

Methodological Issues in Real Earnings Management

Hassan Yazdifar

h.yazdifar@derby.ac.uk

Reza Hesarzadeh

hesarzadeh@um.ac.ir

Mark Whittington

mark.whittington@abdn.ac.uk

Naser Makarem

n.makarem@abdn.ac.uk

Abstract

This article critically reviews the current methodologies used in earnings management research focusing on real activities manipulation studies to explore a more consistent measurement approach. Specifically, this article draws on the methodologies employed in accruals management studies to identify issues with the current measures of real activities manipulation. A survey of accounting journals conducted for the period 2008-2020 indicates that measuring aggregate accruals and specific real activities manipulation are the two most common methods used in earnings management studies. This study employs specific and aggregate approaches used in accruals management studies to provide a comparable basis. The key theme of this study is that abnormal cash flow from operations, which is currently used to measure sales manipulation, could actually serve as an aggregate measure of real activities manipulation. We also discuss why combined measures, which are currently used as aggregate measures of real activities manipulation, can be misleading.

Keywords: Financial reporting, Earnings Management, Accruals Management, Real Activities Manipulation, Measurement

1. Introduction

Providing an overview of the current literature, this article draws on the methodologies employed in accruals management studies to identify issues with the current measures of real activities manipulation. Research has focused on earnings being managed mainly through accruals management and real activities manipulation. Real activities manipulation involves a perceived deliberate management decision to reduce the intrinsic value of the firm through a deviation from what would be the optimal path for long term value maximisation in order to seek the achievement of other ends such as meeting/beating earnings targets (e.g., Roychowdhury, 2006) or avoidance of breaking loan covenants (e.g., Chamberlain *et al.*, 2014). Hence, a good understanding of the likelihood of real activities manipulation being employed is vital for analyst assessment of not only the meaningfulness of the published financial numbers, but also for judgment on the trustworthiness of management in acting out normally assumed corporate governance code responsibilities to shareholders.

Two distinct approaches can be observed from the literature for measuring accruals management: the specific approach and the aggregate approach. The aggregate approach uses total or discretionary accruals, whilst the specific approach focuses on a particular accrual or set of accruals to measure earnings management. On the other hand, real activities manipulation research is characterised by employing a diversity of models to test a wide range of activities with little effort to distinguish between specific and aggregate measures. As will be discussed in this article, such a distinction is required for consistent and meaningful measurement.

This article critically reviews the current methodologies used in earnings management studies in order to seek a consistent and meaningful approach to measuring real activities manipulation. It provides evidence on the current methodologies employed by earnings management studies. Our survey of five leading accounting journals for the period 2008-2020 indicates that

measuring aggregate accruals and specific real activities manipulation are the two most popular methods of studying earnings management, with 39% and 15% frequency, respectively (see Table 1). We also discuss that combined measures of real activities manipulation could be misleading.

The present study contributes to the literature by improving our understanding of where the contemporary earnings management research stands in terms of methodology in general as well as identifying and addressing specific measurement issues with real activities manipulation. The typology of accruals management measures suggested by McNichols (2000) is adopted in order to provide a comparable measurement approach for real activities manipulation. We utilize accrual management literature in order to understand the issues and complexities of measuring real activities manipulation. We discuss that combining real activities manipulation measures to construct one single measure which is a common practice in the literature could be misleading and may result in loss of information. Moreover, we propose abnormal cash flow from operations which was initially intended to capture sales manipulation, and often dismissed because of the problems it has in capturing sales manipulation (see Zang, 2012), could actually be considered as an aggregate measure of real activities manipulation.¹ Finally, we make some suggestions for future research including the use of interval estimates instead of point estimates, and the need to reconsider how results are interpreted.

The rest of this article is structured as follows. First, the methodologies used in earnings management studies are discussed followed by a discussion of specific and aggregate approaches in accruals management studies. Then, these two approaches are applied to

¹ Aggregate and combined measures are different. Aggregate measures refer to earnings management measures intended to capture the entire manipulation e.g., total accruals management using Jones/modified Jones model. Combined measures refer to earnings management measures that are a combination of multiple individual measures which may not capture the entire manipulation e.g., sum of abnormal production costs and abnormal discretionary expenses which is a common measure of real activities manipulation (see Zang, 2012).

understand the current measures of real activities manipulation. Concluding remarks and suggestions for future research are provided at the end of this article.

2. Review of Methodologies Employed in Earnings Management Studies

Earnings management has long been an appealing topic to accounting researchers, which is reflected in the number of articles in this area published in the leading academic accounting journals. The methodologies used to study earnings management are quite diverse. Five leading accounting journals namely *The Accounting Review*, *Journal of Accounting and Economics*, *Journal of Accounting Research*, *Contemporary Accounting Research*, and *Review of Accounting Studies* are surveyed for the period 2008 to 2020 in order to identify the methodologies applied in their earnings management articles.² 158 earnings management articles are found³ and the methodologies employed in these articles are then classified into seven groups including aggregate accruals, specific accruals, specific real activities manipulation, combined real activities manipulation, earnings distribution, *ex-post* evidence of manipulation (i.e., restatements and audit adjustments), and others. Table 1 summarizes the articles by year, journal, and methodology. As is presented in the table, similar to past few decades, measuring accruals is still the main methodology in the earnings management studies accounting for half the methods applied. These results are consistent with those reported by McNichols (2000) who surveyed 55 earnings management articles published in 8 leading accounting journals during the period 1993-1999. She identified three research designs in earnings management studies namely aggregate accruals, specific accruals, and frequency distribution approaches, finding that aggregate accruals is the most popular methodology. However, while McNichols (2000) had predicted that future contributions to earnings

² ABS journal ranking (2018) is employed to select top accounting journals. Accounting, Organizations & Society is excluded because they do not tend to publish on earnings management.

³ Articles identified as earnings management studies are those capturing earnings management in one way or another.

management studies would come from the specific accruals approach, our findings suggest that the aggregate accruals approach is still by far the most favoured (39%). There has also been a more recent growing interest in measuring specific real activities manipulation accounting for 15% of the methodologies employed.⁴

Since the current article is concerned with measurement of earnings management, and real activities manipulation in particular, the focus is on methodologies that quantify the magnitude of earnings management i.e., the first four approaches listed in Panel C of Table 1. The remaining research designs seek to detect or document earnings management by other means. Appendix 1 provides a more detailed breakdown of the methodologies in Panel C.

