

## **Earnings Management Research: A Review of Contemporary Research Methods**

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*Earnings management is a much studied research topic in financial accounting. Empirical studies have documented various approaches in detecting earnings management behaviour. This study reviews various methods used in detecting earnings management and critically evaluates the strengths and weaknesses of using different methods in detecting earnings management. Although accrual approach is the most widely used technique, it has several shortcomings. We highlight these deficiencies and survey alternative methodologies that provide improvements in discretionary accruals estimation.*

**Field of research:** Earnings management, earnings manipulation, discretionary accruals

### **1. Introduction**

For manipulation of earnings, managers have a variety of choices to increase or decrease earnings. In the 1970s and early 1980s, a large number of studies found that managers can exercise discretion through the choice of accounting methods or policies. For example, managers can use specific accounting policies for inventory valuation, depreciation method or the treatment of bad-debt provision; all leading to manipulation of earnings. Since the mid-1980s, studies of earnings management have focused primarily on the accruals estimation. Researchers have tried to detect earnings management by breaking the accruals into two components: discretionary and non-discretionary accruals. Managers can use discretionary accruals, shifting revenue between periods or deferring recognition of expenditures (Healy 1985; Jones 1991; Dechow et al. 1995). Researchers have also detected earnings management through real transactions (Schipper, 1989), income-smoothing (Imhoff, 1977) and benchmark beating (Burgstahler and Dichev, 1997). All these approaches have strengths and weaknesses in detecting earnings management. This study reviews various methods used in detecting earnings management and critically evaluates the strengths and weaknesses of different approaches in detecting earnings management.

The remainder of the paper is organized as follows. Section 2 is a literature review of various methods used in detecting earnings management; Section 3 discusses the strengths and weaknesses of different methods; Section 4 highlights the improvements to existing methods; Section 5 concludes the paper.

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## 2. Literature review

There are various approaches in detecting earnings management. Empirical studies have found managers engage in earnings management through changing accounting choice, real transactions, total accruals/discretionary accruals, specific accruals, earnings distributions approach and income smoothing. This study provides an overall review of various methods.

### 2.1 Accounting choice

In the 1970s and early 1980s, a large number of studies found that managers can exercise discretion through the choice of accounting methods or policies. Watts and Zimmerman (1978) documented that managers will lobby for and choose accounting policies which can decrease tax payments, help secure favourable regulations, reduce political costs, reduce information production costs, and increase accounting earnings. They developed a positive accounting theory which suggests managers will always chose accounting policies that lead to the maximization of their personal wealth. Hagerman and Zmijewski (1979) found the existence of incentive compensation plans affects managers' decisions in accounting choices of inventory method, depreciation method, the treatment of the investment tax credit, and pension costs amortization. Holthausen (1981) examined the case of depreciation switch-back and found the existence of bonus plans explains manager's income-increasing behaviour as related to depreciation switch-back policy. Bowen et al. (1981) also examined whether the existence of management compensation packages affects specific accounting choice. However, Bowen et al. (1981) did not find the existence of management compensation agreements is a significant factor in determining capitalizing interest. Skinner (1993) examined the relationship between accounting procedure choices and the investment opportunity set and found that firms with bonus plans are more likely to select income-increasing depreciation and goodwill procedures. Teoh et al. (1998c) compared initial public offering (IPO) firms to non-IPO firm matched pairs, and found that IPO firms are more likely to choose an income-increasing depreciation method than the matched pair of non-IPO firm. These studies examined only one accounting method or choice at a given time.

Several studies argue that using only one accounting method or choice somewhat limits the picture of a firm's income reporting strategy. These studies form a portfolio with different accounting choices in an attempt to detect the aggregate effect of accounting choices on reporting. For example, Zmijewski and Hagerman (1981) suggested that management will adopt a multi-dimensional income strategy with each accounting policy choice being one dimension of that optimal strategy. Robbins et al. (1993) developed an income strategy score for U.S hospitals and such score indicates whether the combination of accounting method choices increased or decreased reported earnings. Christie and Zimmerman (1994) evaluated all possible accounting choices. They divided each

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accounting choice into an income-increasing strategy and an income-decreasing strategy and then tested these on a sample of firms separately. These studies, regardless whether investigating earnings management through the choice of individual accounting methods or the combination of different accounting methods, typically use a dichotomous variable or categorical variable to capture income-increasing or income-decreasing earnings management through the choice of accounting policies.

