

Have the Companies Been Engaging in Earnings Management? Evidence from Jordanian Industrial Companies

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Abstract

The purpose of this study is to examine whether the Jordanian Industrial Companies have engaged in earnings management or not. The final sample of companies to be included was based on those companies that were identified across Amman Stock Exchange that are constantly report their earnings information due in regular basis to be public-traded for the years (2005–2012), regarding operating income, cash flow, revenues, accounts receivable, and assets is examined using the Modified Jones Model (1991) to separate discretionary and non-discretionary accruals. The results of the data analysis indicate that the industrial companies are engaging in some earnings management as indicated by the statistical significance of the variables in the Modified Jones Model. Also; the results show that total accruals, revenues, and fixed assets were significant predictors of discretionary accruals. Implications of the results and recommendations for academics and practitioners are provided.

Keywords: earnings management, discretionary accruals, Amman Stock Exchange, modified Jones model

1. Introduction

1.1 Introduce the Problem

Accounting policy choice can be divided into two categories: accounting policies and discretionary accruals. Examples of the latter include the timing and amounts of extraordinary items such as write-offs and provisions for reorganization, credit losses, inventory values, etc., whereby managers are able to determine when and how much of revenue and expense to classify on a current income statement. The former, accounting policies are more rigid in the sense that they dictate when and how much revenue and expense to classify in a certain period. Examples of these include amortization policies and revenue recognition. The underlying purpose of accrual accounting is to allow investors to examine the economic performance of a company based on the income and expenses that are incurred during a given period of time (Dechow & Skinner, 2000). According to Roman (2009), "Earnings management occurs when firm management has the opportunity to make accounting decisions that change reported income and exploit those opportunities".

However, with a greater interest in accruals has also come a greater interest in the idea that companies may be manipulating accruals and engaging in what is known as earnings management as a means of demonstrating strength to stock holders for the sake of increasing equity values (McNichols, 2000). Accruals may be significant predictors of future cash flows and stock returns because of the way in which companies account for discretionary accruals as a means of showing higher earnings to investors. Economic and financial theory assumes that managers are, by nature, rational and opportunistic in the pursuit of their personal interests Cormier and Magnan (1996).

We will use the modified Jones model (1991) to calculate discretionary accruals in order to explore whether the Industrial Jordanian Companies have been engaging in earnings management or not. To calculate this, Dechow et al. (1995) modified the Jones model that is; they deduct the variance of receivables (ΔREC). Jones (1991) believes that the variations of revenue would bring variations on operating capital, causing a change in accruals, and the depreciations on fixed assets would decrease the accruals. Because of this, Jones uses variance of revenue (ΔREV) and fixed asset (PPT), as independent variables to predict the discretionary accruals which

considered as an indicator of conducting earnings management. Chen (2010) mentioned in his study that the modified Jones model is still the best approach to detect earnings management compared to all other methods in the educational circles. Our primary sample consists of Jordanian industrial companies listed in Amman Stock Exchanges during (1998 to 2011) that constantly keep issuing the financial reporting for the selected test period. The total number of companies that did so was 59 companies.

The remainder of this paper is organized as follows. Section 2 reviews the problem definition, previous literature and develops the hypotheses. Section 3 provides the research design. Data selection and descriptive statistics of variables are presented in section 4. Empirical results are reported in section 5. Section 6 concludes the study.

1.2 Problem Definition

According to Roman (2009), "Earnings management occurs when firm management has the opportunity to make accounting decisions that change reported income and exploit those opportunities". Theoretical analysis from Lambert (1984), Dye (1988) and Fudenberg and Tirole (1995) suggest that the shareholder wealth maximizing compensation contract offered by the firm to the CEO will induce the CEO to manage earnings. Theoretical analysis from Healy (1985) and Degeorge, Patel and Zechhauser (1999) suggest that for some compensation functions, the CEO will set a policy of achieving the earnings target via accrual management, if possible. However, if accruals manipulation will be insufficient to raise reported income to the target, the CEO will seek to minimize current reported expenses in order to provide additional discretion to boost future earnings. Jones (1991) introduced a regression approach to control for non-discretionary factors in influencing accruals, specifying a linear relation between total accruals and change in sales and property, plant and equipment. Sloan (1996) provides empirical evidence (based on US data) that the current earnings performance of US companies is more persistent for companies with low levels of accruals. Hence, investors tend to overweigh accruals and are subsequently surprised if accruals turn out to be less persistent than expected. This overestimation of the persistence of earnings leads to abnormal positive returns for low accrual companies and abnormal negative returns for companies which have low levels of accruals.

