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Shaista Wasiuzzaman,

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Industry characteristics and earnings management: a study of Malaysian industries

Shaista Wasiuzzaman
Faculty of Management, Multimedia University – Cyberjaya Campus, Cyberjaya, Malaysia

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Abstract

Purpose – The purpose of this paper is to detect variations in earnings management activity across industries and the possible influence of various industry variables on these variations.
Design/methodology/approach – A total sample of 4,249 firm-year observations from 13 different industries spanning a total of eight years (from 2005 to 2012) is used for this purpose. The ordinary least squares regression technique is used to test the influence of various industry variables on earnings management activity.
Findings – The findings indicate the presence of earnings management practices in Malaysian industries. Among industry-level variables, capital intensity, volatility and profitability are found to influence aggregate earnings management. Further analysis shows that volatility only influences the smoothing measure while profitability influences the discretionary measure. Interestingly, industry competitiveness and leverage are not able to explain the variations in earnings management across industries.
Originality/value – To the authors' knowledge, this is the first study which documents the role of various industry characteristics in influencing earnings management activity. It highlights the importance of considering industry-level variables in a study on earnings management and, hence, adds to the growing literature on earnings management.

Keywords Smoothing, Earnings management, Industry studies, Discretionary measure
Paper type Research paper

1. Introduction

Over the past two decades, various accounting scandals have rocked the world and these scandals have been an impetus for studies on earnings management. The problem with earnings manipulation is that it decreases the quality of reported financial information and hence distorts the relationship between stock returns and reported earnings, ultimately creating a problem to the efficient resource allocation in the economy. It may also mislead outsiders (Healy and Wahlen, 1999) and stakeholders regarding a firm's current performance and also its future.

Numerous studies have focused on various earnings management issues especially with regard to the extent of earnings management practices and the firm-specific factors that may influence it (Beatty and Weber, 2003; Bartov, 1993; Brown *et al.*, 1992; De Matos and Sancovschi, 2005; Dichev and Skinner, 2002; Lee *et al.*, 2017; Li *et al.*, 2011; Lin and Peasnell, 2000, Wan Mohammad *et al.*, 2016). While firm-specific factors are important in explaining the variations in earnings management activity, the industry a firm is in plays an important role in influencing these firm-specific factors since firms in the same industry have similar debt levels, face the same level of operating risk, have similar asset base and technology structures and are affected by similar rules and regulations (Chevalier, 1995). Additionally, Akdogu and MacKay (2012) posit that a firm's product market environment influences its financial management decision, prompting Datta *et al.* (2013) to show that it also influences the firm's decision to manage earnings. Similar operating characteristics and business practices, and the level of competition in a particular industry may result in earnings management being more prevalent in some industries compared to others. It is

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very likely that firms in the same industry utilize similar accounting practices such as the way the account for certain accruals and although Sarbanes-Oxley Act 2002 Section 404 "provides guidelines for internal control testing and reporting, how it is executed may vary across different industries" with many industries having their own industry audit guides and accounting-specific guidance (Bolton *et al.*, 2016). Hence, there is a need to focus on the industry-level earnings management and the industry-specific factors that could explain the variations in earnings management activities across industries. Nelson *et al.* (2002), Sun and Rath (2009) and Goel (2012) find evidence of these variations and various studies in Malaysia and globally provide strong arguments for focusing on specific industries (Ahmed *et al.*, 1999; Hall and Stammerjohan, 1997; Hassan and Ahmed, 2012; Yasuda *et al.*, 2004; Shen and Chih, 2005). However, aside from the study by Wasiuzzaman *et al.* (2015), hardly any study has focused on the industry variables *per se*.

Various issues in Malaysia such as the monopolistic nature of its industries, government price control (Price Control Act 1946), family control and strong banking relationships make this study interesting. Competition among firms in Malaysia is low due to the monopolistic nature of some industries and the existence of government price control on some industries. However, the Malaysian Government enforced the Competition Act 2010 in January 2012. Additionally, Malaysia's accounting standards have gone through various phases to achieve full convergence to the International Financial Reporting Standards (IFRS). Malaysia has been a member of the International Accounting Standards Committee since 1975 due to which the International Accounting Standards has largely influenced its accounting standards. In 1997, the Financial Reporting Act was enacted under which the Malaysian Accounting Standards Board (MASB) was established. In year 2006, under the directive of the MASB, the new standards called the Financial Reporting Standards which was in line with the IFRS was adopted to move toward full convergence with the IFRS. In November 2011, the Malaysian Financial Reporting Standards was issued by the MASB. The adoption of IFRS is argued to have positive effects on the financial reporting quality as it requires greater level of disclosure. However, it also allows the firm's management to use greater discretion and flexibility when preparing a firm's financial statements.

This study thus attempts to detect the prevalence of earnings management activity across industries in Malaysia via the earnings management measures developed by Leuz *et al.* (2003) adjusted at the industry level, where these measures are used to rank the different industries. Unlike other studies so far, this study takes a deeper look at earnings management activities by conducting separate analysis on the smoothing and discretion measures.

The results of this study show that earnings management activities do vary across industries. When the measures developed by Leuz *et al.* (2003) are separated into smoothing and discretion, it is found that some industries consistently score high ranks for the smoothing measure and some for the discretion measure. Others do not show any particular trend. An analysis of the industry-level determinants shows that industry variables such as capital intensity, profitability and volatility are able to explain the variations in aggregate earnings management. Upon further investigation it is found that while volatility is significant in influencing the smoothing measure, it is not significant in influencing the discretion measure. Profitability, on the other hand, influences discretion but not smoothing. Competition is found insignificant for all measures except for discretion while leverage and size are not significant in influencing earnings management. Special characteristics of the Malaysian market are used to provide possible explanations of the results.

The next section presents the literature review and hypotheses for the study, followed by a section on the sampling method. This is followed by a discussion of and analysis using the earnings management measures by Leuz *et al.* (2003). The industry-level determinants of earnings management are then studied and this is followed by the conclusion of this study.

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2. Literature review and hypothesis formulation

Most studies on earnings management focus on firm-specific factors that can explain variations in earnings management activities (Beatty and Weber, 2003; Bartov, 1993; Brown *et al.*, 1992; Dichev and Skinner, 2002; Lin and Peasnell, 2000). Aside from firm-level variations, international comparisons of earnings management activities such as by Shen and Chih (2005) and Leuz *et al.* (2003) have shown variations across countries and the possible institutional factors contributing to the variations. However, hardly any study has been carried out at the industry level. Although not obvious, the focus on specific industries such as the oil industry (Hall and Stammerjohan, 1997), the banking industry (Ahmed *et al.*, 1999; Yasuda *et al.*, 2004; Shen and Chih, 2005) and the manufacturing industry (Hassan and Ahmed, 2012) and the use of industry dummy variables in some studies suggests that industrial characteristics play an important role in influencing earnings management activities of firms. Indeed, Nelson *et al.* (2002) and Sun and Rath (2009) find evidence of significantly higher occurrence of earnings management attempts in some industries compared to others. By considering 12 firms from different industries, Goel (2012) finds that the type of earnings management activity (income-increasing or income-decreasing) varies across industries. Specifically, he finds evidence suggesting that on average, firms in the services sector practice income-decreasing earnings management while those in the non-services sector practice income-increasing earnings management. The differences in earnings management activity are attributed to differences in opportunity structures, experiences and environmental uncertainty. However, Goel (2012) does not explore the industry variables specifically to confirm the reason(s) for the differences.