Researchers use accounting choices as the measure of earnings management for several reasons. First, the choices of accounting policies can have a material impact on reported earnings and consequently are unlikely to be adopted without management consideration of the effects. Second, the choices or changes of accounting policies provide a measure that is purely discretionary. No assumption needs to be made concerning the magnitude of the discretionary component of an accounting choice/change. This makes the detection of earnings management relatively easier.

### 2.2 Real transactions

Besides changing accounting policies, managers can also manipulate earnings upwards or downwards through real transactions. For example, managers can accelerate sales through increasing price discounts or more credit terms. The additional sales will boost current period earnings. Also, managers can increase production. When more units are produced, managers can spread the fixed overhead costs over a larger number of units thus lowering fixed costs per unit. By reducing cost of goods sold, they can report higher operating margins. The other transactions involve selling fixed assets and cutting R&D expenses.

Schipper (1989) is one of the first to consider that earnings management can be done through real management transactions: "*A minor extension of this (earnings management) definition would encompass 'real' earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it*" (Schipper, 1989, p92). Bartov (1993) provided evidence that managers avoid reporting losses and debt covenant violations by selling fixed assets. Baber et al. (1991), Dechow and Sloan (1991) and Bushee (1998) documented that managers of profit firms are more likely to use R&D expenditures to manipulate earnings. Graham et al. (2005) surveyed 401 financial executives and showed that managers prefer to manage earnings through real actions as opposed to accounting actions in attempting to meet or beat earnings benchmarks. Roychowdhury (2006) further documented the type of transactions that have been used by managers to avoid reporting annual losses and negative changes in earnings. For example, price discounts are used to increased sales, overproduction is used to spread fixed overhead over more units thus reducing cost of goods sold. Nevertheless, researchers found it is difficult to detect earnings management through real actions, because there is no benchmark to determine the right actions that managers have taken. For

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example, Ball and Shivakumar (2008) are unable to detect real earnings management as the shadow financial statements do not disclose the benchmark against real actions.

### 2.3 Total accruals/discretionary accruals

Earnings have two components, cash flow from operations and total accruals. Total accruals are the management judgements and estimates about cash flows in order to make accounting earnings better reflect a firm's underlying economic performance. Total accruals can be decomposed into two components—discretionary accruals and non-discretionary accruals. Non-discretionary accruals are accounting adjustments to the firm's cash flow imposed by accounting standard-setting bodies. Discretionary accruals are adjustments to cash flows selected by the managers within the flexibility of accounting regulations. Due to this flexibility, discretionary accruals are the component that often gives managers opportunities to manipulate earnings (Dechow, 1994). There is a large literature relating to the detection earnings management based on discretionary accruals.

Healy (1985) first introduced discretionary accruals to detect earnings management. He assumed that discretionary accruals is the component that is subject to managerial discretion while non-discretionary accruals is the expected level of accruals in the firm given no earnings manipulation. As both components of accruals are unobservable, Healy further assumed that the discretionary accruals component in a given year is total accruals scaled by lagged total assets and so effectively, non-discretionary accruals are zero in expectation. He found that accruals are used by managers to maximize their bonus. DeAngelo (1986) assumed that non-discretionary accruals follow a random walk and her approach in detecting earnings management is that the unusual behaviour of the discretionary component of accruals should be reflected from the change in total accruals from year  $t-1$  to year  $t$ . This effectively sets the expectation of non-discretionary accruals in the current year is the prior year's total accruals. With this approach, she detected managers systematically understate earnings prior to the buyouts in a sample of 64 companies whose managers propose to go private by purchasing all of the publicly held common stock. Both the Healy and DeAngelo approaches assumed the non-discretionary accruals component is constant and all earnings management activities can be captured by total accruals. However, such an assumption is unlikely to be empirically descriptive. Kaplan (1985) suggested that the nature of the accrual accounting process dictates that the level of non-discretionary accruals should change from period to period in response to changes in economic circumstances. Although Healy (1985) and DeAngelo (1986) captured either income-increasing or income-decreasing techniques that managers have incentives to employ, they neglected the changing of non-discretionary accruals and they misclassified all accruals as the discretionary component. Therefore, both approaches tend to detect earnings management with error.

