A Comparison of Qualitative and Quantitative Methods of Detecting Earnings Management: Evidence from two Fijian Private and two Fijian State-owned Entities

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Abstract

This paper compares the performance-matched discretionary accrual model (quantitative) and the Mulford and Comiskey (2002) qualitative measure to compute earnings management in two state-owned and two private entities for 1998 to 2009. The results provide evidence that the two measures are unable to provide similar results for the existence of earnings management. The difference in the results between the two methods is attributed to the different ontological and epistemological views and the primary focus of the respective models. The results do not imply superiority of any model.

Keywords: Quantitative measure; Qualitative measure; Discretionary accruals; Performance-matched discretionary accruals; Earnings management.

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Introduction

Earnings management (EM) has been a major concern for most organisations for several decades. One reason for this increased attention to EM is because it is conducted within the bounds of regulation and moreover excessive EM could lead to fraudulent activities. Second, and more importantly, measuring EM has been problematic. There are instances of similar models indicating conflicting results (Hribar & Nichols 2007) and there are different models available to researchers, without any analysis to indicate why different models give differing results.

The ontological and epistemological views guide the development of models to detect instances of EM in business entities. The ontological view predominantly guides the qualitative approach and the epistemological view guides the quantitative approach. This paper compares two different approaches, one based on ontology and one based on epistemology, to determine EM practice in two state-owned enterprises (SOEs) and publicly listed companies. The quantitative model, Performance-matched discretionary accrual (PMDA), primarily focuses on detecting accrual management, while the qualitative measure (Mulford & Comiskey 2002), is a more comprehensive approach which incorporates other forms of EM, such as classification shifting and real activity management. The results suggest that the measurement of EM across both the models is not consistent.

A recent study (Naidu, Patel & Prasad 2009) provides results that indicate differences in the outcome of the two EM models (Modified Jones Model (MJM) to compute discretionary accruals (DAC) and Mulford and Comiskey (2002) model (MCM) as a qualitative measure) for an electricity utility. This study uses the PMDA model developed by Kothari, Leone and Wasley (2005) as a quantitative measure and MCM as a qualitative approach to compare EM in both SOEs and private entities. Kothari et al. (2005) conclude that the PMDA model provides a more powerful test for EM. Hence two SOEs, Fiji Electricity Authority (FEA) and Housing Authority (HA), and two private entities, Flour Mills of Fiji Limited (FMF) and Communications Fiji Limited (CFL) are used for the analysis. The small sample number is due to the comprehensive analysis required as per the qualitative measure. The outcome of this research will be useful for research considering EM measurement and for practitioners wanting to determine the level of EM in industries for policy making.

The following section discusses the ontological and epistemological views of acquiring knowledge and then presents a brief overview of EM incentives in SOEs and private entities. This is followed by a discussion on the options available to conduct EM as highlighted in the literature. The next section identifies the research method and then the results are discussed. Finally, the paper concludes with limitations and areas of future research.

The Ontological and Epistemological Views on Earnings Management Models

EM modelling is a process that involves human inquiry into the level of its existence in organisations. The study of knowledge such as research on the level of EM can be described from two perspectives – the epistemological and ontological views.

Epistemology is described as "the nature of human knowledge and understanding that can possibly be acquired through different types of inquiry and alternative methods of investigation" (Hirschheim, Klein & Lyytinen 1995, p. 20). From an objectivistic worldview, epistemology refers to the study of knowledge through observation and experience. This view supports the qualitative approach to investigate the level of EM as it relates to the observation of annual reports and accounting practice in the organisation.

The qualitative approach to detect EM is a comprehensive method that involves investigating EM on a case-by-case basis. It incorporates the three means of conducting EM: (1) classification shifting (Ronen & Sadan 1975a, 1975b; Barnea, Ronen & Sadan 1975, 1976; McVay 2006; Fan et al. 2010); (2) accrual management (Jones 1991; Dechow, Sloan & Sweeney 1995; Kothari et al. (2005); Payne & Robb 2000); and (3) real activity management (Xu, Taylor & Dugan 2007; Bartov 1993; Dechow & Sloan 1991; Bushee 1998; Herrmann, Inoue & Thomas 2003; Roychowdhury 2006). Hence the qualitative approach involves various types of analysis and incorporates alternative analysis of financial data. On the other hand, the quantitative approach is based on an ontological view.

Wand and Weber (1993, p. 220) explain ontology as "a branch of philosophy concerned with articulating the nature and structure of the world". An ontological view is a constructivistic worldview. From a constructivistic worldview, knowledge is context-specific and varies between groups of individuals. That is, ontological constructions are not absolutely true (Schwandt 1994). Reality is socially constructed and not discovered. Social and cultural artifacts are involved in the construction process.