Variations in earnings management activity across industries may be explained by various industrial characteristics. Recently, Datta *et al.* (2013) and Markarian and Santalo (2014) focus on the effect product market power and competition have on earnings management activity. However, they mainly consider firm-level variables as the determinants and only a small part of Datta *et al.*'s (2013) study actually considers industry-level variables, although the central theme of the study is on product market power and competitiveness which are industry-level variables. Aside from competitiveness, Datta *et al.* (2013) also include leverage, size and volatility as industry factors affecting earnings management at the firm level. This study also includes industry profitability as it is a well-known driver of firm-level earnings management. Also, capital intensity is considered as it has been reported in prior studies such as by Brown *et al.* (1992), Bartov (1993) and Lin and Peasnell (2000) that firms use their tangible assets for earnings management purposes via asset sales and revaluations. Wasiuzzaman *et al.* (2015) find prevalence in earnings management activity when the entire sample is considered but differences across industries when each industry is considered separately. Similar to Datta *et al.* (2013), they find the significant influence of industry competitiveness on the motivation to manage earnings. Capital intensity and profitability are also found to influence both the motivation to avoid reporting losses and to avoid reporting earnings decreases. Leverage only influences the motivation to avoid reporting losses. Unlike Datta *et al.* (2013) and Markarian and Santalo (2014), Wasiuzzaman *et al.* (2015) measure the variables from the industry perspective rather than the firm perspective. This study takes on the same approach by considering industry variables instead of firm variables but considers earnings smoothing and discretion in reported earnings instead of the motivations for managing earnings.

This study thus focuses on these six industrial characteristics which may be able to explain the variations in earnings management activities across industries. Prior literature discussing these variables with respect to earnings management activities are discussed next leading to the formulation of the hypothesis for each variable.

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Competitiveness

Porter (1979) identifies competition in an industry as one of the five important competitive forces that shape an industry and help to determine the strengths and weaknesses of the industry. An industry is said to be competitive when there are many competitors competing with each other not just to satisfy the needs and wants of their customers but also for the limited funds available in the capital market (Datta *et al.*, 2013). The number of competitors and the substitutability of their products and services dictate the power a firm has within the industry. Hence, industry competition is a very important factor in determining the strategy a firm pursues.

The link between competition and earnings management has been inconclusive in past studies. Rivalry among firms in highly competitive industries has been shown to result in both positive and negative effects on information disclosure. While on the one hand it can be argued that higher competition within an industry may result in firms disclosing less information (Verrecchia, 1983; Gertner *et al.*, 1988) and producing biased reports (Datta *et al.*, 2013) to mislead rivals into thinking that the firm has good future prospects or that their costs are lower than actually reported (Bagnoli and Watts, 2010), on the other hand, the existence of rivalry can actually promote full disclosure of financial information. Proponents of the positive effects of competition argue that increase in competition promotes the existence of at least one high-quality firm which is willing to disclose propriety information hence resulting in full disclosure (Gal-Or, 1985). Wasiuzzaman *et al.* (2015) confirm this case for Malaysian firms. Additionally, when more firms compete for limited funds, higher information disclosure helps reduce the cost of gathering information about a particular firm in the industry (Hoberg and Phillips, 2010) and this reduction in information asymmetry helps reduce the cost of financing (Diamond and Verrecchia, 1991).

Since the relationship between earnings management activity and competition remains inconclusive, the first hypothesis is:

H1. Earnings management activity is significantly influenced by the level of competition in an industry.

Leverage

Leverage generally refers to the use of debt in financing the operations of a firm. It can be seen as an investment strategy by a firm where money is borrowed to finance its assets in order to increase the potential returns of the investment, especially the return on equity. However, too high leverage can also increase a firm's risk of default and bankruptcy.

Leverage amounts differ across industries (Ross *et al.*, 2008) and a firm's leverage level is generally determined on the basis of the leverage level of the industry in which it operates (Frank and Goyal, 2007). Firms with high leverage may face higher risks of bankruptcy and so may find it difficult to obtain external debt financing in the future (Dichev and Skinner, 2002; Beatty and Weber, 2003). Additionally, these firms will have to deal with increased debt covenants and face increased scrutiny by the lenders. Thus, in countries such as Malaysia where banks are a major source of financing, the need to avoid debt covenant defaults may result in firms engaging in earnings management activities. Hence, firms in industries with high levels of leverage will tend to have high debt levels and it is expected that there is higher tendency to manage earnings to avoid debt covenant defaults in such industries.

On the other hand, arguments relating firm-level earnings management and leverage refer to the agency theory by Jensen (1986), where debt works as a disciplinary mechanism reducing manager's opportunistic behavior. When a firm has high levels of debt, its cash flows are tied up to pay the interest and principal payments hence the reduced cash flow available results in lower ability and tendency to manage earnings (Zamri *et al.*, 2013).

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Therefore, firms in highly levered industries will have less opportunity to manage earnings due to the limited cash flow available to do so.

The inconclusive arguments given above on the relationship between leverage and earnings management form the following hypothesis for this relationship:

H2. Industry leverage has a significant influence on the level of earnings management in an industry.

Capital intensity/tangibility

Capital intensity refers to the amount a firm must invest in physical or financial assets in order to produce a profit. Industries such as airlines and auto manufacturers are considered to be capital-intensive industries while service-related industries such as insurance which depend more on labor rather than physical assets are not. Because firms in capital-intensive industries require a lot of money to start up and maintain operations, capital intensity benefits the existing firms in the industry as it serves as a barrier to entry into the industry reducing the threat of new entrants into the industry.

At the firm level, it is found that in firms with higher current assets and liabilities, managers have a higher tendency to manage earnings, especially to avoid reporting losses, due to the ease with which current assets, specifically working capital, can be converted into cash. Hence, there is more room, and cheaper, for managers to exercise discretion (Burgstahler and Dichev, 1997). Since firms in the same industry are expected to have similar assets and asset composition (Shleifer and Vishny, 1992), it is then expected that the opportunity to manage earnings in less capital-intensive industries is higher.

On the other hand, the opportunity to manage earnings through asset disposition and/or revaluation may encourage earnings management activities in highly capital-intensive industries. It has been seen in previous studies that firms with high levels of fixed assets may time their asset sales to smooth intertemporal earnings changes (Bartov, 1993) in order to avoid reporting earnings decreases. Due to economies of scale and because it is upon manager's discretion, a more cost-effective exercise, however, would be asset revaluation (Brown *et al.*, 1992; Lin and Peasnell, 2000). Firms in industries that require large investments in fixed assets may revalue these assets downwards to increase reported profits through reduction in depreciation expenses hence bringing forward future write-offs (Francis *et al.*, 1996) in order to manage declines in financial performance.

As with leverage, the inconclusive arguments for the relationship between asset tangibility and earnings management result in the following hypothesis:

H3. An industry's capital intensity has a significant influence on its earnings management activity.

Volatility

Volatility refers to uncertainty. The volatility of demand for the products/services of a firm affects the sales/earnings/cash flows of the firm. The demand for goods and services may vary across industries. For instance, Kotler (1983) suggests that the demand for industrial goods and services tends to be more volatile compared to that of the consumer goods and services. Sudden and unexpected increases in demand can lead to shortages in labor, production capacity and materials while decreases in demand can lead to layoffs and shocks to profits and earnings (Bishop *et al.*, 1984). Bo (2001) finds evidence showing that demand uncertainty affects inventory adjustment significantly.

Most studies on firm-level volatility predict a positive relationship between earnings/cash flow volatility and earnings management. Because a firm operating in an industry which is exposed to greater economic shocks is expected to have volatile sales and earnings

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(Dichev and Tang, 2009), as a result, the reduction in earnings predictability (Graham *et al.*, 2005) provides firms with the opportunity to borrow earnings from the future, especially during times when earnings are low (Defond and Park, 1997). Additionally, reduced earnings predictability results in higher information asymmetry making it difficult for firms to obtain debt financing, hence, the ability to smooth earnings can act as a signaling device (Goel and Thakor, 2003), thereby, helping to reduce cost of capital. This then serves as a motivation for firms in highly volatile industries to manage earnings.