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To overcome this limitation, Jones (1991) introduced a linear regression approach to control for non-discretionary determinants of accruals. She used change in sales to control for non-discretionary accruals of current assets and liabilities; property, plant and equipment to control for the non-discretionary component of depreciation expense. The rationale is that a firm's working capital accruals depend on sales, while its depreciation accruals depend on the level of property, plant, and equipment. She estimated discretionary accruals, the proxy for earnings management, as the residuals from the regression of total accruals on nondiscretionary determinants of accruals. With this estimation procedure, she subsequently detected that managers exercised more negative discretionary accruals to reduce income during the import-relief investigations by the U.S. International Trade Commission (ITC).

Dechow et al. (1995) pointed out that although all models used to separate total accruals into non-discretionary and discretionary components appear to produce reasonably well specified tests for a random sample, the power of the tests is low for earnings management of economically plausible magnitudes. The lack of power in detecting earnings management means that the level of discretionary accruals needs to be very large relative to earnings to be detected. Dechow et al. (1995) applied a time-series version of the Jones Model to a sample where they have artificially manipulated earnings. They reported that the time-series version of the Jones Model is able to detect earnings management close to 100% level only when the induced manipulation exceeds 50% of total assets. When the induced manipulation equals 5% of total assets, this model can only detect less than 30% of the manipulation. Peasnell et al. (2000) evaluated different models in detecting earnings management and suggested that the power to detect earnings management seems to be higher for the cross-sectional Jones Model. They stated that the rejection rates of the null of no earnings management can be as high as 40% of the cases when earnings manipulation equals only 2% of total assets. Dechow et al. (1995) also introduced a cross-sectional Modified Jones model in which the change in account receivables is deducted from change in revenues in an attempt to eliminate the tendency of the Jones Model to measure discretionary accruals with error when discretion is exercised through non-cash revenues (account receivables). They suggested that the modified Jones model exhibits the most power in detecting earnings management.

### **2.4 Specific accrual**

Different from total accrual approach, the specific accrual approach focuses on an industry setting in which a single accrual is sizeable and requires substantial judgment. For example, the claim loss reserve is a very material accrual for the insurance industry and the loan loss provisions is a specific accrual which requires substantial judgment in the banking industry. A specific industry setting can provide insight on variables to control better to identify the discretionary accruals of a given accruals.

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This approach detects earnings management from investigating management discretions through specific accrual account such as bank loan loss provisions, claim loss reserves for property/casualty insurers; and deferred tax valuation allowances. There is evidence that banks use loan loss provisions and insurers use claim loss reserves to manage earnings, particularly to meet regulatory requirements. McNichols and Wilson (1988) detected that managers manipulate earnings through bad debt provisions. Petroni (1992) documented earnings management through the claim loss reserve account. Beaver and Engel (1996) found managers exercise discretions through the use of allowance for loan losses. Finally, Beneish (1997) found that earnings manipulation can be reflected from various indexes including days in receivable index, gross margin index, depreciation index, SG&A expense index, total accrual to total assets index. He constructed an earnings management score based on the weighted indexes and asserted that such score is useful in detecting earnings management.

McNichols (2000) summarized the advantages of the specific accrual approach. First, this approach enables researchers to develop intuition for the key factors that influence the behaviour of the accrual. Second, this approach can be applied in industries in which a certain type of business can result in a specific accrual being material. However, she also pointed out the drawbacks. First, it is crucial that a specific accrual reliably reflect all management discretion. If managers exercise discretion through different accruals, which is the case most of time, then the power of a specific accrual test for earnings management is reduced. Second, the specific accrual approach has a more institutional focus. It has been often applied to the banking and insurance industries and other financial institutions in which some particular accrual accounts are very material due to the specific nature of the business. However, banking and insurance industries just are few exceptions. There are really few industries where a single accrual can be identified to be significantly more important than the others in term of availability for discretion. In fact, for most industries several accrual accounts are equally important and therefore the total accrual approach is more likely to detect earnings management on a full-scale base. Third, the number of firms using a specific accrual to manipulate earnings may be small relative to the number of firms using total accruals. Therefore, the findings from studying a specific accrual may not be as generalizable as those from the total accrual approach.