The quantitative approach to detect EM is based on the construction process and is context specific similar to the ontological views. The quantitative approach has its major focus on accrual management that has been the heart of EM study (Xu et al. 2007). Accrual management models are constructed based on the non-discretionary accounting elements available within accounting standards. The models are context specific (McNichols & Wilson 1988; Marquardt & Wiedman 2004) and their results can vary between industries and countries depending on available regulations. Also, different individuals are expected to have different results as available regulation is broad. Hence, the results may not be absolutely true. Despite several issues relating to the quantitative model, it has been popular (Kothari et al. 2005), may be used in different contexts and has undergone continuous development (Healy 1985; DeAngelo 1986; Jones 1991; Dechow & Sloan 1991; Dechow et al. 1995; Kang & Sivaramakrishnan 1995; Guay et al. 1996; Hribar & Collins 2002; Kothari et al. 2005).

Recently, Kothari et al. (2005, p. 34) indicate that the Jones and MJM are "the most popular choices for estimating discretionary accruals even though previous research shows that (they) are severely misspecified when applied to stratified-random samples of firms". Kothari et al. (2005, p. 35) present the limitations inherent in the two popular models and provide evidence that the "performance-matched discretionary accrual model is useful in mitigating type I errors".

Thus, this study attempts to compare the two broad EM models to determine the degree of consistency in determining EM in organisations by comparing the PMDA model and the MCM.

Earnings Management Incentives

Dechow and Skinner (2000) identify two major incentives for EM. Firstly, in their view, practitioners and regulators are usually more concerned about capital market incentives for EM. Capital markets provide incentives for EM as they provide a market for trading shares. Shareholders and potential investors react to new financial information disclosed, which causes changes in the demand and supply of the corporations' shares. Thus, this impacts the share price. Managers, if interested in the share price, could manage earnings to cause a temporary change in prices. However, in an efficient capital market, as true information is available, the prices will adjust to their true values but the managers would gain from the temporary price change.

Second, contractual arrangements also provide incentives for EM. For example, bonus plans and debt covenants are based on accounting numbers such as profits. Therefore, managers could manipulate profits so that they are able to maximise the benefits from the contracts, such as a good bonus. Furthermore, Healy and Wahlen (1999) also indicate that regulatory incentives provide strong grounds for EM practice.

Earnings Management Incentives in SOEs and Private Entities

SOEs are formed for the purpose of providing services to the public instead of profit maximisation. In order to provide a reasonable quality service, the SOEs need to have sufficient funds and it is important to have reasonable charges for their services to ensure that a break-even position is maintained. Most SOEs in emerging economies are dependent on government support in terms of subsidies. This gives an incentive for the management to engage in income-decreasing EM, so that they can show losses in the reports to justify the subsidies. Jones (1991) provides evidence that firms defer income in the year of application of relief from the government.

The purpose of private enterprises is to maximise business profit and shareholder wealth. Hence, unlike SOEs, private enterprises are expected to continuously increase profits and would thus have benchmarks. Managers could be questioned if these benchmarks are not met. Hence, management in private enterprises is expected to engage in income-increasing EM when the business performance is below the benchmark. According to Degeorge, Patel and Zeckhauser (1999) most managers find that it is vital to avoid losses. Moreover, Burgstahler and Dichev (1997), Burgstahler (1997) and Degeorge et al. (1999) explain that small reported losses are unusually rare than small reported profits and small increases in reported earnings are unusually common than small declines in those earnings.

Similar to capital market incentives, contract arrangements also induce EM. This is mostly when certain outcomes in the contract depend on accounting numbers. A

management compensation contract is a good example where bonus plans depend on earnings or share price increments. This is common for both SOEs and private enterprises. Healy (1985) and Holthausen, Larcker and Sloan (1995) explain that managers engage in income-increasing EM to improve reported earnings when actual earnings do not qualify for bonuses. Additionally, managers would defer accruals to future periods when reported earnings have reached the upper limit of the executive bonus package. Gaver, Gaver and Austin (1995) present similar work, however they support an income-smoothing hypothesis. Moreover, Guidry (1999) supports Healy's (1985) bonus hypothesis and the study shows that managers manipulate accruals to maximise short-term bonuses.