Myers et al. (2007) argue that the firms that had preceding positive earnings are more likely to manipulate earnings, to keep a consecutive earnings growth trend. Zang (2006) analyzes the tradeoffs between accrual manipulations and real earnings management, her results show that real manipulation is positively correlated with the costs of accrual manipulation, and that accrual and real manipulations are negatively correlated.

The distinction between discretionary and non-discretionary components of accruals is important. In earnings management, it is accruals that change as a result of management's accounting decisions that are of interest, which is discretionary accrual. While changes in a company's underlying performance will cause non-discretionary accruals to change. (Islam et al, 2011).

Based on the above, this study is aiming to answer the following statement, which represents the study question:

Do Jordanian industrial companies have been engaging in earnings management by using discretionary accruals?

1.3 Literature Review

Marquardt and Wiedman (2004) find evidence that firm with small earnings increases understate special items but do not overstate revenues. They also find evidence that firms use discretion in revenues to increase (decrease) earnings prior to equity issuances. Caylor (2009) uses discretionary revenues to test their use for avoiding reporting negative earnings surprises and finds evidence that managers use discretion in revenues that affects both accounts receivable and deferred revenues to report positive earnings surprises.

From a broad perspective, research has shown that accruals are indeed related to the future cash flows of a company (Orpurt & Zang, 2009). The various components of accruals along with total operating cash flows have been shown to be significant predictors of future cash flows (Luo, 2008). Research has indicated that the reason for the relationship between accruals and future cash flows is because accruals tend to increase when companies increase the amount of money spent on investments (Kothari, Leone & Wasley, 2005). As a company increases its investments, accruals increase along with the larger growth that occurs in the organization that results in increased cash flows over time. In fact, research conducted using financial data from firms in the United Kingdom showed that when earnings were disaggregated into cash flows and accruals, the ability to predict future cash flows in those firms was increased (Al-Attar & Hussain, 2004).

Bartov (1993) finds that firms with negative earnings changes report higher profits from asset sales, suggesting that the profits are used to blunt the bad earnings news. Myers et al. (2007) argue that the firms that had preceding positive earnings are more likely to manipulate earnings, to keep a consecutive earnings growth trend.

Zang (2006) analyzes the tradeoffs between accrual manipulations and real earnings management, her results show that real manipulation is positively correlated with the costs of accrual manipulation, and that accrual and real manipulations are negatively correlated.

Economic and financial theory assumes that managers are, by nature, rational and opportunistic in the pursuit of their personal interests, Cormier and Magnan (1996). These interests are determined by the terms set out in contracts between managers and the company, as well as in contracts between the company and specific external parties such as suppliers, lenders, governments and regulators. It's important to note that earnings management is not the same as earnings manipulation. Earnings management, however, complies with GAAP whereas earnings manipulation does not. Alireza D. and Daniel Z. (2003) indicated that the mean of abnormal accruals was statistically significant and the sign of abnormal accruals was positive. Their findings also indicated that the changes in accruals had an increasing effect on reported earnings numbers and earnings were managed upward.

The general finding of the research that has been conducted regarding accruals and future cash flows is that accruals provide a much better means by which to predict future cash flows as opposed to examining overall earnings (Dechow, Kothari & Watts, 1998). However, it must be remembered that managers and company leaders can influence reported net income through the reporting of discretionary accruals that have no direct impact on current cash flows (Doyle, Lundholm & Soliman, 2003). A company may account for higher levels of discretionary accruals in the current reporting period in order to reflect future investments that they expect will result in increased cash flows.

Sloan (1996) provides empirical evidence (based on US data) that the current earnings performance of US companies is more persistent for companies with low levels of accruals. Hence, investors tend to overweigh accruals and are subsequently surprised if accruals turn out to be less persistent than expected. This overestimation of the persistence of earnings leads to abnormal positive returns for low accrual companies and abnormal negative returns for companies which have low levels of accruals.