### 2.5 Earnings distribution

The distribution approach in detecting earnings management is relatively new in the literature. Burgstahler and Dichev (1997) studied the density of the distribution of earnings after management. The hypothesis is that managers usually have greater incentives to achieve earnings benchmarks. Hence, the distribution of earnings will have fewer observations than expected just below the threshold; and more observations than expected just above the threshold. The discontinuity of earnings distribution (earnings kink) is the evidence of the

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earnings management. Burgstahler and Dichev (1997) and Degeorge *et al.* (1999) identified three psychological thresholds that usually concern managers—positive earnings, last year earnings, and analysts' consensus forecast.

A noteworthy feature of the distribution approach is that it infers earnings management while avoiding the measurement error and model misspecification problem inherent in accrual-based earnings management studies. McNichols (2000) pointed out that the distribution method is powerful in detecting earnings management as it allows the researcher to make a strong prediction from the frequency of earnings realizations rather than from a measurement of the discretionary accrual component of earnings. Moreover, the distribution method also provides a powerful tool in detecting earnings management when a large number of firms appears to be managing earnings. For example, Burgstahler and Dichev (1997) used this method and estimated that 8–12% of firms with small pre-managed earnings decreases manipulate earnings to achieve earnings increases, and 30–44% of firms with small pre-managed losses manage earnings to achieve small profits. They stated “*an investigation of the prevalence of the avoidance of earnings decreases and losses suggests that this is a pervasive phenomenon*” (Burgstahler and Dichev, 1997, p101). This method is particularly useful when a researcher's aim is to detect the frequency and scope of earnings management since it identifies the context in which a large number of firms appear to manage earnings. It is of interest to regulators as they consider material any earnings management that converts losses into profits, triggers bonuses, or crosses performance thresholds for other covenants.

### 2.6 Income-smoothing

Income-smoothing is a specific form of earnings management which has a clear objective to reduce the temporal volatility of earnings and to produce a steadily growing stream of profits. At early stages researchers detect income-smoothing behaviour based on the comparison of earnings volatility between firms with more and less smooth reported earnings. Imhoff (1977) recognized that the problem with this approach is the difficulty in distinguishing naturally smoothed earnings from intentionally smoothed earnings. For instance, some industries have a less volatile income stream because the nature of the product is less affected by business cycles and is not due to the smoothing activity. One solution is to specify a normalized volatility level of earnings and then test if the volatility of normalized earnings is reduced by the inclusion of a potential smoothing variable on which managers could exercise discretions. Imhoff (1977) and Eckel (1981) suggested using the variability of sales to approximate the normalized volatility of earnings. Therefore, a firm could be classified as an income smoother if the variance of earnings is smaller than the variance of sales. Wang and Williams (1994) suggested that firms with high volatility of cash flows relative to earnings volatility are likely to be involved in income smoothing. As cash flows are less subject to managerial manipulation than accruals, low earnings volatility indicates accruals have been used to reduce the earnings

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volatility. Such an approach is applied in detecting income-smoothing. However, Dechow and Skinner (2000) argued that the very purpose of GAAP using accruals is to dampen the fluctuations in an entity's underlying cash flows in order to provide better information about economic performance of the firm to investors than cash flows. Therefore, it becomes extremely difficult to separate the normal smoothing required by GAAP from excessive smoothing raised from management manipulation. Income-smoothing is a specific form of earnings management and this approach has a narrower application.

### 3. The strengths and weaknesses of different methods

Fundamentally, more management discretions are made through accruals. More accruals are in place simply because the accounting system creates accruals in order to recognize revenues when they are earned and match expenses to those revenues, irrespective of whether cash has been received or paid. This matching principle makes accounting earnings a better economic measure of firm performance than cash flows. Since the mid-1980s, there has been explosive growth in using accruals to detect earnings management. Healy (1985) first noticed the fact that accruals modify the timing of reported earnings and thus it enables managers to transfer earnings between periods. So he broke down earnings into cash flow from operations and total accruals and estimated the discretionary proportion of accruals by using total accruals. The method of accrual has been widely applied in detecting earnings management.

In terms of the perspective of manipulators, managers may prefer to use accruals in manipulating earnings. Accruals are the product of GAAP. Under the accrual accounting system, managers are allowed to make adjustments to cash flows through accruals. As such, managers are more likely to exploit this flexibility to shift earnings between periods by changing accruals rather than by changing accounting policies. Healy (1985) suggested that it is more costly for managers to shift earnings between periods by changing accounting procedures than by changing accruals. Managers are also more likely to exercise discretion through accruals rather than the cash flow component of earnings. Healy (1985) suggested that managers observe cash flows from operations at the end of each year and selects accruals to maximize their personal wealth.