However, it can be argued that firms may be tempted to manage earnings when they are operating in an industry with stable (or less volatile) cash flows, i.e. where earnings are predictable. Since earnings are predictable, any firm in the industry which falls below the expected earnings forecast for the industry may be tempted to engage in earnings management in order to meet or exceed earnings benchmarks due to strong capital market incentives (Graham *et al.*, 2005).

Based on the above arguments, the fifth hypothesis is then:

H4. Earnings management activity is significantly influenced by the volatility of revenue/cash flows of the industry.

Profitability

Porter's (1979) five competitive forces analysis on firm strategy identifies an industry to be considered unattractive when potential for profits is low. Hence, the "perfectly competitive" industry is considered the most unattractive due to ease of entry into the industry and uncontrolled jockeying for position within the industry, thus, resulting in lower profitability (Porter, 1979). Therefore, in such industries rivalry is intense and so to stay "above the game" and establish its position, there may be greater motivation for firms to manage earnings to mislead rivals into thinking that it may have formulated strategies to earn profits/returns above the industry median (Wasiuzzaman *et al.*, 2015). Hence, earnings management should be more prevalent in less profitable industries. The following hypothesis with respect to industry profitability is thus formulated as:

H5. Earnings management activity is significantly higher in industries with lower profitability.

3. Sampling

Data of firms listed on the Bursa Malaysia are obtained from the Datastream database for the years 2005–2012. A total of 4,249 firm-year observations are considered. Datastream industrial classification is then used to classify the firms into specific industries. Industries with very few observations and many missing data are excluded from this study. Initially, there are 25 industries but with the elimination process, the number of industries comes down to 13. Even if a firm has incomplete data, it is included in the sample. A firm is excluded from the sample if it has no data at all in these eight years. An overall sample of 104 industry-year observations across eight years is considered. The distribution of the sample across year and industry is provided in Table I.

4. Earnings management measures by Leuz *et al.* (2003)

The variation in the tendency to manage earnings across industries may be explained by various industry-level variables. However, before proceeding with an analysis on the possible industry-level variables which may be able to explain the variations, earnings management measures used by Leuz *et al.* (2003) are developed at the industry level to further test for earnings management and to attain an aggregate measurement of earnings

Year	Overall	2005	2006	2007	2008	2009	2010	2011	2012
All	4,249	507	515	529	537	555	560	557	489
Construction	793	97	98	100	101	103	103	102	89
Food Produce	604	73	75	75	78	79	78	78	68
General Industries	241	29	29	30	31	31	33	32	26
General Retail	182	22	23	23	22	23	24	24	21
Household Goods	285	34	34	35	35	37	37	37	36
Industrial Engineering	357	41	42	45	42	48	48	49	42
Industrial Transportation	203	23	24	26	27	27	27	26	23
Real Estate Investment and Services	580	71	71	72	73	75	76	75	67
Support Services	181	22	22	23	23	23	24	24	20
Personal Goods	245	28	29	29	30	34	34	33	28
Automobiles	142	18	18	18	18	18	18	18	16
Travel Services	224	27	28	28	28	28	29	30	26
Chemicals	212	22	22	25	29	29	29	29	27

Table I. Distribution of sample across industry and year

management to be used for the regression analysis conducted later in the study. Industry-level measurements are developed to "capture various dimensions along which insiders can exercise their discretion to manage reported earnings" (Leuz *et al.*, 2003, p. 509).

Measures to detect earnings smoothing

Leuz *et al.* (2003) develop two country-level measures to detect smoothing of earnings carried out to reduce variability of reporting earnings (EM1) and to conceal the effect of economic shocks to the firm's operating cash flows (EM2). Unlike Leuz *et al.* (2003) who calculate one value for each country, due to the small number of industries considered, this study calculates the value for EM1 and EM2 for each industry in each year, i.e. there are eight values (from year 2005 to 2012) for each earnings management measurement for each industry.

Since this study focuses on the industry, EM1 is measured as an industry's "median ratio of the firm-level standard deviation of operating income divided by the firm-level standard deviation of cash flow from operations" (Leuz *et al.*, 2003, p. 509). Cash flow from operations (CFFO) is found by subtracting accruals from the earnings, such that the accruals component of earnings is calculated as the change in non-cash current assets (i.e. change in total current assets minus change in cash and cash equivalents) less change in total current liabilities (excluding changes in short-term debt portion of current liabilities and income tax payable) less the depreciation and amortization expense (Dechow *et al.*, 1998). Both the operating income and CFFO are scaled by lagged total assets to control for differences in firm size. The standard deviations are calculated over a rolling five-year period with all values calculated for firm i at time t. Higher values (or scores) of EM1 would indicate lower levels of earnings management.

EM2 is calculated as the correlation between industry i's change in accounting accruals and its change in operating cash flows (Leuz *et al.*, 2003) for year t. The accruals and operating cash flows (both scaled by lagged total assets) are as earlier calculated for EM1. Firms may hide poor current performance by either accelerating the reporting of future revenues or delaying the reporting of current costs. However, it is also possible for firms to underreport strong current earnings to enable adjustments in earnings in the future. Therefore, accruals are used as buffer for cash flow shocks and this results in a negative correlation between changes in accruals and operating cash flows. A negative correlation is expected to be the result of accrual accounting while a higher magnitude of the correlation indicates "smoothing of reported earnings that does not reflect a firm's underlying economic

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performance" (Leuz *et al.*, 2003, p. 510). Similar to EM1, higher values (or scores) of EM2 indicate lower levels of earnings management.

Values for EM1 and EM2 are presented in Table II.

Measures to detect discretion in reported earnings

Aside from the smoothing measures, Leuz *et al.* (2003) also develop two country-level measures to detect discretion in reported earnings as a result of insider's attempts overstate earnings in order to achieve "earnings targets or report extraordinary performance in specific instances, such as equity issuance" (Leuz *et al.*, 2003, p. 510) (EM3) or to avoid reporting small losses (EM4).

While the smoothing measures are used to dampen fluctuations in firm performance, managers may also use discretion to misstate its economic performance. However, managers may "use discretionary accruals to increase the informativeness of financial reports" (Leuz *et al.*, 2003, p. 510). Since accruals is used for this purpose, magnitude of accruals is used as a proxy to measure the extent to which managers use discretion when reporting earnings. EM3 is calculated as the industry median of the absolute value of accruals divided by the absolute value of the CFFO. Scaling by CFFO is done to control for differences in size and performance. EM3 is calculated for each industry in each year; hence, there are eight values for EM3 for each industry. Higher values of EM3 should indicate higher levels of earnings management.