Both, private enterprises and SOEs engage in externally-sourced finance. In their lending contracts with firms, lenders usually have a debt covenant to restrict the firm to maintain certain accounting ratios or to impose limits to investing and financing activities. Violating this covenant could lead to serious consequences for the firm, including increases in interest rates, requiring additional security for the loan, or in extreme cases the immediate payment of the loan. In order to avoid such consequences, managers could be motivated to manage earnings (Beneish 2001). Prior research has found some evidence of EM being motivated by lending contracts (DeFond & Jiambalvo 1994; Sweeney 1994).

Since a firm's share price is to some extent dependent on the firm's earnings, managers are expected to engage in EM prior to equity offers such as Initial Public Offers (IPO) or Seasoned Equity Offers. Higher earnings and increases in earnings signal positive information that leads to an overvaluation of the initial offer price. Healy and Wahlen (1999, p. 374) explain that some managers use income-increasing accruals to "inflate reported earning in an attempt to increase investor's expectations of future performance and increase the offer price". Singh (2007) also has a similar view and states that due to information asymmetry between investors and IPO issuers, the IPO process is susceptible to EM. Earlier studies have provided some evidence on this incentive. Teoh, Welch and Wong (1998b) provide evidence on the relationship between EM and underperformance of IPOs in the subsequent periods. Issuers with unusually high accruals prior to the IPO year experience a decline in stock prices in subsequent years reflecting the true financial performance and allowing the capital market to adjust the share price. Teoh, Welch and Wong (1998a) and Rangan (1998) provide similar evidence around seasoned equity offering. However, this incentive is less common in inefficient markets.

The Quantitative Model

The two approaches to detect instances of EM employed in this study are the PMDA model (quantitative measure) and the MCM (qualitative measure). Although the MJM has been identified as a powerful tool for measuring EM (Dechow et al. 1995), it is severely misspecified. Performance adjustment enhances the reliability of inferences of the traditional EM model (Kothari et al. 2005). Kothari et al. (2005, p. 35) "present detailed simulation evidence on the properties of alternative measures of discretionary accruals", and state that "under most circumstances, performance-matched discretionary

accruals are well specified and powerful". Hence, we use PMDA as the quantitative measure in this research.

The PMDA model includes a constant and a performance measure[2] in the accruals regression (Kothari et al. 2005) unlike the MJM. The PMDA model is as presented below:

$$\frac{TA_{it}}{A_{it-1}} = \alpha + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{(\Delta REV_{it} - \Delta AR_{it})}{A_{it-1}} + \beta_3 \frac{PPE_{it}}{A_{it-1}} + \beta_4 ROA_{it} + \varepsilon_{it} \qquad (1)$$

where:

TA_{it} = total accruals for firm *i* in year *t*,

A_{it-1} = net total assets for firm *i* in year *t-1*,

ΔREV_{it} = change in revenue for firm *i* from year *t-1* to year *t*,

ΔAR_{it} = change in accounts receivable for firm *i* from year *t-1* to year *t*,

PPE_{it} = gross property plant and equipment for firm *i* in year *t*,

ROA_{it} = Return on Assets,

ε_{it} = error term for firm *i* in year *t*.

The model is Total Accruals (*TA*) ($\frac{TA_{it}}{A_{it-1}}$) equals the sum of the Non-discretionary accrual (NDAC) component ($\alpha + \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{(\Delta REV_{it} - \Delta AR_{it})}{A_{it-1}} + \beta_3 \frac{PPE_{it}}{A_{it-1}} + \beta_4 ROA_{it}$) (which includes a constant and a performance measure) and the Discretionary component (ε_{it}). Our focus when detecting EM is on the residual representing DAC that is used by management to "cook the books". The other components are equally important as they are used to determine the magnitude and directions of the DAC or EM.

[2] Kothari, Leone & Wasley (2005) provide an explanation for the inclusion of the performance measure and the constant term in the accruals regression.

Jones (1991) explains *TA* as the change in non-cash working capital less depreciation expense. There are two approaches to compute *TA*, the income approach and the balance sheet approach. Since the balance sheet approach has been widely used in research,[3] it is used in this paper to compute *TA*. Accordingly it is calculated as follows:

$$TA = \Delta Current\ Assets - \Delta Current\ Liabilities - \Delta Cash + \Delta Current\ Maturities\ of\ Long\text{-}Term\ Debt - Depreciation\ and\ Amortisation\ Expense$$

NDAC, a vital component, represents the accruals that cannot be manipulated by the managers. The model identifies a number of NDAC components. First, the constant term (α) provides control for heteroskedasticity and mitigates problems stemming from an omitted size variable (Kothari et al. 2005). Next, the difference between changes in revenues and accounts receivable cannot be manipulated. For example,

Account	**2010 ($)**	**2011 ($)**	**Transaction during the year**
Revenue	100	230	1. Cash Sales $40
Accounts Receivable	50	140	2. Credit Sales $70
Cash	40	80	3. Credit Sales $20

If we compute $\Delta REV - \Delta AR$, we will get:

$$= 130 - 90$$

$$= 40$$

This represents the cash sales that cannot be manipulated easily.