Second, managers may prefer to use accruals because they are more subtle and do not require disclosure. Accruals include many estimates and transactions, whose total effect on accounting earnings is neither disclosed nor easily estimable. In contrast, any change in accounting choices or real transactions must be disclosed, which makes managers' discretion easy to monitor. Gaver et al. (1995) pointed out that the level of discretionary accruals is the accounting variable least likely to be effectively monitored by outsiders and thus the prime candidate for earnings management. Holthausen et al. (1995) also explained that the reason why executives prefer to manipulate earnings through accruals instead of changing accounting methods is that auditors look for consistency in

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the accounting policy for each reporting period; therefore, any manipulation through a change to accounting policy would be easily detected.

From the perspective of detectors, researchers (or regulators) can understand earnings management better because accruals measure earnings management in a more comprehensive manner. First, earnings management does not always have to be related to changes in accounting policies. For instance, managers can simply speed up sales by providing customers with attractive discounts and more flexible credit terms without changing any accounting policies or methods. Although some accounting choices are made to achieve a goal that is consistent with earnings management, not all accounting choices involve earnings management and the term earnings management goes beyond accounting choice.

Second, the likelihood of detecting earnings management is increased since accruals aggregate the net effect of numerous accounting decisions and choices. Managers may exercise discretions through multiple accounting choices to accomplish a specific goal. In this case, examining accruals can capture the net effect of all accounting choices that a firm made during the period under consideration. In the context of executive compensation, for example, Healy (1985), Gaver et al. (1995), Holthausen et al. (1995) and Guidry et al. (1999) investigated the use of discretionary accruals to manage earnings to increase bonus payments. The research design in all these papers overcomes, at least partially, the problem of multiple accounting choices because they consider discretionary accruals in total, which aggregates the effects of numerous accounting choices. As a result, the aggregate effect of accounting discretion is larger relative to a single accounting change. This larger magnitude increases the power of the tests, making it more likely to detect the existence of earnings management.

Third, researchers found it is difficult to detect earnings management through real actions, because there is no benchmark to determine the right actions that managers have taken. With business environment uncertainty, managers are protected by law. It is difficult to judge whether managers' actions in response to business environment uncertainty are right or wrong, thus making it difficult to find them liable for bad business decisions, if any. For example, Ball and Shivakumar (2008) are unable to detect real earnings management in their sample of IPO firms because the shadow financial statements do not disclose the benchmark against real actions.

Fourth, earnings management is more likely to be detected through discretionary accruals than through a specific accrual because, most of the time, managers tend to exercise discretion through different accruals. Moreover, the number of firms using a specific accrual to manipulate earnings may be relatively small to the number of firms using various accruals. As such, the specific accrual approach may preclude detection of earnings management behaviour if a

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specific accrual is not sufficiently sensitive. In addition, a specific accrual approach has often been applied to banking industries in which some particular accrual accounts are very material due to the specific nature of the business.

Finally, income-smoothing and earnings distribution are two methods of detecting specific forms of earnings management. For instance, the income-smoothing approach is useful in detecting earnings management which has the clear objective of reducing the temporal volatility of earnings and to produce a steadily growing stream of profits. The earnings distribution approach is useful in detecting benchmark-beating behaviour. Both methods have narrower applications in detecting earnings management. The approach of income-smoothing has lost its popularity while earnings distribution is relatively new.

### **4. Enhancements of Jones Accrual Detection Model**

Accruals, relative to other methods, are preferred in detecting earnings management. Nevertheless, the major challenge for researchers using accruals to detect earnings management is the ability of the model correctly separate accruals into discretionary and non-discretionary accruals. Non-discretionary accruals are the portions that resulted from a firm's normal operations without management intervention. Discretionary accruals are subject to management manipulation. Neither is observable directly in financial statements. Previous studies have used different models to separate these two components, with a heavy reliance on the assumption of accruals. Despite the popularity of the Jones-based model, the validity and reliability of the model in estimating discretionary and nondiscretionary accruals have often been criticized.