2.1. Measurement Approaches in Accruals Management Studies

The dominant methodology in the earnings management literature is the use of statistical models applied to a large sample of archival data (Walker, 2013). As Healy and Wahlen (1999) note, in spite of the widespread idea of existence of earnings management, researchers have been struggling to document it, essentially because before determining whether or not a firm has been engaged in earnings management they first need to know about earnings before earnings management is committed. They further add that earnings management studies tend to identify managerial incentives for earnings management, and then measure the effect of managerial discretion over earnings induced by the incentives. Although different approaches have been employed in the earnings management literature, two distinct steps can generally be recognised in the mainstream earnings management research:

⁴ McNichols (2000) reports that 9.1% of the articles measure manipulation of activities including asset sales/write-offs and R&D.

1. Identifying firms that, due to the incentives, are more likely to be engaged in earnings management, or firms suspected of manipulation; and
2. Measuring earnings management for two groups of firms: suspect firms and all other firms; and comparing earnings management between the two groups.

In an analysis of research designs in the literature, McNichols (2000) identifies three main approaches in earnings management studies. The first is the “aggregate accruals approach”, which generally measures total accruals or discretionary accruals. The second is the “specific accruals approach”, which focuses on one particular accrual or a set of accruals that are deemed to be subject to substantial judgment. The third, “earnings distribution approach”, looks at the pattern of earnings around a target to indicate how earnings manipulation can affect the distribution of earnings. The earnings distribution approach is different from the first two because it does not measure earnings management but seeks to uncover an anomaly in the distribution of earnings and associates this with an incentive for earnings management (Burgstahler and Chuk, 2017). As the focus of this paper is on the measurement of earnings management, only the first two accruals management approaches will be discussed.

2.1.1. Aggregate Accruals Approach

Measuring accruals management is so ubiquitous in earnings management literature to the extent that many scholars have used “accruals management” and “earnings management” almost synonymously. There exists an extensive literature (e.g., Healy, 1985; DeAngelo, 1986; Sletten *et al.*, 2018; Kim *et al.*, 2019) assessing earnings management through the relationship between total accruals and an explanatory variable which is expected to influence earnings management behaviour. Total accruals are normally defined as the difference between earnings and operating cash flows. Most of measurement models are intended to capture the discretionary portion of total accruals (Dechow *et al.*, 2012), thus researchers often split total

accruals into two components: accruals more likely to be subject to managerial discretion (discretionary accruals) and those not (nondiscretionary accruals). Discretionary accruals have long been used as the major measure of accruals management by accounting scholars (Kothari, 2001).

To test a hypothesis regarding earnings management one should measure the extent of manipulation. There has not been significant development in the measurement of accruals management in recent years and most accounting scholars are still using the same models as two decades ago or with minor modifications. Healy (1985) suggests mean total accruals scaled by lagged total assets to capture earnings management. Dechow and Sloan (1991) group firms based on their industries and use the median of scaled total accruals to estimate the normal level of nondiscretionary accruals. Their proposed industry model relies on a strong assumption that nondiscretionary accruals are similar in nature within the same industry (Dechow *et al.*, 1995).

An important study under the aggregate approach is Jones (1991), who proposed what became the dominant model in the literature for measuring accruals management. She introduced a model of discretionary accruals assuming that the nondiscretionary component of accruals changes with the economic circumstances of the firm. To this end, change in revenue and gross property, plant and equipment are included in the model to control for change in nondiscretionary components attributable to economic conditions and depreciation. The implicit assumption behind the Jones model is that revenues are not discretionary (Dechow *et al.*, 1995) whilst arguably managers can exercise discretion over recording revenue when no cash has been received or there is uncertainty whether or not the revenue is earned. While under the Jones model revenue is considered to be an objective measure of a firm's economic conditions, Defond and Jiambalvo (1994) note that revenue is not a clean exogenous variable

as managers may postpone or accelerate shipment of goods sold to manipulate it. This simplified view of revenue can then bias the estimate of earnings management toward zero (Dechow *et al.*, 1995). McNichols (2000) suggests that although the Jones model has been the most commonly used model in the literature, given the limited theory on the behaviour of accruals in the absence of discretion, there is a problem of potential omitted variables. Attempting to tackle this issue, Dechow *et al.* (1995) suggest a model, which is generally referred to as the modified Jones model, in which change in net receivables is excluded from change in revenue in order to reduce the impact of possible managerial discretion as revenue itself might be subject to manipulation. They discuss that nondiscretionary accruals estimated by the Jones model are too large and that this in turn leads to too small estimation of discretionary accruals because the entire revenue figure is considered as non-discretionary.

While the Jones model assumes that revenue is not affected by managerial discretion in both estimation and event periods, the modified Jones model implies two further assumptions: 1) the entire change in credit sales in the event period is due to earnings management, and 2) exercising discretion over revenue from cash sales is more difficult (Dechow *et al.*, 1995). The former assumption leads to “estimates of nondiscretionary accruals that are too small for firms with growing revenues, because not all of the change in receivables is discretionary” (McNichols, 2000, p. 327) and, as Kothari *et al.* (2005) suggest, it results in a positive correlation between discretionary accruals and sales growth. Hence, unless it is certain that credit sales reflect accruals manipulation, the modified Jones model can lead to spurious conclusions about earnings management.

Other scholars have also attempted to improve the Jones model while the essence has remained unchanged. For instance, DeFond and Jiambalvo (1994) propose a cross-sectional variation of the Jones model to estimate discretionary accruals. Kothari *et al.* (2005) suggest that

performance matching improves the reliability of accruals management measures. More recently, Owens *et al.* (2016) includes the impact of idiosyncratic shocks to improve the Jones accruals model and Collins *et al.* (2017) suggests controlling for performance and sales growth.