It is evident that accounting discretion is used by managers to avoid reporting small losses (Degeorge *et al.*, 1999; Burgstahler and Dichev, 1997). Managers would prefer to avoid reporting losses of any magnitude but they have limited discretion and are therefore not able

Industry	2005	2006	2007	2008	2009	2010	2011	2012	Average
EM1									
Construction	0.531	0.521	0.533	0.512	0.585	0.489	0.438	0.409	0.502
Food Produce	0.730	0.683	0.715	0.783	0.774	0.722	0.686	0.642	0.717
General Industries	0.470	0.631	0.542	0.655	0.645	0.592	0.693	0.552	0.597
General Retail	0.507	0.612	0.559	0.305	0.442	0.474	0.386	0.414	0.462
Household Goods	0.718	0.691	0.501	0.486	0.511	0.468	0.610	0.585	0.571
Industrial Engineering	0.604	0.573	0.657	0.553	0.591	0.484	0.567	0.467	0.562
Industrial Transportation	0.429	0.419	0.424	0.489	0.544	0.586	0.574	0.642	0.513
Real Estate Investment and Services	0.402	0.392	0.373	0.354	0.391	0.376	0.373	0.358	0.377
Support Services	0.456	0.455	0.509	0.512	0.466	0.444	0.486	0.555	0.485
Personal Goods	0.654	0.590	0.651	0.454	0.558	0.535	0.586	0.798	0.603
Automobiles	0.454	0.536	0.458	0.460	0.600	0.701	0.623	0.538	0.546
Travel Services	0.511	0.528	0.629	0.614	0.583	0.675	0.854	0.766	0.645
Chemicals	0.949	0.794	0.901	0.602	0.612	0.666	0.669	0.579	0.722
EM2									
Construction	−0.741	−0.942	−0.686	0.401	−0.994	−0.996	−0.876	−0.869	−0.713
Food Produce	−0.726	−0.755	−0.895	−0.852	−0.900	−0.913	−0.901	−0.761	−0.838
General Industries	−0.682	−0.672	−0.760	−0.955	−0.953	−0.906	−0.970	−0.975	−0.859
General Retail	−0.902	−0.961	−0.947	−0.989	−0.993	−0.892	−0.887	−0.968	−0.942
Household Goods	−0.909	−0.924	−0.615	−0.891	−0.823	−0.814	−0.880	−0.869	−0.840
Industrial Engineering	−0.937	−0.521	−0.602	−0.795	−0.953	−0.945	−0.931	−0.910	−0.824
Industrial Transportation	−0.907	−0.830	−0.895	−0.929	−0.894	−0.723	−0.717	−0.774	−0.833
Real Estate Investment and Services	−0.970	−0.925	−0.973	−0.971	−0.893	−0.976	−0.988	−0.979	−0.959
Support Services	−0.998	−0.999	−0.936	−0.941	−0.814	−0.822	−0.726	−0.933	−0.896
Personal Goods	−0.885	−0.853	−0.903	−0.981	−0.889	−0.966	−0.910	−0.650	−0.880
Automobiles	−0.954	−0.906	−0.592	−0.761	−0.793	−0.909	−0.956	−0.930	−0.850
Travel Services	−0.780	−0.957	−0.798	−0.650	−0.805	−0.906	−0.620	−0.602	−0.765
Chemicals	−0.961	−0.562	−0.399	−0.848	−0.732	−0.835	−0.830	−0.929	−0.762

Table II.
Industry values for earnings management scores (EM1 and EM2)

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to report profits when facing large losses. It is easier to report profits when the firm is facing small losses and therefore the extent to which managers manage earnings to avoid reporting losses is observed via the small profits and small losses. EM4 is thus calculated as the ratio of small profits to small losses where profit is calculated as the net income before extra and preferred dividends scaled by total assets. A profit is considered small when the ratio is positive but its value is not greater than 0.01 while a loss is negative profit (or less than 0) and is considered small when its value is not greater than −0.01. Similar to EM3, higher value of EM4 indicates higher levels of earnings management. However, unlike the other earnings management measures, it is not possible to calculate EM4 for each year as there is insufficient number of observations of small losses for each industry each year. Leuz *et al.* (2003) require that the number of observations of small losses to be at least five in order to reliably calculate this ratio. Hence, only one value is obtained for each industry. Out of the 13 industries in this study, only the Personal Goods and Automobiles industries have less than five observations for the entire study period so although the value for EM4 is calculated for these industries, these values may not be reliable as cautioned by Leuz *et al.* (2003).

Values for EM3 and EM4 are presented in Table III.

Aggregate measurement of earnings management

Following Leuz *et al.* (2003), an aggregate measure is constructed for each industry each year. To do this, every year, each industry is ranked based on the values for each measurement. A higher rank indicates higher levels of earnings management. Since only EM1, EM2 and EM3 can be calculated and the ranking assigned for each year, the aggregate earnings management score (AGGSCORE) is thus calculated as the average industry ranking using these three measurements. The AGGSCORE for each industry in each year are presented in Table IV.

The ranks in Table IV show that the General Retail and Real Estate Investment and Services industries are found to have the highest scores. The General Retail industry is found to have high scores in the two smoothing measures (EM1 and EM2) while the Real Estate Investment and Services industry has consistently high scores for all measures. For the discretion measure EM3, the Construction and Industrial Engineering industries score consistently high values across the years and this is validated by the overall EM4 value for these two industries. Other industries do not really stand out with scores fluctuating over the years. The observations above indicate the different purposes for earnings management in different industries and this could be due to the different industrial characteristics.

Industry	2005	2006	2007	2008	2009	2010	2011	2012	Average EM3	EM4
Construction	0.600	0.776	0.912	0.792	0.725	0.830	0.813	0.813	0.783	9.000
Food Produce	0.403	0.360	0.350	0.235	0.365	0.266	0.278	0.323	0.322	5.375
General Industries	0.713	0.544	0.570	0.674	0.545	0.430	0.395	0.464	0.542	4.857
General Retail	0.546	0.577	0.686	0.562	0.403	0.429	0.451	0.770	0.553	3.250
Household Goods	0.816	0.589	0.514	0.455	0.627	0.598	0.686	0.985	0.659	3.769
Industrial Engineering	0.542	0.480	0.562	0.648	0.763	0.731	0.718	0.907	0.669	9.143
Industrial Transportation	0.591	0.306	0.394	0.358	0.425	0.340	0.388	0.404	0.401	6.800
Real Estate Investment and Services	0.647	0.621	0.671	0.594	0.742	0.666	0.742	0.677	0.670	9.071
Support Services	0.554	0.546	0.495	0.357	0.514	0.472	0.417	0.413	0.471	4.600
Personal Goods	0.742	0.515	0.497	0.648	0.499	0.428	0.526	0.335	0.524	14.333
Automobiles	0.484	0.693	0.522	0.716	0.394	0.621	0.326	0.395	0.519	5.250
Travel Services	0.512	0.530	0.515	0.634	0.411	0.532	0.350	0.533	0.502	1.944
Chemicals	0.505	0.572	0.604	0.466	0.577	0.403	0.488	0.319	0.492	4.625

Table III.
Industry values for earnings management scores (EM3 and EM4)

Table IV.
Aggregate earnings management score (AGGSCORE) for each industry

Industry	2005	2006	2007	2008	2009	2010	2011	2012	Average
Construction	6.00	11.00	8.67	7.00	10.00	11.33	9.67	9.67	8.00
Food Produce	1.67	3.00	4.00	2.67	3.67	3.67	4.00	3.00	3.00
General Industries	7.00	4.33	7.33	7.67	7.00	6.00	6.33	9.00	7.33
General Retail	6.67	8.67	10.00	10.67	9.00	6.67	8.67	10.67	11.00
Household Goods	8.00	6.67	6.33	6.67	8.33	7.33	7.33	7.67	7.67
Industrial Engineering	6.33	3.67	4.67	6.33	9.33	10.33	10.00	9.67	7.33
Industrial Transportation	9.00	6.00	7.33	6.33	7.33	3.00	4.67	4.00	5.33
Real Estate Investment and Services	11.67	11.00	12.33	10.00	10.67	12.00	12.67	11.67	12.67
Support Services	10.00	10.33	7.67	5.67	7.33	7.33	6.33	7.67	8.33
Personal Goods	7.00	5.33	6.00	10.67	6.67	7.33	8.33	2.00	7.00
Automobiles	7.67	9.00	6.67	8.33	2.67	6.67	6.00	7.33	7.33
Travel Services	5.00	8.33	6.00	4.33	4.67	5.67	1.67	3.67	3.67
Chemicals	5.00	3.67	4.00	4.67	4.33	3.67	5.33	5.00	2.33