Gross property, plant and equipment (*PPE*) is the value of physical assets recorded in the balance sheet. The cost or revaluation model could be used to record *PPE*. The cost model was used until recently. Now, due to the introduction of fair value accounting, some entities use the revaluation model. The cost model does not allow much scope for manipulation as the original cost is recorded. Hence, it is considered a NDAC component. However, the use of fair value accounting requires management's judgments. It may not be appropriate to use the current models for firms using the revaluation model where *PPE* could be a discretionary component.

[3] Kothari et al. (2005) and Cheng and Reitenga (2009) use the balance sheet approach to compute total accruals.

Return on Assets (*ROA*) is included in the model to control for firm performance. Kothari et al. (2005, p. 2) explain that "performance and estimated discretionary accruals exhibit a mechanical relation". Lastly, the error term, which is the residual from *TA* after considering NDAC, is the proxy for EM and DAC. Hence, this model is an indirect measure. It does not identify items that are considered to be DAC. However, it identifies NDAC and calculates the residual from *TA*.

The Qualitative Model

The qualitative method, unlike the quantitative models, provides a direct measure to detect EM. It attempts to identify all of the discretionary components instead of computing it as a residual. Mulford and Comiskey (2002) present checklists to detect EM. The four checklists are: detecting premature or fictitious revenue; detecting aggressive capitalisation and extended amortisation; detecting misreported assets and liabilities; and using operating cash flows to detect EM. These checklists outline questions to determine the instances of EM. The following paragraphs (adopted from Naidu et al. 2009) briefly describe these checklists.[4]

The first checklist, which highlights recognising premature or fictitious revenue, is divided into several sections. The first section requires individuals (people identifying instances of EM) to understand the entity's revenue recognition policy. Such understanding could be gathered from carefully evaluating the notes section of the Annual Report. Also imperative is reviewing the disclosure of related party transactions. Thirdly, individuals are required to analyse the physical capacity of the firm to gauge its potential to generate the reported revenue. Overstatement or understatement of accounts receivable is also considered due to the double entry concept. This means that any premature or fictitious revenue would be recorded against an asset account. Hence, other asset accounts could also be used, such as prepaid expenses, which are considered in the last section.

The second checklist is divided into two parts: detecting aggressive capitalisation policies and detecting aggressive amortisation policies. The first part highlights four useful analytical tools: (1) reviewing the entity's capitalisation policy; (2) carefully considering what the capitalised cost represents; (3) checking whether the entity has been aggressive in its capitalisation policy in the past; and (4) checking for costs capitalised in stealth. Other methods are also considered to be useful such as comparing the capitalisation policies with the competitors and the industry. However, competitors could also be employing aggressive capitalisation policies.

The second part of this checklist deals with detecting extended amortisation policies. This is done by firstly computing the average amortisation period for a company's depreciable assets, and secondly, checking for extended amortisation periods in prior years.

The third checklist detects any misreported assets and liabilities. This checklist is also divided into two parts: detecting overvalued assets and detecting undervalued liabilities. The former concentrates on assets like accounts receivable, inventory and investments. Assets subject to annual depreciation are considered in the second checklist.

[4] A detailed explanation is available in Mulford and Comiskey (2002).

Although accounts receivable is examined in the first checklist, this (the third) checklist considers the improper valuation of accounts receivable through adjusting entries. Entities could manipulate provision for doubtful debts to misreport earnings.

Inventories can be manipulated by misreporting the physical count, misreporting the dollar value without altering the quantity, or postponing transactions. The method used to record inventories could also be considered. Internal control procedures are also considered in this checklist. The checklist allows investigating investments with a major focus on changes in fair value.

Checklist 3 is also used to gather information on understating liabilities like accrued expenses and accounts payable. Trends in accrued expenses could be identified and compared with the revenue growth rate. A time series comparison of administrative expenses as a percentage of revenue could also be a useful test. Furthermore, accounts payables increase due to the credit purchase of inventory. The growth rate of accounts payable could be compared against inventory to figure any unusual change. Computing the number of accounts payable days is another method to detect any understatement.

The last checklist uses cash flows from operations to detect EM practices. Operating cash flows may not be exclusively helpful but they could be used in conjunction with income from continuing operations adjusted for nonrecurring events. This checklist requires computing the adjusted cash flow-to-income ratio. This will be useful in identifying discernible trends over time. Any unusual change in trends would mean that EM practices have been employed.