The aggregate approach, particularly Jones and modified version of it, has generally been shown to be successful in detecting earnings management in different settings. For instance, Dechow *et al.* (1995) look into firms accused of earnings overstatement and examine whether earnings management models were capable of capturing such misstatement. While Jones and modified Jones models are shown to outperform other models, all the aggregate models Dechow *et al.* (1995) examined, namely Healy (1985), DeAngelo (1986), Jones (1991), Dechow and Sloan (1991) and their own proposed model, reject the null hypothesis of no earnings management for firms with extreme financial performance. This suggests that the aggregate measures are able to identify extreme cases of earning management. In general, critical limitations of aggregate measures of accruals management are 1) the lack of power due to limited ability of the measures to isolate the discretionary portion of earnings and 2) misspecification because of the common problem of omitted variables (Dechow *et al.*, 2012). While there have been sporadic suggestions and adjustments, after more than two decades since its introduction, accruals management literature still relies heavily on Jones (1991) model and its modified versions.

2.1.2. Specific Accruals Approach

Under specific accruals approach researchers concentrate on one major accrual or a set of accruals that are subject to considerable judgement and are therefore expected to reflect managerial discretion (McNicholes, 2000; DeFond *et al.*, 2020). The general intuition behind this approach is to develop a model of expected value for a specific accrual and measure the difference between the expected and the actual accruals. For example, McNichols and Wilson

(1988) indicate how one single accrual, namely the provision for bad debts, is used for earnings management purposes. They develop a model of provision for bad debt and find evidence consistent with the discretionary portion of the provision for bad debts being used to push earnings down. Another example would be Petroni (1992) who examines the application of the liability for outstanding claim losses by property-casualty insurers in order to manipulate earnings, suggesting that financially weak insurers underestimate claim loss reserve estimates. A further industry specific example is Beatty *et al.* (1995) who examine five accrual items in banking industry to see whether they are used for manipulation. In particular, they look into loan charge-offs, loss provisions, and security issuance decisions, pension settlement gains and asset sales, finding evidence that these are employed to manipulate earnings and capital ratios. Cheng (2012) also examines specific accruals and transactions in the banking industry suggesting that banks manage loss provisions, loan sales and securitizations to meet earnings targets.

McNichols (2000) compares advantages and disadvantages of specific accruals approach with those of aggregate approach. Major advantages of specific accruals approach over aggregate approach include: 1) greater ability of researchers to develop key factors affecting the behaviour of a specific accrual or set of accruals, 2) the possibility of application in specific industries where a particular accrual is substantial and more subject to discretion, and 3) the possibility of direct estimation of the relationship between a specific accrual and an independent variable. On the other hand, he mentions three disadvantages of using specific accruals approach: 1) since it is not clear which accruals are used to manage earnings, the power of the test decreases, 2) it requires more knowledge and data compared to aggregate approach which increases the cost of its application, and 3) concentrating on a smaller number of firms with one specific type of accruals manipulation reduces the generalizability of the results of the specific approach. While McNichols (2000) had predicted that future

development in the earnings management literature would favour the specific accruals approach, this has not yet come true as aggregate accruals measures are still the most popular (see Table 1).

2.2. Measurement Approaches in Real Activities Manipulation Studies

Before the real activities manipulation measures introduced by Roychowdhury (2006), research on activities manipulation had employed a variety of models to examine different activities. For instance, various models were used to measure real activities manipulation through R&D expenditures (e.g., Barber *et al.*, 1991; Dechow and Sloan, 1991; Perry and Grinaker, 1994), asset sales (e.g., Bartov, 1993; Hermann *et al.*, 2003), and stock repurchases (e.g., Bens *et al.*, 2003; Hribar *et al.*, 2006). The Roychowdhury (2006) model gave research on real activities manipulation a momentum as accounting researchers started re-examining the hypotheses already studied through accruals management by means of the new measures of real activities manipulation. Since the introduction of the real activities manipulation measures over a decade ago, there has been a large number of studies employing those measures for testing earnings management. However, as Cohen *et al.* (2016) point out, while measures of accruals management have been widely studied, surprisingly enough there has not been sufficient research on validity and reliability of real activities manipulation measures. This is significant since a growing proportion of the literature is being accumulated using measures the soundness of which has not been carefully studied.

A review of the earnings management literature reveals that while accruals management studies are dominated by the aggregate approach, the specific approach prevails among RAM studies. RAM studies tend to focus on one or few activities and indicate the impact of incentives for earnings management on those activities. All types of business activities, i.e., investing, financing, and operating, could be subject to manipulation. Since activities with different

natures are investigated to find indications of manipulation, the models employed vary considerably from one study to another. Researchers tend to measure real activities manipulation using models that estimate abnormal level of activities (Xu *et al.*, 2007; Srivastava, 2019; Ngo *et al.*, 2022; Balios *et al.*, 2022; Makarem *et al.*, 2023). For instance, examining timing of asset sales, Bartov (1993) hypothesises a negative association between income from asset sales and earnings change, expecting that when earnings decrease (increase), managers sell assets to increase (decrease) earnings. Another example is Bens *et al.* (2002) who hypothesise that stock repurchase and exercise of employee stock options are positively associated. The intuition here is that firms try to reduce the number of shares in order to mitigate the impact of the exercises on EPS. While numerous specific measures have been used to measure real activities manipulation, the Roychowdhury (2006) model which is intended to capture manipulation of operating activities⁵ has been the most popular in the past decade. He proposes three specific models to measure manipulation of sales, production costs and discretionary expenses (Abdou *et al.*, 2020; Alam *et al.*, 2017; Alzayed *et al.*, 2023; Khodakarami *et al.*, 2023; Khodamipour *et al.*, 2023; Nasserri *et al.*, 2018).

In general, prior studies use specific activities to measure real activities manipulation. This resembles the methodology employed in the specific accruals management studies.

3. Aggregate Measure of Real Activities Manipulation

Although concentrated on accruals management, the informative framework proposed by McNichols (2000) for categorization of measurement approaches in earnings management studies can also be applied to real activities manipulation. That is, in addition to the specific measures, real activities manipulation could also be measured by aggregate measures. Some

⁵ While investing and financing activities can also be used to manipulate earnings (see Xu *et al.*, 2007), the main focus of this study is on manipulation of operating activities.

scholars have attempted to come up with an aggregate measure of real activities manipulation through combining individual specific measures. For instance, Gunny (2010) uses the sum of abnormal production costs, abnormal discretionary expenses and abnormal R&D as an aggregate measure of real activities manipulation. Another example is Zang (2012) who takes the sum of abnormal production costs and abnormal discretionary expenses to generate one single measure for real activities manipulation. The choice of individual measures to shape a combined measure has been arbitrary and tends to vary from one study to another. Moreover, it is not justified why a certain specific measure is included in a combined measure or, indeed, why several others are excluded.