Companies can manipulate accruals in the short-term to influence to increase predictions about future cash flows as a way of increasing stock price. Unfortunately, accruals have become as important if not more important than earnings in driving the movement of investors into and out of stocks in relation to expected future performance (Callen & Segal, 2004). Research has shown that earnings have had a reduced relationship with stock price over the past few years (Kim & Kross, 2005).

In terms of stock returns, Kang, Liu & Qi (2010) found in their research that discretionary accruals were indeed significant predictors of stock returns. However, Barth, Beaver, Hand and Landsman (2005) explained based on their research that separating accruals into their components increased the ability to predict future stock returns with less error. Simply using accruals as a way of predicting future stock returns without considering the impact of the different types of accruals can result in inaccurate predictions (Hirshleifer, Hou & Teoh, 2009).

Given that accruals may not be the best indicator of future cash flows and stock returns, some researchers have argued that in order to determine the proper role of accruals to predict future cash flows and stock returns for a given company, accruals must be separated so that potential manipulations and the use of earnings management on the part of a company can be identified (Dechow & Dichev, 2002). The Modified Jones Model was created from the original Jones Model in which total accruals were calculated by taking reported net income and reducing it by the cash flow from operations (Dechow, Sloan & Sweeney, 1995). The reason for reducing total net income by cash flow from operations is to create a measure of accruals that is more accurate based on non-discretionary accruals that could serve to inflate net income. The Modified Jones Model also involves the reduction of revenues by accounts receivable (Bartov, Gul & Tsui, 2000; Ebrahim, 2001).

The literature that has been reviewed has suggested that while the use of accruals to manage earnings has gained popularity in recent years, companies have also increased their manipulation of accruals as a means of attempting to manipulate earnings. The importance of the current study and the contribution that can be made to the existing literature is to identify if industrial companies in Jordan are indeed engaging in earnings management.

1.4 Hypothesis Development

Based on the literature that has been reviewed, it is hypothesized that the variables in the Modified Jones Model from the financial data of the industrial companies in Jordan included in this study will be significant. It is hypothesized that the earnings management of industrial companies in this study will be significantly related to their discretionary accruals. It is expected that the data that will be analyzed will demonstrate the same findings as many previous studies, which is that discretionary accruals are an important part of the earnings management

of companies. We can develop the study null hypothesis as follows:

H1: Jordanian Industrial Companies have not been engaging in earnings management by using discretionary accruals.

2. Method

2.1 Data Gathering

The data for this study have been gathered from Industrial companies in Jordan. The financial data from a total of 59 companies was obtained from publicly available sources of financial information to be included in the study. The final sample of companies to be included was based on those companies that were identified across Amman Stock Exchange that are constantly report their earnings information due in regular basis to be public-traded for the years (2005-2012).

Financial variable representing net operating income, cash flows from operating activities, total assets, operation revenues, net accounts receivable, and total fixed assets were collected from the companies. These variables were collected from the 59 companies for the period from 2005 through 2012. The reason for choosing to analyze financial data from this period is because it represents recent data given the economic turmoil that many companies in the Jordan have experienced in relation to the global financial crisis. The conclusions and recommendations that are provided as a result of the data analysis will be relevant to the stakeholders.

2.2 Methodology

Studies of earnings management around firm-specific events commonly use models of aggregate accruals. The distinction between discretionary and non-discretionary components of accruals is important. In earnings management, it is accruals that change as a result of management's accounting decisions that are of interest, which is discretionary accrual. While changes in a company's underlying performance will cause non-discretionary accruals to change. (Islam et al, 2011).

A variety of accrual models have been used in recent years. Most accrual models are some variation of the cross-sectional Jones model (Jones 1991; DeFond and Jiambalvo 1994). In these models, nondiscretionary, or normal, accruals are usually estimated as a linear function of change in revenues and gross property, plant, and equipment. The models are usually estimated by industry and year, and the residual is the discretionary accruals estimate.

2.3 The Jones Model (1991)

Jennifer Jones (1991) proposes a model that attempts to control for the effects of changes in a firm's economic circumstances on non-discretionary accruals. She indicates that changes in total assets, gross revenue, and gross property plant and equipment (PPE) are the determinants of non-discretionary accruals. The idea of the Jones (1991) model is that sales revenue proxies for the economic events that generate current non-discretionary accruals, while gross PPE controls for non-discretionary accruals related to depreciation expense. The modified Jones model (Dechow et al. 1995) uses change in cash revenues rather than change in total revenues because some credit revenues may be discretionary. Thus the Jones (1991) model is based on two key assumptions. Firstly, sales revenue is assumed to be unmanaged. Secondly, changes in current assets and liabilities are assumed to be driven by changes in sales revenue.