On a case-by-case basis, these checklists would identify any unexplained behaviour or unusual trends. Analysis will involve explanations for any unusual behaviour and any incentives driving this behaviour. Analysis will also depict whether generally accepted accounting principles have been followed.

Limitations of MCM

MCM is a recent development and has not been extensively used in research; thus it lacks practical guidance. The qualitative method is subjective to the interpretation of data based on the researcher's ability, whilst both the MJM and PMDA models objectively determine the presence and directions of EM. The qualitative approach does not yield the magnitude of EM. It only attempts to identify the existence of EM and possibly the directions based on the researcher's interpretations. However, it is difficult to identify the extent of EM.

Overlap Between the Two Approaches

The logic behind the two measures is the same. Both methods identify the same variables as discretionary components, thus implying that the same variables are used in both measures to detect instances of EM. However, PMDA uses a quantitative approach and MCM uses a qualitative approach. For instance, the variables that are used to calculate *TA* are used in the checklists. Net income before extraordinary items and net cash flows from operations are used in Checklist 4. Checklist 3 consists of variables such

as accounts receivable and accounts payable, which are used in the balance sheet approach to calculate *TA*. Depreciation expenses are used in Checklist 2

The independent variables in the PMDA model are revenue, receivables and property, and plant and equipment. These are also used in the checklists. Revenue is used to identify premature and fictitious revenue. Property, plant and equipment are used in the checklists to determine the physical capacity of the entity to generate the reported revenue. Receivables are used in detecting misreported assets.

Although the two measures employ the same variables, PMDA is an indirect approach and MCM is a direct approach. The PMDA model is concerned about the NDAC and computes DAC as a residual representing the instances of EM. The models also differ because PMDA only uses financial figures while the other approach is more exhaustive. MCM analyses the same variables with all of the other factors that affect the variable. For instance, MCM analyses revenue values, revenue recognition policy, credit policy, related party transactions and physical capacity to generate the reported revenue. The other factors used apart from revenue values make the analysis more effective and robust in detecting instances of EM. Thus, the results from computing EM using the two measures may not be the same. This could be due to the comprehensive nature of MCM.

Moreover, the literature discusses three broad ways that management could engage in EM. As discussed earlier, these are classification shifting, real activity management and accrual management. On one hand, the PMDA primarily focuses on accrual management, and thus as a quantitative model is unable to detect EM through classification shifting and real activity management in most cases. On the other hand, MCM is a qualitative comprehensive model that incorporates all forms of EM. The differences between the two models can lead to different results in EM.

Research Design

Sample Selection

For the purpose of this research we have used two SOEs (FEA and HA) and two private entities (FMF and CFL) to compare the results of MCM and the PMDA model. We selected two entities from two different ownership types so that the results of each could be compared. The purpose of this comparison is due to the different incentives for EM in each of the ownership types.

It is difficult to obtain financial data for most entities due to the lack of mandatory requirements on the publication of annual reports unless the entity is listed on the stock exchange. Most entities were listed on the South Pacific Stock Exchange (SPSE) after 2002; however FMF and CFL were listed in 1979 and 2001 respectively. The annual reports for CFL are publicly available since 1998. Hence, FMF and CFL are selected. FEA and HA are statutory organisations and their financial reports are publicly available for all years. For FMF and CFL, we obtained data from 1998 to 2009. For consistency, we used the same period data for FEA and HA.

Research Method

As discussed earlier, this paper uses the PMDA model as the quantitative approach and MCM as the qualitative approach to detect EM. First, suspicious events that indicate an instance of EM are identified from the annual reports of each company. Then, EM incentives within the firm are identified. Based on the event, and the identified incentives, the direction of EM as per MCM is established. The PMDA model is later used to compute DAC for the sample firms for the sample years. This result is then compared with the MCM results.

While comparing the results, we consider the direction of EM, either income-increasing or income-decreasing for the respective years. This paper provides a year-by-year comparison of the directions of EM between the two measures. Direction of EM using the DAC is determined by the quantitative calculation using the PMDA model, and for MCM it is determined by examining the qualitative factors.

Results

Qualitative Results

Table 1 provides a summary of EM evidence in the SOEs. Panel A presents results for FEA and Panel B the results for HA. It describes the incentives for EM and the approach used to practice EM for the respective years considered. It considers approaches like changes in depreciation rates, changes in provision for doubtful debts, provisions written back, extraordinary items such as losses arising from write off, and classifications of items like security expenditures. Similarly, Table 2 provides a summary of EM evidence in the private entities. Panel A presents the results for FMF and Panel B the results for CFL.