There are reasons why combined measures could be misleading or hard to interpret. First, there is no theory or conceptual basis for combining different measures and for determining exactly what the resultant measure means. Second, if two or more measures of earnings management are used to test the same hypothesis and the results for individual measures are not consistent with each other, then looking at the individual measures would be more informative compared with a combined measure. This is because conflicting measures would cancel each other out and hence the net effect could become unobservable. For instance, given earnings management is studied in a setting where upward manipulation is expected, if one measure indicates income-increasing earnings management and the other measure suggests income-decreasing manipulation, then combining the two measures only results in a loss of information and could be misleading. In this case, individual measures are superior to the combined measure as the combined measure does not really add to the evidence that is already provided by the individual measures.⁶ Third, as is discussed below, cash flow from operations could be an aggregate

⁶ It should be noted that simultaneous use of various measures of earnings management to test a certain hypothesis is not necessarily inappropriate or problematic because if all measures suggest the same results, that would provide corroborative evidence and if they provide conflicting results that could indicate differing impact of one motivation on various activities which is still informative.

measure of real activities manipulation, and as such combining it with other specific measures would be as unreasonable as combining abnormal discretionary accruals with one or more specific measures of accruals management. Therefore, due to lack of conceptual basis and interpretation issues combined measures may not properly capture real activities manipulation.

While a number of specific measures of real activities manipulation have been used by prior studies, to date no aggregate approach has been formally introduced to measure manipulation of activities. We propose that an aggregate measure of real activities manipulation can be developed as follows. Earnings can be broken down into two major components: total accruals and cash flows.

$$\text{Earnings} = \text{total accruals} + \text{cash flows} \quad (1)$$

By definition, the entire manipulation of earnings can also be divided into accruals management and cash flows management:

$$\text{Earnings manipulation} = \text{accruals manipulation} + \text{cash flows manipulation} \quad (2)$$

The cash flow part of earnings manipulation could therefore be an aggregate measure of real activities manipulation. This is particularly relevant because unlike accruals management that has no direct cash flow consequences, as Cohen and Zarowin (2010) point out, real activities manipulation includes impact on cash flows. However, econometric issues in modelling real activities manipulation are more complicated than accruals management measured by abnormal accruals (Walker, 2013). This is because for the sake of modelling it is usually assumed that accruals management does not directly affect cash flows, which is logical, whilst measuring real activities manipulation by taking cash flow manipulations assumes that real activities manipulation does not have an impact on accruals which is not always the case.

Nonetheless, if real activities manipulation is to be measured through earnings, then making such an assumption appears to be inescapable.

There is paucity of models to address cash flows manipulation. If only operating activities are concerned, then the model of cash flows manipulation suggested by Roychowdhury (2006) which is intended to capture sales manipulation could be useful. Below, we explain how the cash flow manipulation model is developed and then discussed why it is not a good measure of sales manipulation.

Without a model of how accounting numbers react to the change in economic circumstances, the ability to make conclusions about earnings management is limited (McNichols and Wilson, 1988), thus to detect earnings management it is important to recognise the expected behaviour of the item under scrutiny for manipulation in the absence of earnings management. As far as accruals management is concerned, answering the question ‘how do accruals behave in the absence of earnings manipulation?’ is crucial as studies often model nondiscretionary accruals to draw inference about accruals management (McNichols, 2000). Likewise, the need to model how cash flows behave assuming no manipulation is equally vital for measuring cash flows manipulation. A thoughtful attempt to demonstrate the behaviour of accounting numbers in absence of manipulation was made by Dechow *et al.* (1998). They propose a model that relates earnings to its two components, i.e., accruals and cash flows. In their model a random walk sales process is considered and it is assumed that there are no fixed costs, and that accounts payable, receivables and inventory are the only components of accruals. These assumptions are comparable to those used in the Jones (1991) model. They then express cash flows from operations as a function of contemporaneous and lagged sales. Based on these assumptions, the following model is suggested by Roychowdhury (2006) to capture abnormal cash flow from operations as a measure of sales manipulation:

$$\frac{CFO_{it}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{it}}{A_{i,t-1}} + \alpha_3 \frac{\Delta S_{it}}{A_{i,t-1}} + \varepsilon_{it} \quad (3)$$

Where *CFO* is cash flow from operations. Sales could be manipulated through temporary boosting by offering price discounts or more lenient credit terms. It is expected that upward sales manipulation results in lower current cash flow from operations and higher production costs compared with the normal sales level. Discretionary expenses provide a good opportunity to manipulate earnings because they are recorded as expense when they occur, therefore managers can reduce (increase) them to increase (reduce) current earnings. If upward earnings management is expected, the behaviour of other activities could also affect cash flows because reduction of discretionary expenses improves cash flows from operations while overproduction can increase holding costs which in turn reduces cash flows from operations. The effects of these manipulative actions can be summarized as follows:

1. Reduction of discretionary expenditures results in abnormally low discretionary expenses while it increases cash flow from operations.
2. Aggressive price discounts and overproduction result in abnormally high production costs compared with the level of sales while it decreases cash flow from operations.

Therefore, whereas aggressive price discounts and overproduction reduce current cash flows from operations, reduction in discretionary expense increases it, leaving the net effect of these manipulative actions on operating cash flows ambiguous. That is to say although the effect of income-increasing activities manipulation on production costs and discretionary expenses is known, its effect on abnormal cash flows is confused. This confusion is due to the fact that abnormal cash flows from operations is used as a measure of sales manipulation while all operating activities, not merely sales, can affect operating cash flows. This is particularly problematic as it interferes with the interpretation of the results. As Roychowdhury (2006)

notes, the net effect of sales manipulation on cash flow from operations is ambiguous due to fact that cash flow from operations combines the effect of two sub-components with opposite impacts on cash flows i.e., sales and expenses. Thus, the use of abnormal cash flow from operations to measure sales manipulation is likely to be misleading.