First, researchers found the omitted operating cash flows can result in model misspecification. McNichols and Wilson (1988) constructed ten operating cash flow portfolios and found systematic negative association between operating cash flows and accounting discretions across portfolios. Specifically, when operating cash flows are unusually high, managers tend to decrease earnings. When operating cash flows are poor, managers tend to increase earnings. However, if operating performance is extremely poor, some firms may decrease income further. This is the so-called 'taking a bath' strategy. Dechow (1994) also found that change in cash flow from operations is negatively correlated with total accruals. In addition, Dechow et al. (1995) showed that cash flows from operations influence the magnitude of discretionary accruals. A higher level of operating cash flows is associated with lower level of discretionary accruals.

In order to control cash flow effects, Kasznik (1999) added the change in operating cash flows into the Modified Jones Model as an additional variable to control for a firm's operating cash flow performance. He modelled discretionary accruals as a function of the change in revenue adjusted for the change in receivables, the levels of property, plant and equipment and the change in operating cash flows. Barua et al. (2006) applied this model and found

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discretionary accruals are used to achieve earnings benchmarks. Finally, Shuto (2007) used this model and detected earnings management to be associated with executive compensation in Japanese firms.

Second, the model may also be misspecified without controlling for extreme earnings performance. In fact, Kaszink (1999) showed the correlation between the discretionary accrual estimates and firm's earnings performance that firms with higher (lower) earnings exhibit significantly positive (negative) discretionary accruals. Presumably this arises because firms with abnormally high (low) earnings have positive (negative) shocks to earnings that include an accrual component. As a result, researchers are more likely to detect income-increasing earnings management for higher profitable firms and income-decreasing earnings management for lower profitable firms.

In order to address the correlated omitted variable problem that resulted from earnings performance, Kaszink (1999) suggested a Performance Adjust Technique (also known as Matched Portfolio Approach) to adjust estimated discretionary accruals by removing the effect of firm's earnings performance. He sorted the estimated discretionary accruals into percentiles based on earnings performance (measured by return on assets). Then, he computed the median discretionary accruals for each percentile and subtracted it from each observation's discretionary accruals in that percentile. These adjusted discretionary accruals are the proxy for earnings management and are used in the subsequent tests. By doing that, evidence on earnings management is suggested to be more reliable as measurement errors that are potentially correlated with earnings performance are removed.

Other modifications which attempt to control for firm performance include Kothari et al. (2005) who directly introduced return on assets as an additional independent variable into the modified Jones model or adopt a performance-matched approach. This approach calculated performance-matched discretionary accruals by matching the firm-year observation of the treatment firm with the firm-year observation for the control firm from the same industry and year with the closest return on assets in the current year or the prior year and then subtracting the control firm's discretionary accruals from the treatment firm's discretionary accruals. Kothari et al. (2005) found that matching based on the current year return on assets performs better than matching on the prior year return on assets and this performance-matched approach is superior to just including a performance variable in the regression model.

Kang and Sivaramakrishnan (1995) proposed an instrumental variables (IV) approach to measuring the discretionary and non-discretionary accruals. The IV approach involves replacing the independent variables that are correlated with the error terms with instruments that are assumed to be highly correlated with the original variables, but uncorrelated with the error terms. Although their approach is claimed to be superior to the Jones types of model for detecting

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earnings management, it has not yet been thoroughly tested or widely adopted, primarily because of the data requirement and the complexity in applying the IV approach.

Researchers also use a current accruals approach to replace the traditional total accruals approach. DeFond and Jiambalvo (1994) and Teoh et al. (1998a, 1998b) segregated total accruals into current accruals versus long-term accruals. The current portion of accruals represents changes in current assets and liabilities related to the day-to-day operations, whereas the long-term portion reflects changes in net fixed assets. The justification for this classification is based on the argument that managers have greater discretion over current accruals than over long-term accruals. Moreover, long-term accruals are less likely to reflect period-specific earnings management, which is of critical importance in an event-specific earnings management investigation. Thus, instead of modelling discretionary total accruals, they estimated discretionary current accruals by dropping the property, plant and equipment term from the original Jones specification.

### 5. Concluding remarks

This study reviews various methods of detecting earnings management including accounting choice, real transactions, total accruals/discretionary accruals, specific accruals, earnings distributions approach and income smoothing. This study also critically evaluates the strengths and weaknesses of using different methods in detecting earnings management. As studies of earnings management have focused primarily on the investigation of discretionary accruals since the mid-1980s, this study particularly discusses the limitation of discretionary accruals and highlights the improvements of the estimation process. Our review provides useful information in this field of research.

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