5. Industry-level determinants of earnings management

Since variations are found in the earnings management measures (EM1 to EM4), the next focus is to evaluate the influence of industry-level variables on these measures. AGGSCORE is taken as the overall measurement of earnings management and the dependent variable and industry characteristics such as competition, profitability, earnings volatility, leverage, tangibility and size are the independent variables. Additionally, because it was earlier seen that some industries score higher in the smoothing measures (EM1 and EM2) while some in the discretion measure (EM3), the analysis is then separated into two, one with the average of the smoothing scores (AGGSMOOTH) as the dependent variable and the other with the discretion score (EM3) as the dependent variable. The models are thus:

$$\begin{aligned}\text{AGGSCORE}_{i,t} = {} & \alpha_0 + \alpha_1 \text{COMP}_{it} + \alpha_2 \text{PROF}_{it} + \alpha_3 \text{VOL}_{it} \\ & + \alpha_4 \text{LEV}_{it} + \alpha_5 \text{CINT}_{it} + \alpha_6 \text{SIZE}_{it} + \varepsilon_{it}, \end{aligned} \tag{1}$$

$$\begin{aligned}\text{AGGSMOOTH}_{i,t} = {} & \alpha_0 + \alpha_1 \text{COMP}_{it} + \alpha_2 \text{PROF}_{it} + \alpha_3 \text{VOL}_{it} \\ & + \alpha_4 \text{LEV}_{it} + \alpha_5 \text{CINT}_{it} + \alpha_6 \text{SIZE}_{it} + \varepsilon_{it}, \end{aligned} \tag{2}$$

$$\begin{aligned}\text{EM3}_{i,t} = {} & \alpha_0 + \alpha_1 \text{COMP}_{it} + \alpha_2 \text{PROF}_{it} + \alpha_3 \text{VOL}_{it} \\ & + \alpha_4 \text{LEV}_{it} + \alpha_5 \text{CINT}_{it} + \alpha_6 \text{SIZE}_{it} + \varepsilon_{it}. \end{aligned} \tag{3}$$

Competitiveness (COMP) is measured via the natural log of the number of firms in the industry (Datta *et al.*, 2013). Other alternate measures are also considered such as the Hirschman-Herfindahl Index (HHI), calculated as the sum of the squared market share of all the firms in that industry, but several doubts have been raised about the actual implication of this measure with regard to competition (Datta *et al.*, 2013). Profitability (PROF) is measured as the median value of each firm's net income before extra/preferred dividends divided by the total assets (Seng and Su, 2010). To measure volatility (VOL), the standard deviation of sales over the prior five-year period divided by lagged total assets is calculated for each firm in the industry and the median value is then calculated for each industry. Industry leverage (LEV) is calculated as the natural logarithm of the median value of the total debt as a percentage of common equity of all firms in the industry. Capital intensity (CINT) is measured as the median value of the net value of property, plant and equipment plus depreciation/depletion/amortization deflated by the total assets for each

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firm in the industry. Size of the industry (SIZE) is taken as a control variable and is measured as the median of the natural logarithm of the sales of each firm in the industry.

Table V provides the overall mean for each variable and those of each industry. Since the time frame is eight years (from 2005 to 2012), the number of observations for each industry is 8 with the total observation being 104. The standard deviation for each variable is very low due to the small number of observations for each industry, hence, not shown in the table.

The statistics in Table V shows that no two industries are similar in their characteristics. For instance, in comparison with the average values for the overall sample, the construction industry is characterized by high competition (since it does have the highest number of firms), low capital intensity and profitability but high leverage and earnings volatility. The Food Produce industry is quite competitive and is capital intensive (higher CINT value) but leverage is quite high in this industry possibly because of low volatility and high profitability. In fact in terms of size (as measured via its sales), the value is the highest among all industries. Industries such as the Automobile and the Chemicals industry in Malaysia are oligopolistic in nature with high barriers to entry imposed by the government hence have less number of participating firms and so less competition. These two industries are almost similar in the sense that both experience high earnings volatility with high capital intensity requirements and profitability (although Chemicals industry has higher values). However, there is a big difference in the leverage held by firms in these two industries, which is probably due to the nature of the business and the sales volatility. Therefore, the different industrial characteristics are now analyzed as possibly having significant influence on the variations in earnings management activities.

The correlations between the independent variables in Table VI show all correlations between independent variables being less than 0.7 hence no issues of multicollinearity can be detected.

Analyses on Models 1–3 are carried out using ordinary least squares (OLS) multiple regression technique (Table VII). Tests of heteroscedasticity and autocorrelation are carried out for each model. Only Model 3 produces unbiased results with OLS regression analysis. In Models 1 and 2, no issue of heteroscedasticity of the residuals is detected but autocorrelation is detected in the residuals hence to correct this in order to produce unbiased results, robust standard errors adjusted for industry-level clustering are calculated for these two models.

Industry	*n*	AGGSCORE	AGGSMOOTH	EM3	COMP	PROF	VOL	LEV	CINT	SIZE
All Industries	104	7.00	7.00	7.00	3.58	0.04	0.13	3.53	0.38	16.78
Construction and Materials	8	9.17	7.75	12.00	4.60	0.02	0.14	3.74	0.30	17.32
Food Produce	8	3.21	4.19	1.25	4.33	0.06	0.12	3.72	0.52	17.88
General Industries	8	6.83	6.31	7.88	3.43	0.04	0.14	3.50	0.43	17.51
General Retail	8	8.88	9.69	7.25	3.14	0.05	0.16	3.83	0.28	17.15
Household Goods	8	7.29	6.31	9.25	3.60	0.02	0.16	3.46	0.40	15.65
Industrial Engineering	8	7.54	6.69	9.25	3.84	0.04	0.14	3.32	0.34	16.38
Industrial Transportation	8	5.96	7.06	3.75	3.24	0.04	0.06	3.70	0.49	16.86
Real Estate Investment and Services	8	11.50	12.06	10.38	4.29	0.03	0.06	3.57	0.42	16.65
Support Services	8	7.79	8.88	5.63	3.12	0.05	0.16	3.09	0.25	15.93
Personal Goods	8	6.67	6.81	6.38	3.46	0.06	0.15	3.27	0.32	15.67
Automobiles	8	6.79	7.00	6.38	2.88	0.04	0.14	3.29	0.38	16.75
Travel Services	8	4.92	4.50	5.75	3.35	0.03	0.07	3.86	0.45	17.76
Chemicals	8	4.46	3.75	5.88	3.34	0.05	0.17	3.60	0.40	16.60

Table V. Mean of dependent and independent variables

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In Table VII, three variables (PROF, VOL and CINT) are found to significantly influence the aggregate earnings management score (EMAGG). However, when the score is split into the two different measures of smoothing (EMSMOOTH) and discretion (EM3), only CINT is found to be significant in both analyses. In fact CINT is highly significant at the 1 percent level for all three analyses. Interestingly, VOL significantly influences the aggregate ratio for smoothing (EMSMOOTH) but not for the measure of discretion (EM3) while PROF significantly influences EM3 but not EMSMOOTH. LEV and SIZE have no significant influence while COMP is only significant at the 5 percent level for EM3.

CINT is found to have a negative effect on earnings management in all three cases. Since CINT is a measure of capital intensity, this indicates that firms in industries requiring a smaller fixed asset base and using more current and/or intangible assets will tend to engage in earnings management activities. Having high levels of current assets allows firms to manage earnings through management of working capital and cash. Additionally, the cost involved in liquidating fixed assets (Burgstahler and Dichev, 1997) and the negative signals its sales emit may prompt firms to avoid these issues by using current assets to manage earnings. It is not surprising then that Malaysian firms have been found to consistently over-invest in working capital (Wasiuzzaman and Arumugam, 2013). In the case of intangible fixed assets, the difficulty in quantifying and qualifying these assets allows them to be used for earnings management purposes. Often a firm's intangible assets are not even reported on its financial statements or are reported at significantly lower values compared to their actual values. Hence, there is greater opportunity to manage earnings in industries that require lower levels of fixed assets and higher current and intangible assets.