A second problem with the sales manipulation model is that most of current models of earnings management rely on sales as an un-manipulated item based on which the normal level of other items are computed. For example, virtually all accruals models and real activities manipulation models start with sales to find normal levels of earnings management measures. There are at least two reasons why sales are used as the starting point in modelling: “[f]irst, as in budgeting processes, sales determine a firm’s production and inventories, which, in turn, determine the cost of sales, other operating costs, and investment decisions. Second, sales have the highest persistence of any component of the income statement” (Ronen and Yaari, 2008, p.377-8). Therefore, while there is no discussion that sales can also be subject to manipulation, such an assumption undermines the current models of earnings management. However, even if sales are manipulated and if one is not able to isolate its manipulated portion, it can still be used as an exogenous variable to determine the normal level of other variables. That is because any possible manipulation of sales only pushes other items in a certain direction with perhaps no effect on the relationship between the other items with each other. To isolate sales manipulation, one needs a further exogenous variable that can determine level of sales. It is unlikely that endogeneity of variables in earnings management models can be completely removed, even if sales are accepted as an exogenous variable. Therefore, cash flow from operations which is dependent on sales is not effective in isolating sales manipulation. These problems with abnormal cash flows from operations has led to dismissal of this measure of earnings management by some scholars. For instance, Zang (2012) drops the cash flow from

operations model when measuring real activities manipulation on the ground that the net effect of sales manipulation on cash flow from operations is ambiguous.

Nevertheless, as Equation (2) indicates, manipulation of cash flow from operations can be an aggregate measure of operating activities manipulation instead of a specific measure of sales manipulation. This will eliminate the above problem of the mixed effects of different types of activities manipulation on cash flow from operations because cash flow manipulation as an aggregate measure will combine those mixed effects. The interpretation of results will be straightforward because given the direct relationship between cash flows and earnings, an upward (downward) manipulation of earnings is expected to result in abnormally higher (lower) cash flows from operations. Therefore, while the abnormal cash flow model suggested by Roychowdhury (2006) was originally introduced to capture sales manipulation, we suggest that it could actually be used as an aggregate measure of real activities manipulation. This is also consistent with the nature of real activities manipulation, i.e., unlike accrual-based earnings management which has no direct cash flow effect, real activities manipulation affects cash flows (Cohen and Zarowin, 2010).

4. Other Methodological Issues

4.1. Interval Estimates vs. Point Estimates

Earnings management, both accruals management and activities manipulation, is usually measured by relying on an industry-based expected level model which is fundamentally a mean adjusted by some control variables. This is based on a point estimate of the expected level and any difference between the expected and actual level is considered as indicative of earnings management. For instance, the difference between the point estimate of the expected level of discretionary expenses and its actual level is considered as abnormal discretionary expenses. The odds of the actual level being exactly equal to the expected level is very remote even for

firms that are not engaged in earnings management. That means that the null hypothesis of no earnings management can be very easily rejected.⁷ Therefore, it is more sensible to assume that there is an acceptable range for the expected level rather than an exact amount. While defining the acceptable range itself involves an arbitrary process, it seems superior to the naïve assumption that there is an exact mean above or below which earnings are manipulated. Therefore, we suggest that using interval estimates instead of the current point estimate models could result in more accurate inferences.

4.2. Interpretation Issues

In addition to the measurement issues, the interpretation of results produced by earnings management measures is also important. When it comes to interpretation of the results one should consider the motivation for the hypothesised earnings management behaviour i.e., whether upward or downward manipulation is anticipated, as there is growing evidence on downward manipulation of activities (e.g. Francis *et al.*, 2015, Makarem and Roberts, 2020). Consistency between the hypothesised direction of earnings management and the observed direction is vital since, as already discussed, the null hypothesis of no earnings management will most likely be rejected anyways because the absolute amount of earnings management is unlikely to be zero. In this regard, the direct relationship between earnings and its components i.e., accruals and cash flows (Equation 1) entails that income-increasing (income-decreasing) earnings management by firms suspected of manipulation should result in abnormally higher (lower) accruals and cash flows. Although it seems very straightforward, this point is sometimes missed. For example, Roychowdhury (2006) examines *income-increasing* real activities manipulation by firms that just beat zero earnings, hypothesising that suspect

⁷ By virtue of point estimated earnings management measures, in order to find support for an earnings management hypothesis, one only needs to find a theoretically supported consistence between the direction of observed earnings management (i.e., upward or downward manipulation) and the direction predicted in the research hypothesis.

observations are expected to show *unusually low cash flow from operations*. The results indicate unusually lower cash flow from operations by firms reporting a small profit and he interprets this as a sign of real activities manipulation by firms with incentives for *upward manipulation*. Although he finds evidence in support of his hypothesis, the hypothesis in the first place overlooks the relationship between cash flows and earnings.⁸

Given the direct relationship between earnings and cash flows from operations, any income-increasing earnings management is expected to result in unusually higher cash flow from operations and the inverse relationship cannot be interpreted as a sign of upward manipulation. Even if cash flow from operations is used as a measure of sales manipulation, that interpretation would not be consistent with the logic of earnings calculation as there is a direct relationship between sales and earnings. Therefore, it should be noted that interpretation of real activities manipulation results must take into account the hypothesised direction of manipulation as well as the relationship between earnings and the real activities manipulation measure.

4.3. Model Assessment Criteria

There has been a number of studies assessing the performance of earnings management models. Dechow *et al.* (1995) examine extreme cases of earnings management identified by the Securities and Exchange Commission suggesting that Jones and modified Jones models exhibit significantly lower standard errors than other models. Guay *et al.* (1996) test the same models as Dechow *et al.* (1995) did and report that while aggregate accruals models are generally subject to ‘considerable imprecision and/or misspecification’, the Jones and modified Jones models are the only ones to measure opportunistic accruals management. In the same vein, Wayne *et al.* (1996) examine aggregate accruals models and indicate that the Jones and

⁸ While the precise reason needs further investigation, the abnormally lower cash flow from operations of small profit firms observed by Roychowdhury (2006) might signify cash flow difficulties of small profit firms since firms struggling to produce a positive profit could also have issues regarding cash flow generation as well.

modified Jones models are able to identify discretionary accruals. Thomas and Zhang (2000) examine the ability of the accruals models to predict future accruals and indicate that only the Jones model has some predictive ability. While different approaches have been taken to assess accruals models, the approach of Dechow *et al.* (1995) seems to be the most appealing. This is because given the historical detachment of earnings management studies from the “real” practice of earnings management by firms, their study links the theory and practice by showing that extreme cases of detected earnings management actually indicate higher discretionary accruals.