Table 1
Summary of Earnings Management Evidence in State-owned Enterprises

Panel A (Fiji Electricity Authority – FEA)

Year	Event	Incentive
1998	Increase in provision for doubtful debts and reversal of gain on disposal of assets	To show difficulties and persuade for tax exempt status
1999	Adopted high depreciation rates. Extraordinary item: losses arising from the write-off	To make a case to the government to extend the tax exempt status and reimburse the cost of universal service obligations
2000	Abnormal item: costs related to civil unrest and security related expenditures. Postponed significant revenue to next period with decrease in accruals	To attract concessions and government grants
2001	Revenue improved with increase in accounts receivables. Adopted high depreciation rates	
2002	Significant increase in provision for retirement benefit	To attain duty concession and attractgGovernment grants
2003	Postponed significant revenue to the following period. There was high capacity to generate revenue as its proportion to lag total assets was increasing	To attain government grants
2004	Adopted low depreciation rates	To attain financial performance indicators within Statement of Corporate Intent
2005	Adopted high depreciation rates and provision for doubtful debts	To attain duty concession of diesel fuel
2006	Provision for doubtful debts written back. Decline in provision for doubtful debts	To meet debt covenant. To meet Corporate Intent requirements (Return on Shareholders Fund)
2007	Provision and VAT liability written back and costs written off. Grants amortised and classified as other income	
2008	Adopted high depreciation rates. Grants amortised and classified as other income	To meet debt covenant. To meet Corporate Intent requirements. To relay message that it needs duty concessions
2009	Significant unrealised foreign exchange loss treated as ordinary income. The company still made a good profit	To meet Corporate Intent requirements. To relay message that it needs duty concessions

Panel B (Housing Authority – HA)

1998	Abnormal income item classified within operating income	To beat budget projections and attract government grants
1999	Increase in provision for doubtful debts. Stock write-downs. Change in policy resulted in decrease in interest income	Converting debt into equity
2000	Decrease in provision for doubtful debts. Abnormal items: government grants received included part of operating income	To attain government guarantee on housing bonds
2001		To attract government's decision to favour debt to equity conversion
2002	Reversal of accruals and provision for repairs classified as operating income	To attain the conversion of debt to equity
2003	Decrease in provision for doubtful debts. Reversal of accruals	To provide improved performance upon restructure and the replacement of Chief Executive Officer
2004	Increase in revenue relative to capacity measured using lag total assets. Reversal of accruals	To beat budget projections targeted return on equity
2005	Increase in provision for doubtful debts	To achieve stretched profit budget projections
2006	Significant increase in other current assets; significant decline in provision for doubtful debts	To provide return of 10% on Shareholders Fund
2007	Significant increase in provision for doubtful debts. Increase in short term employee benefits	To attract government grants
2008	Decrease in revenue relative to capacity measured using lag total assets	To attract government grants
2009	Significant increase in accounts receivable and revenue relative to capacity	To attract government grants. This was subsequently provided

Table 2
Summary of Earnings Management Evidence in Private Entities

Panel A (Flour Mills of Fiji – FMF)		
1998	Adopted high depreciation rates	Specific incentive could not be identified with limited information in annual report
1999	Increase in provision for doubtful debts	To draw attention to the impact of significant reduction in import protection
2000	Large decline in debtors and other receivables while provision for doubtful debts was high	
2001	Large increase in debtors and other receivables while growth of operating capacity decreased	Specific incentive could not be identified with limited information in annual report
2002	Adopted low depreciation rates	Import protection was granted, hence positive results shown
2003	Decline in provision for doubtful debts	A new Chief Financial Officer was appointed who could have incentive to show positive results
2004	Adopted high depreciation rates	To smooth earnings due to significant increase in revenue
2005	Significant decline in provision for doubtful debts	To provide positive results to the market despite the introduction of a competitor
2006	Further decline in provision for doubtful debts and change in amortisation policy	A new Chief Financial Officer was appointed who could have incentive to show positive results
2007	Increase in provision for doubtful debts	To draw attention to the impact of the Price and Income Board's decision against the company
2008	Significant increase in provision for doubtful debts	
2009	Decline in provision for doubtful debts	To avoid significant decline in operating profit