2.4 The Modified Jones Model (1995)

A major weakness of the Jones (1991) model is its inability to capture the impact of sales-based manipulation, since changes in sales are assumed to result in a non-discretionary model (Dechow et al. 1995). In an attempt to overcome this limitation, Dechow et al. (1995) proposed a modification to the standard-Jones model. The modified Jones model is identical the standard Jones model (1991) with the exception that the change in debtors (ΔREC) is subtracted from ΔREV at the second stage, so that; the change in revenues is adjusted for the change in receivables in the event period to determine non-discretionary accruals. The original Jones model (1991) uses a three-stage approach to split total accruals into their discretionary (managed) and nondiscretionary components.

The data collected for this study were analyzed based on the Modified Jones Model. Appendix A provides a full explanation of the Modified Jones Model from (Bartov, Gul & Tsui, 2000). The Modified Jones Model allows for non-discretionary accruals to be estimated based on the following formula:

$$NDA_t = \alpha_1(1/At - 1) + \alpha_2[(\Delta REV_t - \Delta REC_t) / At - 1] + \alpha_3(PPE_t / At - 1)$$

Where,

NDA =Non-Discretionary Accruals;

At – 1=Total assets at t – 1;

ΔREV_t =Revenues in year t less revenues in year t-1;

$\Delta RECT_t$ =Accounts Receivable in year t less revenues in year t-1;

PPE_t =Fixed Assets in year t.

In order to calculate non-discretionary accruals, it was necessary to calculate total accruals according to the Modified Jones Model, which were calculated as net operating income–net cash flows from operating activities. Then, non-discretionary accruals were calculated as total accruals / total assets.

Once the variables for the Modified Jones Model were calculated, a linear regression analysis can be performed in which the non-discretionary accruals are regressed on the independent variables of scaled accruals, scaled revenues, and scaled fixed assets. The null hypothesis for the model is that the independent variables are not significant predictors of the dependent variable (NDA_t) which means that Jordanian industrial companies have not engaged in earnings management. The alternative hypothesis is that the independent variables are significant predictors of the dependent variable, which would indicate that the non-discretionary accruals are significant in predicting of earnings management by the Jordanian industrial companies. In addition to the regression analysis using the Modified Jones Model, the analysis of the data involves the presentation of the descriptive statistics of the raw, unscaled data collected from the industrial companies in the sample, as well as a correlation analysis of the un-scaled data in order to determine if indicators of earnings management are associated with each other.

3. Empirical Analysis

Table 1 shows the descriptive statistics of the financial data for the companies in the sample. The mean net operating income for the industrial firms was only about JD 6 million. However, the range of net operating incomes for the companies was from nearly -JD10 million to about JD 359 million. Furthermore, the mean net cash flow from operations was similar at about JD 6 million, but with a range from–JD 25 million to JD 311 million. The total assets of the companies also showed a large range with a mean of JD 48 million. The mean operating revenues for the companies was about JD 27 million with a mean net accounts receivable of JD 6 million. Finally, the mean total fixed assets of the companies were about JD 17 million.

Table 1. Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
Net Operating Income	-9,821,182.00	359,341,000.00	6,362,532.42	33,818,900.15
Net Cash Flow from (Used In) Operating Activities	-25,192,100.00	310,878,000.00	6,276,636.54	32,051,619.89
Total Assets	552,375.00	1,223,269,000.00	48,049,136.63	139,057,140.36
Operating Revenues	-1,695,575.00	846,891,895.00	27,092,622.04	99,658,743.54
Account Receivables, Net	0.00	222,973,000.00	6,022,593.00	18,377,226.57
Total Fixed Assets	4.00	471,728,000.00	17,486,990.66	54,276,611.93

The importance of the descriptive statistics is the large dispersion of financial performance of the industrial companies. For some of the financial indicators, such as net operating income and net cash flow, the mean values seem very low. However, upon examining the range of values for the two variables, particularly the minimum values, it is much easier to understand why the mean values are so low. On a broader level, given that the data represent the period from 2005 through 2012, it is possible to understand how some of the companies could have such large negative values for net operating income, net cash flow, and operating revenues. The low mean values for each of the variables in relation to the maximum values do suggest that more of the companies had lower values for the variables while a few companies had very strong financial performance over the period that the data represent.