VOL is found to be significant in influencing the aggregate measurement earnings management (EMSCORE). However, when these measures are analyzed separately, VOL is

	AGGSCORE	AGGSMOOTH	EM3	COMP	PROF	VOL	LEV	CINT	SIZE
AGGSCORE	1								
AGGSMOOTH	0.8857	1							
EM3	0.6633	0.2399	1						
COMP	0.1819	0.0793	0.2525	1					
PROF	−0.2861	−0.0676	−0.4892	−0.273	1				
VOL	−0.1085	−0.1859	0.0729	−0.1626	0.2442	1			
LEV	−0.1226	−0.097	−0.1	0.2151	−0.2218	−0.397	1		
CINT	−0.393	−0.3125	−0.3179	0.125	−0.0967	−0.5659	0.3623	1	
SIZE	−0.1977	−0.1464	−0.1775	0.2549	−0.0129	−0.2536	0.4127	0.3306	1

Table VI.
Correlations between independent variables

Dependent variable	EMSCORE	EMSOOTH	EM3
C	25.226*** (8.156)	25.932** (9.676)	23.813*** (7.130)
COMP	0.923 (0.827)	0.640 (0.999)	1.489** (0.613)
PROF	−35.711** (14.475)	4.039 (17.469)	−115.209*** (20.003)
VOL	−26.749** (9.640)	−38.693** (12.838)	−2.861 (8.473)
LEV	−1.001 (1.019)	−0.886 (1.242)	−1.231 (1.094)
CINT	−18.074*** (4.290)	−19.833*** (5.052)	−14.555*** (4.137)
SIZE	−0.372 (0.541)	−0.342 (0.724)	−0.433 (0.440)
Number of observations	104	104	104
R^2	0.419	0.314	0.384

Notes: Values in parenthesis represent standard errors. *,***Significant at 10 and 1 percent levels, respectively

Table VII.
Industry-level determinants of earnings management

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found to have a significant influence on smoothing (EMSMOOTH) only but not on discretion (EM3). The relationship found in all cases is negative. This implies that firms tend to engage in earnings management activities, especially earnings smoothing, when they are operating in industries with low earnings volatility. This result is different from previous studies which have always found a positive relationship between earnings management and volatility, particularly when volatility is a firm-level variable. However, here it is found that when firms operate in an industry which has predictable earnings, the pressure to maintain the expected earnings level may entice firms to manage earnings, especially since having higher earnings volatility when others in the industry have not may be indicative of the firm facing problems in generating revenues and controlling costs. Hence, earnings management is more prevalent in industries with stable revenues/cash flows. This suggests that the effect of earnings volatility on earnings management is different at the firm and the industry level. Replacing earnings volatility with cash flow volatility produces similar results.

Similar to VOL, PROF is found to be significant in influencing EMSCORE but when the measures are separated, PROF is only found to be highly significant in influencing EM3 and not EMSMOOTH. The relationship is found to be negative for both EMSCORE and EM3 but positive for EMSMOOTH. Since the discretionary measure is a measure of an insider's attempts to achieve "earnings targets or report extraordinary performance in specific instances, such as equity issuance" (Leuz *et al.*, 2003, p. 510), it is therefore not surprising that firms operating in industries with low profitability would be more likely to use accounting discretion to report higher earnings to improve the firm's position in the market. These firms would not have enough profitability or cash flow to engage in smoothing activities hence resulting in the insignificant relationship.

An insignificant positive relationship is found between COMP and AGGSCORE indicating that competition (or more specifically the number of firms in an industry) does not have a significant impact on earnings management activities in Malaysia unlike the results of previous studies such as by Datta *et al.* (2013). COMP is only found to be significant in influencing EM4 but not AGGSMOOTH. However, when different measures of competition are used such as the HHI or the cost of entry into the industry (which tends to influence competition as higher cost tends to discourage firms from entering the industry), the relationship between these measures of competition and earnings management is found to be insignificant. This indicates the tendency to use accounting discretion to misreport earnings when competition is high. The insignificance of the COMP variable is not surprising given that Malaysian industries are monopolistic, or in some cases oligopolistic, in nature with one-fourth of the corporate sector being owned by the ten largest families (Claessens *et al.*, 2000) and most of these large family firms tend to foster close ties with the government for survival (Gomez and Jomo, 1997). There is also the issue of government price control of certain goods under the Price Control Act 1946, which influences the competitive nature of some industries. It is possible that the effect of competition may be different after year 2012 due to the enforcement of the Competition Act 2010 by the government in January 2012 to ensure free and fair competition in commercial markets (according to the Malaysia Competition Commission).

LEV is found to be insignificant in influencing any of the earnings management measures possibly due to the strong relationship with banks which reduces the role of gearing as a control mechanism (Haniffa and Hudaib, 2006). In Malaysia, the government provides incentives to build strong relationships between firms and banks which results in multi-relationships between them with banks providing guarantees for corporate bond issues and even holding a high percentage of firms' private debt securities (Suto, 2003). Wasiuzzaman *et al.* (2015) find that leverage significantly influences the motivation to manage earnings to avoid reporting losses. Perhaps, leverage is insignificant here because the measurement for earnings management does not consider the motivation but only considers earnings management as a whole.

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Robustness tests

The regressions are also carried out using mean values of all variables, except for COMP and SIZE, and in all cases, the results are similar, as presented in Table VIII.

Also, removal of the insignificant variables (LEV and SIZE) does not influence the significance of the remaining variables. Possible influence of the global financial crisis of 2008/2009 on the validity of the results is also tested by introducing a dummy variable with value 1 for the years of the financial crisis and 0 otherwise. The dummy variable is found to be insignificant suggesting that the financial crisis is not significant in influencing earnings management across industries and the results for the other variables are found to be consistent with those reported earlier.

6. Conclusion

This study investigates the influence of the industry on earnings management and finds evidence of differences in practices across industries. It also finds that industry variables such as capital intensity, volatility and profitability are able to explain the variations across industries. However, upon analyzing further, volatility is found to explain only smoothing measures while profitability explains only discretionary measures, implying that further studies should not just consider aggregate measures of earnings management but also study the two measures separately to get a clearer picture of what is happening. Interestingly, most current studies focus on the influence of product market competition on earnings management and find it very influential but this study fails to find this. Leverage is also found to be insignificant. Characteristics of the Malaysian market are able to explain these results and this highlights the need to focus on other markets with characteristics different from that of more developed and open markets such as the USA. The results also suggest that accounting standard setters should take into consideration these issues related to industry characteristics when designing reporting standards to control earnings management activities. Since different industries may have different audit guidelines and accounting-specific guidance, understanding the extent of earnings management practices in certain industries and how industry variables can influence these practices allows regulators to incorporate measures to control for these characteristics across industries so that internal control testing and reporting guidelines can be improved across the board.