Panel B (Communications Fiji Limited – CFL)		
1998	Significant increase in other receivables and decline in provision for doubtful debts	Specific incentives could not be identified. Broadly to meet debt covenants
1999	Significant increase in provision for doubtful debts and increase in depreciation charge	Specific incentives could not be identified. Probably for tax savings
2000	Significant increase in provision for doubtful debts	
2001	Significant decline in other receivables and adopted low depreciation rates	To attract an application for an Initial Public Offer
2002	Significant decline in provision for repairs and maintenance and annual leave	To provide positive information to the market after being listed and to approach targeted earnings in the Prospectus
2003	Increase in revenue while debtors and other receivables declined	To provide positive information to the market after being listed and to exceed targeted earnings in the Prospectus
2004	Significant increase in other receivables while revenue remained stagnant	To maintain earnings growth. Specific incentives could not be identified
2005	Significant increase in provision for doubtful debts. Significant loss on impairment	Specific incentives could not be identified. To smoothen the earnings trend over time
2006	Significant decline in provision for doubtful debts	To avoid loss as income from operations was significantly reduced
2007	Adopted high depreciation rates	To induce a temporary decline in share prices as an employee-share incentive plan was introduced
2008	Significant decline in provision for doubtful debts	To maximise compensation as per the employee-share incentive plan
2009	Significant increase in provision for doubtful debts	Specific incentives could not be identified. To smoothen the growth in earnings trend.

Earnings Management Events in SOEs and Private Entities

Broadly, the approaches used for EM by SOEs and private entities differ. The selected private entities have used only a few events to engage in EM, mostly the use of accruals (accounts and other receivables), provision for doubtful debts and changes in depreciation policies. On the other hand, the SOEs have used many ways to engage in EM. Including the techniques used by private entities, SOEs have also used abnormal items, reversal of gains from disposal of fixed assets, provision for retirement benefits, liability write-backs, stock write-down, unrealised foreign exchange loss and reversal of accruals.

The use of different events for SOEs can be mainly attributed to the differences in the incentives to engage in EM for each ownership type. Also, SOEs and private entities have different operating purposes. The former has the goal of providing service with the minimum possible cost while the latter has the aim of maximising profits.

PMDA Results

Table 3 presents the results computed using the PMDA model as well as comparing the MCM results for the respective years for SOEs. Panel A displays the DAC and its comparison for FEA. Panel B provides the same for HA. The direction of EM is the same in 7 instances out of 12 for both SOEs. The two models provide different results in approximately 42% instances.

Table 3

Comparative Results for the PMDA model and MCM for State-owned Enterprises

Panel A (Fiji Electricity Authority – FEA)			
Year	**DAC**	**Directions as per MCM**	**Comparisons**
1998	-0.0182	income – decreasing	Same
1999	-0.0031	income – decreasing	Same
2000	-0.1853	income – decreasing	Same
2001	-0.0127	income – decreasing	Same
2002	-0.0631	income – decreasing	Same
2003	-0.0130	income – decreasing	Same
2004	-0.1205	income – increasing	Different
2005	-0.0476	income – decreasing	Same
2006	-0.0145	income – increasing	Different
2007	-0.0095	income – increasing	Different
2008	-0.0356	income – decreasing / income – increasing	Different
2009	0.0583	income – decreasing	Different

Panel B (Housing Authority – HA)			
1998	8.6823	income – increasing	Same
1999	-8.9903	income – decreasing	Same
2000	3.2524	income – increasing	Same
2001	6.4364	income – increasing	Same
2002	-3.6792	income – increasing	Different
2003	-1.3147	income – increasing	Different
2004	-0.5101	income – increasing	Different
2005	-1.6808	income – decreasing	Same
2006	-0.7991	income – increasing	Different
2007	-1.3212	income – decreasing	Same
2008	-1.1223	income – decreasing	Same
2009	-0.3003	income – increasing	Different

Table 4 compares the results from the two models for the private entities, FMF in Panel A and CFL in Panel B. The direction of EM is same in 6 instances for FMF and 10 instances for CFL out of a total of 12. On average the results are different in fewer instances for private entities than SOEs. The following paragraphs discuss possible foundations for the inconsistency in the results from the two approaches to measure EM.

Table 4
Comparative Results for the PMDA model and MCM for Private Entities

Panel A (Flour Mills of Fiji – FMF)			
1998	-0.3291	income – decreasing	Same
1999	-0.2087	income – decreasing	Same
2000	0.0200	income – decreasing	Different
2001	0.1081	income – increasing	Same
2002	-0.1171	income – increasing	Different
2003	-0.0098	income – increasing	Different
2004	-0.0474	income – decreasing	Same
2005	0.0316	income – increasing	Same
2006	-0.2107	income – increasing	Different
2007	-0.3029	income – decreasing	Same
2008	0.7214	income – decreasing	Different
2009	-0.2866	income – increasing	Different