In the context of real activities manipulation, the methodology used by Dechow *et al.* (1995) may not be applicable because even extreme cases of real activities manipulation may not be observed. real activities manipulation is very difficult to detect because it contains no violation of accounting standards and concerns business decisions that are under managerial discretion which might not be challenged by, or easily visible to, outsiders. This is, as Lo (2008) argues, because of the business judgment rule which protects managers against allegations of bad business decisions as well as the inherent uncertainty of business which leaves no absolute benchmark against which the performance of a firm can be assessed. Hence, distinguishing normal business activities from manipulated activities is a very daunting task, especially for outsiders because it is difficult to define normal business activities and what is considered to be a manipulated activity is perhaps an optimal action under some specific circumstances (Roychowdhury, 2006). For instance, selling assets at a bargain price which is booked as income regardless of motivation behind it (Ewert and Wagenhofer, 2005) could be a rational business decision or an attempt to push earnings up. Furthermore, as Srivastava (2019) indicates, intra-industry variations in competitive strategies need to be controlled for if the variable of interest is associated with firms’ competitive strategy otherwise what is inferred as activities manipulation could be due to differences in strategies.

Unlike accruals management, the performance of real activities manipulation measures has not been well studied and only recently have a few studies considered this. For instance, Cohen *et al.* (2016) test the specification of real activities manipulation measures in terms of Type I error and report that all the measures are seriously mis-specified. They suggest that the performance-matching solution suggested by Kothari *et al.* (2005) for accruals management might ameliorate the Type I error. Christensen *et al.* (2017) also examine several measures of real activities manipulation regarding their impact on future performance based on the assumption that engagement in earnings management results in lower future performance. They suggest that abnormal cash flow from operations and abnormal production costs are associated with lower future performance and lower future stock price while accruals management leads to higher future performance.

While statistical evaluation of the measures provides evidence on the efficiency of the models, it cannot provide insight into the effectiveness of the models in measuring what they purport to measure. Similar to the approach taken by Dechow *et al.* (1995) for accruals management, further studies are required to provide more compelling evidence about the link between the real activities manipulation measures and actual examples of activities manipulation, which would be a future avenue for earnings management researchers.

5. Concluding Remarks

Offering a comprehensive glimpse into the diverse spectrum of methodologies embraced by earnings management researchers, the primary aim of this article is to undertake a rigorous critical examination of the research methods meticulously wielded by accounting scholars. The focal point of this investigation lies in the intricate domain of real activities manipulation, as we seek to shed light on the methodologies employed by scholars in their endeavour to unravel this complex financial phenomenon. Particularly, this study draws on accruals management

studies to reach a comparable basis for assessing the current measures of real activities manipulation and identifies issues in the application of the current measures of real activities manipulation and interpretation of their results. Conducting an extensive exploration, this study delves into the content of five prominent accounting journals spanning the years from 2008 to 2020. The findings from this comprehensive survey reveal a clear prevailing trend in earnings management research. Specifically, the measurement of aggregate accruals emerges as the dominant methodology in this field, closely followed by the application of specialized measures tailored to capture the intricate nuances of real activities manipulation.

Our analysis suggests that, similar to accruals management studies, both aggregate and specific approaches could be applied to measuring real activities manipulation. Particularly, operating cash flows manipulation which was initially devised to capture sales manipulation could actually be taken as an aggregate measure of real activities manipulation. It is also discussed that combined measures of real activities manipulation could be misleading due to a lack of theory or a conceptual basis for combining different measures and the possible inconsistent results for individual measures. Finally, it is suggested that to assess the reliability of real activities manipulation measures, the link between what the current measures capture and real-world examples of activities manipulation is necessary. Real activities manipulation is a costly exercise for underlying shareholder wealth and hence deserves and requires significant further investigation.

Appendix 1: Example studies for research methods applied in earnings management studies*

Methodology	Example article
Aggregate accruals:	
• Jones (1991) discretionary accruals model • Dechow <i>et al.</i> (1995) modified Jones model • Kothari <i>et al.</i> (2005) performance matching model • Other variations of Jones model	Cunningham <i>et al.</i> (2020) Dyreng <i>et al.</i> (2012) Raman & Shahrur (2008) Zhao & Chen (2008)
Specific accruals:	
• Discretionary revenue • Other (e.g., loss reserves)	McNichols & Stubben (2008) Grace <i>et al.</i> (2010)
Specific real activities manipulation:	
• Roychowdhury (2006) model • Other (e.g., stock repurchases)	Boland and Godsell (2010) Burnett <i>et al.</i> (2012)
Combined real activities manipulation:	Zang (2012)
Earnings distribution:	Durtschi <i>et al.</i> (2009)
Ex-post evidence of manipulation:	
• SEC enforcement releases • Restatements	Schrand & Zechman (2012) Chiu <i>et al.</i> (2013)
Others:	
• Classification shifting • Survey • Experiment • Earnings management index • Theoretical modelling	Haw <i>et al.</i> (2011) de Jong <i>et al.</i> (2014) Brown (2014) Blaylock <i>et al.</i> (2015) Strobl (2013)

*This table shows methodologies employed in earnings management studies with an example article for each.

Table 1*: Descriptive analysis of journal articles on earnings management**Panel A: Frequency of articles by publication year**

Year	Number of articles	%
2008	17	11
2009	8	5
2010	14	9
2011	8	5
2012	16	10
2013	10	6
2014	15	9
2015	13	8
2016	7	4
2017	14	9
2018	7	4
2019	15	9
2020	<u>14</u>	<u>9</u>
Total	158	100

Panel B: Frequency of articles by journals

Journal	Number of articles	%
The Accounting Review	44	28
Journal of Accounting and Economics	31	20
Journal of Accounting Research	15	9
Contemporary Accounting Research	40	25
Review of Accounting Studies	<u>28</u>	<u>18</u>
Total	158	100

Panel C: Frequency of methodologies used

Methodology employed	Frequency of application	%
Aggregate accruals	88	39
Specific accruals	21	9
Specific real activities	33	15
Combined real activities	9	4
Earnings distribution	15	7
<i>Ex-post</i> evidence of manipulation	14	6
Others**	<u>45</u>	<u>20</u>
Total	176***	100

*The design of this table is based on McNichols (2000, p. 318).