Table 2 shows the results of a correlation analysis for the financial data collected from the industrial companies. Not surprisingly, each of the financial variables was significantly correlated with each other. In addition, the correlation coefficients shown in the table indicate that the correlations were very strong. The correlations

ranged from 0.08 to 0.97. While these results may not seem important given that it would be expected that these indicators of financial performance would be significantly correlated with each other as they generally impact each other, the table allows for the conclusion that there is no unique characteristics in the financial performance of the companies.

Table 2. Correlation analysis

	1	2	3	4	5	6	7	8
Net Operating Income	1.00							
Net Cash Flow from (Used In) Operating Activities	0.97**	1.00						
Total Assets	0.91**	0.94**	1.00					
Operating Revenues	0.89**	0.89**	0.92**	1.00				
Account Receivables, Net	0.89**	0.86**	0.89**	0.80**	1.00			
Total Fixed Assets	0.84**	0.89**	0.96**	0.87**	0.81**	1.00		
Total Accruals	0.33**	0.09	0.08	0.20**	0.32**	-0.05	1.00	
NDA	0.08	0.01	0.07	0.06**	0.10*	0.04	0.29**	1.00

**p<0.01; *p<0.05.

What is perhaps more interesting is that the table includes the total accruals and the non-discretionary accruals (NDA) that were calculated for the Modified Jones Model. The total accruals were significantly correlated with net operating income, operating revenues, and net accounts receivable (0.33, 0.20 and 0.32) respectively. However, the non-discretionary accruals were only significantly correlated with operating revenues, net accounts receivable, and total accruals (0.06, 0.10 and 0.29) respectively. One conclusion that might be drawn from these correlations is that not only is non-discretionary accruals an important aspect of total accruals in these industrial companies, but they do indeed provide more specific information about a company's performance and use of resources given that they are only significantly correlated with operating revenues, and net accounts receivable. Furthermore, the positive beta coefficients for the variables indicate that as operating revenues and net accounts receivable increase, non-discretionary accruals also increase. These results show that Jordanian Industrial Companies have been engaging in some form of earnings management during the tested period.

The purpose of the Modified Jones Model in which non-discretionary accruals are calculated by scaling revenues by accounts receivable is to reduce some of the noise or anomalies in total accruals. Based on the correlation analysis, it would seem that this purpose has been achieved in the data from the industrial companies in Jordan. While total accruals were associated with net operating income, operating revenues, and net accounts receivable, the non-discretionary accruals were only associated with operating revenues and net accounts receivable. There was no correlation between non-discretionary accruals and net operating income; which also supports our results that the Jordanian Industrial Companies used discretionary accrual to engage earnings management. This result supports our alternative hypothesis that Industrial companies in Jordan have been engaging in some form of earnings management by using discretionary accruals.

Table 3 shows the results of the regression analysis in which non-discretionary accruals were regressed on the independent variables of scaled total accruals, scaled revenues, and scaled fixed assets. As was hypothesized, all of the independent variables in the Modified Jones Model for the industrial firms were significant predictors of non-discretionary accruals. The scaled accruals, the scaled revenues, and the scaled fixed assets were all significant predictors of the non-discretionary accruals.

Table 3. Non-Discretionary accruals regressed on independent variables in the modified jones model

	Beta	S.E.	
(Constant)	0.043	0.014	0.001556
Scaled Accruals	-91048.050	26723.064	0.000713
Scaled Revenues	-0.047	0.015	0.001895
Scaled Fixed Assets	-0.103	0.029	0.000461
Adjusted R-Squared	0.065		

***p<0.001; **p<0.01.

The conclusion that can be drawn from the results of the linear regression analysis using the Modified Jones Model is that the industrial companies in this study have been engaging in some form of earnings management over the tested years. The combined results of the correlation analysis and the linear regression analysis serve to demonstrate the importance of discretionary accruals and the fact that they should be considered when attempting to use accruals to make predictions about earnings management of industrial companies in Jordan. It is worth noting, however, that only 6.5% (Adjusted R –Squared) of the variance in the non-discretionary accruals was explained by the independent variables in the model. This does leave room for consideration of other variables that might be added to the Modified Jones Model in order to provide more information about the proper role that accruals should have in predicting earnings management in Jordanian industrial companies.