Panel B (Communications Fiji Limited – CFL)			
1998	0.0364	income – increasing	Same
1999	0.0145	income – decreasing	Different
2000	-0.0602	income – decreasing	Same
2001	0.1211	income – increasing	Same
2002	0.0020	income – increasing	Same
2003	0.0613	income – increasing	Same
2004	0.0115	income – increasing	Same
2005	-0.0121	income – decreasing	Same
2006	-0.0193	income – increasing	Different
2007	-0.0130	income – decreasing	Same
2008	0.0348	income – increasing	Same
2009	-0.0779	income – decreasing	Same

Foundations for Inconsistency between MCM and the PMDA model

The results of the two measures of EM differ due to the different perspective adopted in developing each model, namely the ontological and epistemological views. The epistemological explanation takes a broader view and incorporates alternative approaches in acquiring knowledge. This is more aligned with the qualitative measure that incorporates most ways in which one could engage in EM. The ontological perspective involves a construction process similar to the empirical modelling of accrual management. The knowledge acquired through this process may not be absolutely true.

EM is achieved through various means including the use of accruals, changes in accounting methods, and policies and changes in capital structure like debt defeasance or debt-equity swaps (Jones 1991). Similarly Ronen and Sadan (1975a, 1975b) explain that EM is conducted using approaches such as classification shifting, real activity management and accrual management. While scrutinising EM using MCM, most of the possibilities to conduct EM are considered. The checklists discussed in this study demonstrate that MCM incorporates most of the techniques of committing EM. However, the PMDA model detects instances of EM that are mainly committed through accrual management. This is a major drawback of the quantitative measure and also a rationale that leads to the differences in the results produced by the two models.

Table 5 provides a summary of the events that are captured by the quantitative model. The following events are captured in the PMDA model: adoption of high tax depreciation rates; changes in depreciation rates; provision for doubtful debts; provision for retirement plans; provision for write-down of inventory; reversal of gain from disposal of fixed assets; and the use of accruals. Since the quantitative model captures these events, it can produce the same outcome as the qualitative measure for the years that these events have been used to manage earnings. However, for other years the outcome of the two models differs.

Table 5
Summary of Common Events and Similar Ability of the Two Approaches to Detect Earnings Management Arising From the Respective Events

Event	PMDA model and MCM have same result
Abnormal items	Yes
Adopted high depreciation rates	Yes
Adopted lower depreciation rates	No
Change in amortisation policy	No
Liability write-back	No
Provision for doubtful debts	Yes
Provision for retirement plan	Yes
Provision for write-down of inventory	Yes
Reversal of accruals	No
Reversal of gain from disposal of assets	Yes
The use of accruals	Yes
Unrealised foreign exchange loss	No

The PMDA model tends to ignore other important factors that lead to EM. These factors include changes in accounting policies such as revenue recognition policies, credit policies, EM through classification shifting and the use of real business activities. For example, FEA ceased to capitalise certain overheads to property, plant and equipment and the revaluation of non-current assets. This is a major limitation of using the quantitative models and further research is required to further develop the model. However, this inconsistency does not imply that one model is superior to the other.

Conclusion

We employ the PMDA model (quantitative) and MCM (qualitative) to compare EM in two SOEs and two private entities. We find that the measurement of EM across both models is not consistent. The differences are explained using the ontological and epistemological views of acquiring knowledge. This is related to the three broad ways in which management can engage in EM, which are are classification shifting, real activity management and accrual management. While the PMDA model is specifically for accrual management, the qualitative approach generally incorporates all three categories.

This paper also attempts to identify some limitations of each method discussed. Even though the qualitative measure is a comprehensive approach, it does not compute the magnitude of EM and is also very subjective. Moreover, one may not be able to identify all instances of EM using either approach. In addition, it is time-consuming to evaluate individual annual reports and more difficult in countries where disclosure is inadequate and business management is hesitant in providing information.

On the other hand, the PMDA model objectively determines the presence of EM and could be reliably used in empirical research. The accrual model has gone through a number of revisions and Kothari et al. (2005) provide a powerful test. However, this model does not incorporate the qualitative factors. It is developed to detect EM conducted through accrual management, and in most cases it may not detect EM through classification shifting and real activity management. Researchers have also discussed the expectations model for real activity management. Hence, future research could incorporate the ideas from each form of EM and further develop the quantitative measure.

The use of only four selected companies is a major limitation of this study. This idea requires further exploration using more data so that the results could be validated. The results identify the events being captured by the quantitative model and indicate that more research is required to incorporate other events in the quantitative model. Mulford and Comiskey (2002) provide a good guide for future research to enhance the ability of the quantitative models to detect EM.

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