**Others include methodologies with least frequency including survey, experiment, analytical, and classification shifting, and earnings management index.

*** Since many articles have used multiple methods, the total frequency of methodologies applied is greater than the number of articles.

References

- Abdou, H. A., Ellelly, N. N., Elamer, A. A. Hussainey, K. & Yazdifar, H. (2020). "Corporate Governance and Earnings Management Nexus: Evidence from the UK and Egypt Using Neural Networks", *International Journal of Finance & Economics*. 2020, 1-31.
- Alam, A., Uddin, M. & Yazdifar, H. (2017). Financing behaviour of R&D investments in the emerging markets: The role of alliance and financial system", *R&D Management*, 2017. 49(1), Pp.21-32
- Alzayed, N., Eskandari, R. Eshraghi, A. & Yazdifar, H. (2023, forthcoming). "Revisiting Corporate Governance and Financial Risk-Taking", *International Journal of Finance and Economics*.
- Association of Business Schools. (2018). Academic journal quality guide.
- Baber, W. R., Fairfield, P. M., & Haggard, J. A. (1991). The effect of concern about reported income on discretionary spending decisions: the case of research and development. *The Accounting Review*, 66(4), 818-829.
- Balios, D., Kalantonis, P., & Zaroulea, T. (2022). Corporate governance mechanisms and earnings management. *Journal for International Business and Entrepreneurship Development*, 14(3), 304-328.
- Barth, M. E., & Taylor, D. (2010). In defense of fair value: Weighing the evidence on earnings management and asset securitizations. *Journal of Accounting and Economics*, 49(1-2), 26-33.
- Bartov, E. (1993). The timing of asset sales and earnings manipulation. *The Accounting Review*, 68(4), 840-855.
- Beatty, A., Chamberlain, S. L., & Magliolo, J. (1995). Managing financial reports of commercial banks: the influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research*, 33, 231-261.
- Bens, D., Nagar, V., & Franco Wong, M. H. (2002). Real investment implications of employee stock option exercises. *Journal of Accounting Research*, 40, 359-393.
- Bens, D., Nagar, V., Skinner, D., & Franco Wong, M. H. (2003). Employee stock options, EPS dilution, and stock repurchases. *Journal of Accounting and Economics*, 36, 51-90.
- Blaylock, B., Gaertner, F., & Shevlin, T. (2015). The association between book-tax conformity and earnings management. *Review of Accounting Studies*, 20(1), 141-172.
- Boland, M., & Godsell, D. (2020). Local soldier fatalities and war profiteers: New tests of the political cost hypothesis. *Journal of Accounting and Economics*, 70(1), 1-31.

- Brown, T. (2014). Advantageous comparison and rationalization of earnings management. *Journal of Accounting Research*, 52(4), 849-876.
- Burgstahler, D., & Chuk, E. (2017). What have we learned about earnings management? Integrating discontinuity evidence. *Contemporary Accounting Research*, 34(2), 726–749.
- Burnett, B., Cripe, B., Martin, G., & McAllister, B. (2012). Audit quality and the trade-off between accretive stock repurchases and accrual-based earnings management. *The Accounting Review*, 87(6), 1861-1884.
- Chamberlain, T. W., Butt U. R., & Sarkar S. (2014). Accruals and real earnings management around debt covenant violations. *International Advances in Economic Research*, 20(1), 119-120.
- Cheng, X. (2012). Managing Specific Accruals vs. Structuring Transactions: Evidence from Banking Industry. *Advances in Accounting*, 28, 22-37.
- Chiu, P., Teoh, S., & Tian, F. (2013). Board interlocks and earnings management contagion. *The Accounting Review*, 88, 915-944.
- Christensen, T. E., Huffman, A. & Lewis-Western, M. F. (2022). Accruals Earnings Management Proxies: Prudent Business Decisions or Earnings Manipulation? *Journal of Business Finance & Accounting*, 1, 1-52.
- Cohen, D. A., Pandit, S., Wasley, C., & Zach, T. (2020). Measuring real activity management. *Contemporary Accounting Research*, 37, 1172-1198.
- Cohen, D., R. Mashruwala, & T. Zach. (2010). The use of advertising activities to meet earnings benchmarks: Evidence from monthly data. *Review of Accounting Studies*, 15, 808-832.
- Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, 50, 2-19.
- Collins, D. W., Pungaliya, R., & Vijh, A. M. (2017). The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review*, 92(2), 69-100.
- Cunningham, L. M., Johnson, B. A., Johnson, E. S., & Lisic, L. L. (2020). The Switch-Up: An Examination of Changes in Earnings Management after Receiving SEC Comment Letters. *Contemporary Accounting Research*, 37(2), 917-944.
- De Jong, A., G. Mertens, M. van der Poel, & van Dijk R. (2014). How Does Earnings Management Influence Investors' Perceptions of Firm Value? Survey Evidence from Financial Analysts. *Review of Accounting Studies*, 19(2), 606-627.