This study does have its limitations. First, various measures have been proposed for earnings management in previous studies. This study only uses the measurements by Leuz *et al.* (2003). Further confirmation of the variations across industries can be carried out using other measures such as the earnings distribution model and the accruals models. Second, this study uses the Datastream database classification of industries rather than the more conventional sic-2 digit or Fama and French industry classifications. The way

Dependent variable	AGGSCORE	AGGSOOTH	EM4
C	25.56*** (9.639)	23.877** (10.876)	19.925** (8.041)
COMP	1.094 (0.878)	0.606 (1.077)	2.070*** (0.668)
PROF	−21.979** (8.622)	−9.221 (11.448)	−47.495*** (13.998)
VOL	−38.538** (14.482)	−49.059** (18.961)	−17.495 (12.673)
LEV	−0.228 (1.325)	−0.242 (1.484)	−0.198 (1.192)
CINT	−21.944*** (5.882)	−22.422*** (6.279)	−20.988*** (5.850)
SIZE	−0.369 (0.556)	−0.301 (0.741)	−0.506 (0.501)
Number of observations	104	104	104
R^2	0.356	0.267	0.283

Table VIII.
Robustness tests

Notes: Values in parenthesis represent standard errors. *,***Significant at 10 and 1 percent levels, respectively

industries are classified may influence the results as some classifications are very specific in nature while some are more general. It is suggested that future studies test different classifications, and possibly go further into more specific industries, to further test the results found in this study and to identify possible differences in effects of these classifications. Third, this study only uses some variables and ignores others due to the limitation of sample size. Variables such as the market-to-book ratio can be included as a control variable in the regression model in future studies especially in countries with large volumes of industry-level data. There is also scope for qualitative studies on internal control, risk management and accounting practices in different industries, which may provide further information on how they vary across industries and will have wide implications for studies on earnings management. Finally, this study only focuses in Malaysia due to its special characteristics but a further study on other countries in Asia or globally should be carried out to further validate the results in this study.

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References

Ahmed, A.S., Takeda, C. and Thomas, S. (1999), "Bank loan loss provisions: a reexamination of capital management, earnings management and signaling effects", *Journal of Accounting and Economics*, Vol. 28 No. 1, pp. 1-25.

Akdogu, E. and MacKay, P. (2012), "Product markets and corporate investment: theory and evidence", *Journal of Banking and Finance*, Vol. 36 No. 2, pp. 439-453.

Bagnoli, M. and Watts, S.G. (2010), "Oligopoly, disclosure, and earnings management", *The Accounting Review*, Vol. 85 No. 4, pp. 1191-1214.

Bartov, E. (1993), "The timing of asset sales and earnings manipulation", *The Accounting Review*, Vol. 68 No. 4, pp. 840-855.

Beatty, A. and Weber, J. (2003), "The effects of debt contracting on voluntary accounting method changes", *Accounting Review*, Vol. 78 No. 1, pp. 119-142.

Bishop, W.S., Grahan, J.L. and Jones, M.H. (1984), "Volatility of derived demand in industrial markets and its management implications", *Journal of Marketing*, Vol. 48 No. 4, pp. 95-103.

Bo, H. (2001), "Volatility of sales, expectation errors, and inventory investment: firm level evidence", *International Journal of Production Economics*, Vol. 72 No. 3, pp. 273-283.

Bolton, B., Lian, Q., Rupley, K. and Zhao, J. (2016), "Industry contagion effects of internal control material weakness disclosures", *Advances in Accounting, Incorporating Advances in International Accounting*, Vol. 34, pp. 27-40.

Brown, P., Izan, H.Y. and Loh, A.L. (1992), "Fixed asset revaluations and managerial incentives", *Abacus*, Vol. 28 No. 1, pp. 36-57.

Burgstahler, D. and Dichev, I. (1997), "Earnings management to avoid earnings decreases and losses", *Journal of Accounting and Economics*, Vol. 24 No. 1, pp. 99-126.

Chevalier, J.A. (1995), "Capital structure and product-market competition: empirical evidence from the supermarket industry", *American Economic Review*, Vol. 85 No. 3, pp. 415-435.

Claessens, S., Djankov, S. and Lang, L. (2000), "Separation of ownership and control in East Asian corporations", *Journal of Financial Economics*, Vol. 58 Nos 1/2, pp. 81-112.

Datta, S., Iskandar-Datta, M. and Singh, V. (2013), "Product market power, industry structure, and corporate earnings management", *Journal of Banking & Finance*, Vol. 37 No. 8, pp. 3273-3285.

Dechow, P.M., Kothari, S.P. and Watts, L.R. (1998), "The relation between earnings and cash flows", *Journal of Accounting and Economics*, Vol. 25 No. 2, pp. 133-168.

Defond, M.L. and Park, C.W. (1997), "Smoothing income in anticipation of future earnings", *Journal of Accounting & Economics*, Vol. 23 No. 2, pp. 115-139.

Degeorge, F., Patel, J. and Zeckhauser, R. (1999), "Earnings management to exceed thresholds", *The Journal of Business*, Vol. 72 No. 1, pp. 1-33.

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De Matos, F.F.J. and Sancovschi, M. (2005), "Earnings management: the case of lucent technologies", *Revista Universo Contábil*, Vol. 1 No. 1, pp. 101-111.

Diamond, D.W. and Verrecchia, R.E. (1991), "Disclosure, liquidity, and the cost of capital", *The Journal of Finance*, Vol. 46 No. 4, pp. 1325-1359.

Dichev, I.D. and Skinner, D.J. (2002), "Large-sample evidence on the debt covenant hypothesis", *Journal of Accounting Research*, Vol. 40 No. 4, pp. 1091-1123.

Dichev, I.D. and Tang, V.W. (2009), "Earnings volatility and earnings predictability", *Journal of Accounting and Economics*, Vol. 47 No. 1/2, pp. 160-181.

Francis, J., Hanna, J.D. and Vincent, L. (1996), "Causes and effects of discretionary asset write-offs", *Journal of Accounting Research*, Vol. 34 No. S1, pp. 117-134.

Frank, M.Z. and Goyal, V.K. (2007), "Trade-off and pecking order theories of debt", in Eckbo, B.E. (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*, Vol. 2, Elsevier, Amsterdam, pp. 135-202.

Gal-Or, E. (1985), "Information sharing in oligopoly", *Econometrica*, Vol. 53 No. 2, pp. 329-343.

Gertner, R., Gibbons, R. and Scharfstein, D. (1988), "Simultaneous signaling to the capital and product markets", *RAND Journal of Economics*, Vol. 19 No. 2, pp. 173-190.

Goel, A.M. and Thakor, A.V. (2003), "Why do firms smooth earnings?", *The Journal of Business*, Vol. 76 No. 1, pp. 151-192.

Goel, S. (2012), "Demystifying earnings management through accruals management: an Indian corporate study", *Vikalpa*, Vol. 37 No. 1, pp. 49-56.

Gomez, E.T. and Jomo, K.S. (1997), *Malaysia's Political Economy: Politics, Patronage and Profits*, Cambridge University Press, Cambridge.

Graham, J.R., Harvey, C.R. and Rajgopal, S. (2005), "The economic implications of corporate financial reporting", *Journal of Accounting and Economics*, Vol. 40 Nos. 1/3, pp. 3-73.

Hall, S.C. and Stammerjohan, W.W. (1997), "Damage awards and earnings management in the oil industry", *The Accounting Review*, Vol. 72 No. 1, pp. 47-65.

Haniffa, R. and Hudaib, M. (2006), "Corporate governance structure and performance of Malaysian listed companies", *Journal of Business Finance & Accounting*, Vol. 33 Nos. 7/8, pp. 1034-1062.

Hassan, S.U. and Ahmed, A. (2012), "Corporate governance, earnings management and financial performance: a case of Nigerian manufacturing firms", *American International Journal of Contemporary Research*, Vol. 2 No. 7, pp. 214-226.

Healy, P.M. and Wahlen, J.M. (1999), "A review of the earnings management literature and its implications for standard setting", *Accounting Horizons*, Vol. 13 No. 4, pp. 365-383.

Hoberg, G. and Phillips, G. (2010), "Real and financial industry booms and busts", *The Journal of Finance*, Vol. 65 No. 1, pp. 45-86.

Jensen, M. (1986), "Agency costs of free cash flow, corporate finance and takeovers", *American Economic Review*, Vol. 76 No. 2, pp. 323-329.