- DeAngelo, L. (1986). Accounting numbers as market valuation substitutes: A study of management buyouts of public stockholders. *The Accounting Review*, 61, 400-420.
- Dechow, P., & Sloan, R. (1991). Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting and Economics*, 14, 51-89.
- Dechow, P., Hutton, A., Kim, J. H., & Sloan, R. (2012). Detecting earnings management: a new approach. *Journal of Accounting Research*, 50, 275-334.
- Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review*, 70, 193-225.
- DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17(1-2), 145-176.
- DeFond, M., Hu, J., Hung, M., & Li, S. (2020). The effect of fair value accounting on the performance evaluation role of earnings. *Journal of Accounting and Economics*, 70(2-3), 1-23.
- Durtschi, C., & P. Easton. (2009). Earnings management? Erroneous inferences based on earnings frequency distributions. *Journal of Accounting Research*, 47(5), 1249-1281.
- Dyreng, S., Hanlon, M., & Maydew, E. (2012). Where do firms manage earnings? *Review of Accounting Studies*, 17, 649-687.
- Ewert, R., & Wagenhofer, A. (2005). Economic Effects of Tightening Accounting Standards to Restrict Earnings Management. *The Accounting Review*, 43(4), 1101-1124.
- Francis, B., Hasan, I., & Li, L. (2016). Evidence for the existence of downward real-activity earnings management. *Journal of Accounting, Auditing & Finance*, 31, 212-248.
- Grace, M. F., & Leverty, J. T. (2010). Political Cost Incentives for Managing the Property-Liability Insurer Loss Reserve. *Journal of Accounting Research*, 48, 21-49.
- Guay, W., Kothari, S., & Watts, R. (1996). A market-based evaluation of discretionary accrual models. *Journal of Accounting Research*, 34, 83-105.
- Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, 27(3), 1-34.
- Haw, I., Ho, S., & Li, A. (2011). Corporate governance and earnings management by classification shifting. *Contemporary Accounting Research*, 28(2), 517-553.
- Healy, P. M. (1985). The effect of Bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(1-3), 85-107.
- Herrmann, D., Inoue, T., & Thomas, W. (2003). The sale of assets to manage earnings in Japan. *Journal of Accounting Research*, 41, 89-108.

- Hribar, P., Jenkins, N., & Johnson, W. (2006). Stock repurchases as an earnings management device. *Journal of Accounting and Economics*, 41, 3-27.
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193-228.
- Khodakarami, M., Yazdifar, H., Faraji Khaledi, A., Bagheri Kheirabadi, S. & Sarlak, A. (2023, forthcoming). The Level of Islamic Religiosity of the Local Community and Corporate Environmental Responsibility Disclosure: Evidence from Iran. *Journal of Business Ethics*.
- Khodamipour, A., Yazdifar, H., Askari Shahamabadm, M. & Khajavi, P. (2023, forthcoming). Modelling Barriers to Social Responsibility Accounting (SRA) and Ranking its Implementation Strategies to Support Sustainable Performance – a study in an emerging market”, *Journal of Modelling in Management*.
- Kim, J., Kim, J. W., & Lim, J. (2019). Does XBRL Adoption Constrain Earnings Management? Early Evidence from Mandated U.S. Filers. *Contemporary Accounting Research*, 36(4), 2610–2634.
- Kothari, S. P. (2001). Capital markets research in accounting. *Journal of Accounting and Economics*, 31, 105-231.
- Kothari, S. P., Leone, A., & Wasley, C. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163-197.
- Lo, K., Ramos, F., & Rogo, R. (2017). Earnings management and annual report readability. *Journal of Accounting and Economics*, 63, 1-25.
- Makarem, N., & Roberts, C. (2020). Earnings management to avoid earnings boosts. *Journal of Applied Accounting Research*, 21(4), 657-676.
- Makarem, N., Singh, H., Sultana, N., & Henderson, D. (2023). Policy uncertainty and real activities manipulation: evidence from Brexit. *Review of Quantitative Finance and Accounting*, 1-26.
- Nasser, A., Sayyadi, M., Yazdifar, H., Eskandari, R. & Albahloul, M., (2018). Causality between Cash Flow and Earnings – Evidence from Tehran (Iran) Stock Exchange, *Journal of Emerging Market Finance*, 17(2), pp. 210-228.
- McNichols, M. F. (2000). Research Design Issues in Earnings Management Studies. *Journal of Accounting and Public Policy*, 19(4-5), 313-345.
- McNichols, M., & Wilson, G. P. (1988). Evidence of Earnings Management from the Provision for Bad Debts. *Journal of Accounting Research*, 26(Supplement), 1-31.
- McNichols, M., & Stubben, S. (2008). Does earnings management affect firms’ investment decisions? *The Accounting Review*, 83, 1571-1603.

- Ngo, N.Q.N., Ly, U.N., Truong, Q.M., & Ha, M.T. (2022). The impact of firm life cycle on abnormal earnings in financial statement quality: evidence from Vietnam. *Journal for Global Business Advancement*, 15(6), 686-713.
- Owens, E. L., J. S. Wu, & Zimmerman, J. (2016). Idiosyncratic shocks to firm underlying economics and abnormal accruals. *The Accounting Review*, 92(2), 183-219.
- Perry, S., & Grinaker, R. (1994). Earnings expectations and discretionary research and development spending. *Accounting Horizons*, 8(4), 43-51.
- Petroni, K. R. (1992). Optimistic reporting in the property casualty insurance industry. *Journal of Accounting and Economics*, 15, 485-508.
- Raman, K., & H. Shahrur. (2008). Relationship-specific investments and earnings management: Evidence on corporate suppliers and customers. *The Accounting Review*, 83(4), 1041-1081.
- Ronen, J., & Yaari, V. (2008). *The Accrual Process. Earnings Management Emerging Insights in Theory, Practice, and Research*. Springer, New York.
- Roychowdhury, S. (2006). Earning Management through Real Activities Manipulation. *Journal of Accounting and Economics*, 42(3), 335-370.
- Schrand, C., & Zechman, S. (2012). Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53, 311-329.
- Sletten, E., Ertimur, Y., Sunder, J., & Weber, J. (2018). When and why do IPO firms manage earnings? *Review of Accounting Studies*, 23(3), 872–906.
- Srivastava, A. (2019). Improving the measures of real earnings management. *Review of Accounting Studies*, 24, 1277–1316.
- Strobl, G. (2013). Earnings Manipulation and the Cost of Capital. *Journal of Accounting Research*, 51, 449-473.
- Thomas, J., & Zhang, X. J. (2000). Identifying unexpected accruals: a comparison of current approaches. *Journal of Accounting and Public Policy*, 19, 347-376.
- Walker, M. (2013). How far can we trust earnings numbers? What research tells us about earnings management. *Accounting and Business Research*, 43(4), 445-481.
- Wayne, R., Guay, S., Kothari, S.P., & Watts R.L. (1996). A market based evaluation of discretionary accrual measures. *Journal of Accounting Research*, 34, 83-105.
- Xu, R., G. K. Taylor, & Dugan, M. T. (2007). Review of real earnings management literature. *Journal of Accounting Literature*, 46, 195-228.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675-703.

Zhao, Y., & Chen, K.H. (2008). Staggered boards and earnings management. *The Accounting Review*, 83, 1347-1381.