Kotler, P. (1983), *Principles of Marketing*, Prentice-Hall, NJ.

Lee, S.J., Park, S.O. and Jung, W.O. (2017), "Earnings management by controlling shareholders who plan for stock gifts: Korean evidence", *Asia-Pacific Journal of Accounting and Economics*, Vol. 25 Nos 3-4, pp. 1-17.

Leuz, C., Nanda, D. and Wysocki, P.D. (2003), "Earnings management and investor protection: an international comparison", *Journal of Financial Economics*, Vol. 69 No. 3, pp. 505-527.

Li, S., Selover, D.S. and Stein, M. (2011), "'Keep silent and make money': institutional patterns of earnings management in China", *Journal of Asian Economics*, Vol. 22 No. 5, pp. 369-382.

Lin, Y.C. and Peasnell, K.V. (2000), "Asset revaluation and current cost accounting", *The British Accounting Review*, Vol. 32 No. 2, pp. 161-187.

Markarian, G. and Santalo, J. (2014), "Product market competition, information and earnings management", *Journal of Business Finance & Accounting*, Vol. 41 Nos 5/6, pp. 572-599.

Nelson, M.W., Elliott, J.A. and Tarpley, R.L. (2002), "Evidence from auditors about managers' and auditors' earnings management decisions", *The Accounting Review*, Vol. 77 No. 1, pp. 175-202.

Porter, M.E. (1979), "How competitive forces shape strategy", *Harvard Business Review*, March-April, pp. 1-10.

Ross, S.A., Westerfield, R.W. and Jaffee, J. (2008), *Corporate Finance*, McGraw-Hill/Irwin, New York, NY.

Seng, D. and Su, J. (2010), "Managerial incentives behind fixed asset revaluations: evidence from New Zealand firms", Accountancy working paper series, Institution is University of Otago in Dunedin, available at: http://hdl.handle.net/10523/1606

Shen, C.-H. and Chih, H.-L. (2005), "Investor protection, prospect theory, and earnings management: an international comparison of the banking industry", *Journal of Banking & Finance*, Vol. 29 No. 10, pp. 2675-2697.

Shleifer, A. and Vishny, R. (1992), "Liquidation values and debt capacity: a market equilibrium approach", *Journal of Finance*, Vol. 47 No. 4, pp. 1343-1366.

Sun, L. and Rath, S. (2009), "An empirical analysis of earnings management in Australia", *International Journal of Human and Social Sciences*, Vol. 4 No. 14, pp. 1069-1085.

Suto, M. (2003), "Capital structure and investment behaviour of Malaysian firms in the 1990s: a study of corporate governance before the crisis", *Corporate Governance*, Vol. 11 No. 1, pp. 25-39.

Verrecchia, R.E. (1983), "Discretionary disclosure", *Journal of Accounting and Economics*, Vol. 5 No. 1, pp. 179-194.

Wan Mohammad, W.M., Wasiuzzaman, S. and Nik Salleh, N.M.Z. (2016), "Board and audit committee effectiveness, ethnic diversification and earnings management: a study of the Malaysian manufacturing sector", *Corporate Governance: The International Journal of Business in Society*, Vol. 16 No. 4, pp. 726-746.

Wasiuzzaman, S. and Arumugam, V.C. (2013), "Determinants of working capital investment : a study of Malaysian public listed firms", *Australasian Accounting Business and Finance Journal*, Vol. 7 No. 2, pp. 49-70.

Wasiuzzaman, S., Sahafzadeh, I. and Nejad, N.R. (2015), "Prospect theory, industry characteristics and earnings management: a study of Malaysian industries", *Review of Accounting and Finance*, Vol. 22 No. 3, pp. 324-347.

Yasuda, Y., Okuda, S. and Konishi, M. (2004), "The relationship between bank risk and earnings management: evidence from Japan", *Review of Quantitative Finance and Accounting*, Vol. 22 No. 3, pp. 233-248.

Zamri, N., Rahman, R.N. and Mohd Isa, N.S. (2013), "The impact of leverage on real earnings management", *Procedia Economics and Finance*, Vol. 7, Special issue, pp. 86-95.

Further reading

Ball, R., Kothari, S.P. and Robin, A. (2000), "The effect of international institutional factors on properties of accounting earnings", *Journal of Accounting and Economics*, Vol. 29 No. 1, pp. 1-51.

Blundell, R., Griffith, R. and Reenen, J.V. (1999), "Market share, market value and innovation in a panel of British manufacturing firms", *Review of Economic Studies*, Vol. 66 No. 3, pp. 529-554.

Brown, L.D. and Caylor, M.L. (2005), "A temporal analysis of quarterly earnings thresholds: propensities and valuation consequences", *The Accounting Review*, Vol. 80 No. 2, pp. 423-440.

Christie, A.A. and Zimmerman, J.L. (1994), "Efficient and opportunistic choices of accounting procedures: corporate control", *Accounting Review*, Vol. 69 No. 4, pp. 539-566.

Fama, E.F. (1980), "Agency problems and the theory of the firm", *Journal of Political Economy*, Vol. 88 No. 2, pp. 288-307.

Giroud, X. and Mueller, H.M. (2011), "Corporate governance, product market competition, and equity prices", *The Journal of Finance*, Vol. 66 No. 2, pp. 563-600.

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Guadalupe, M. and Pérez-gonzález, F. (2010), "Competition and private benefits of control", AFA 2007 Chicago Meetings Paper, October, available at: https://ssrn.com/abstract=890814; http://dx.doi.org/10.2139/ssrn.890814

Hart, O.D. (1983), "The market mechanism as an incentive scheme", *The Bell Journal of Economics*, Vol. 14 No. 2, pp. 366-382.

Holland, D. and Ramsay, A. (2003), "Do Australian companies manage earnings to meet simple earnings benchmarks?", *Accounting and Finance*, Vol. 43 No. 1, pp. 41-62.

Iturriaga, F.J.L. and Hoffmann, P.S. (2005), "Managers discretionary behaviour, earnings management and internal mechanisms of corporate governance: empirical evidence from Chilean firms", *Corporate Ownership and Control*, Vol. 3 No. 1, pp. 17-29.

Jones, J.J. (1991), "Earnings management during import relief investigations", *Journal of Accounting Research*, Vol. 29 No. 2, pp. 193-228.

Kamarudin, K.A., Ismail, W.A.W. and Wan Mustapha, W.A.H. (2012), "Aggressive financial reporting and corporate fraud", *Procedia – Social and Behavioral Sciences*, Vol. 65, Special issue, pp. 638-643.

Nalebuff, B.J. and Stiglitz, J.E. (1983), "Prizes and incentives: towards a general theory of compensation and competition", *The Bell Journal of Economics*, Vol. 14 No. 1, pp. 21-43.

Petroni, K.R. (1992), "Optimistic reporting in the property-casualty insurance industry", *Journal of Accounting and Economics*, Vol. 15 No. 4, pp. 485-508.

Saleh, N.M., Iskandar, T.M. and Rahmat, M.M. (2005), "Earnings management and board characteristics: evidence from Malaysia", *Jurnal Pengurusan*, Vol. 24 No. 2005, pp. 77-103.

Scholes, M.S., Wilson, G.P. and Wolfson, M.A. (1990), "Tax planning, regulatory capital planning, and financial reporting strategy for commercial banks", *The Review of Financial Studies*, Vol. 3 No. 4, pp. 625-650.

Sulaiman, A.N.M. (2008), "Financial misreporting and securities fraud – public and private enforcement", *Australian Journal of Corporate Law*, Vol. 22, pp. 1-20.

About the author

Shaista Wasiuzzaman is Senior Lecturer at the Faculty of Management, Multimedia University, Malaysia. Shaista Wasiuzzaman can be contacted at: shaistaw76@gmail.com

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