4. Discussions and Recommendations

The purpose of this study was to examine whether the Jordanian Industrial Companies have been engaging in earnings management during the tested financial periods. The basis for this research was the idea that total accruals should not be used as a means of earnings management. Instead, investors should more closely examine both non-discretionary accruals and especially discretionary accruals as large discretionary accruals may indicate earnings management on the part of companies that are attempting to manipulate earnings. The results of this study have confirmed the idea that discretionary accruals are a better source of information with regards to predicting earnings management.

The results of the data analysis that was performed using the data from Jordanian Industrial Companies showed that total accruals, revenues, and fixed assets were significant predictors of discretionary accruals. The conclusion that can be drawn from these findings is that discretionary accruals were an important part of the operating revenues and the accounts receivable of the companies. The correlation analysis indicated that a positive correlation existed between non-discretionary accruals and operating revenues and net accounts receivable. The conclusion that might be drawn is that as the operating revenues and net accounts receivable of the industrial companies' increase, the non-discretionary accruals that are accounted for also increase. Alireza D. and Daniel Z. (2003) indicated that the mean of abnormal accruals was statistically significant and the sign of abnormal accruals was positive. Their findings also indicated that the changes in accruals had an increasing effect on reported earnings numbers and earnings were managed upward.

The findings of this study indicate that the using of accruals in predicting earnings management is one that is based on a more specific issue: non-discretionary accruals. What is meant by this is that the role of using accruals to engage earnings management should involve examining the components of total accruals rather than simply discovering the engagement of earnings management. In reality, large parts of total accruals can be for discretionary purposes and non-discretionary purposes. Investors must be willing to take the time to think about the range of accrual components when attempting to discover the engagement in earnings management. Our result highlights the importance of controlling for financial performance when investigating earnings management stimuli that are correlated with financial performance. Finally, a modified version of the model developed by Jones (1991) exhibits the most power in detecting earnings management.

A recommendation that is made based on the findings of this study and the findings of the literature that was reviewed is that both academics and practitioners in the listed industrial companies and other should focus more time and effort in examining the way in which accrual components affect earnings management of companies in a variety of industries. While some of the literature is indeed very specific involving data from companies in specific industries, a great deal of the literature seems to be highly theoretical in nature, and often focus on specific industries in specific countries or regions of the world. Given the global nature of investments and the impact that the global financial crisis has had on encouraging people to seek out investments around the world rather than only in the countries in which they live, more research is needed on the accrual accounting, earnings management, and the way in which discretionary accruals are being used.

Practitioners should become part of the process of educating their clients about the importance of not focusing on total accruals, but instead focusing on discretionary accruals as compared to non-discretionary accruals. Investors need to understand how companies may use discretionary accruals to engage in earnings management.

References

- Al-Attar, A., & Hussain, S. (2004). *Corporate data and future cash flows*. *Journal of Business Finance & Accounting*, 31(7–8), 861–903. <http://dx.doi.org/10.1111/j.0306-686X.2004.00560.x>
- Alireza, D., & Daniel, Z. (2003). *Earnings Management and the Stock Market Environment*. Discussion paper, University of New Haven, USA.

- Barth, M. E., Beaver, W. H., Hand, J. R., & Landsman, W. R. (2005). Accruals, accounting-based valuation models, and the prediction of equity values. *Journal of Accounting, Auditing & Finance*, 20(4), 311–345. [http://dx.doi.org/10.1016/S0165-4101\(01\)00015-5](http://dx.doi.org/10.1016/S0165-4101(01)00015-5)
- Bartov, E., Gul, F. A., & Tsui, J. S. (2000). *Discretionary-accruals models and audit qualifications*. *Journal of Accounting and Economics*, 30(3), 421–452.
- Callen, J. L., & Segal, D. (2004). *Do Accruals Drive Firm Level Stock Returns? A Variance Decomposition Analysis*. *Journal of Accounting Research*, 42(3), 527–560. <http://dx.doi.org/10.1111/j.1475-679X.2004.t01-1-00140.x>
- Chen & Tianran (2010). Analysis on accrual-based models in detecting earnings management. *Lingnan Journal of Banking, Finance and Economics*, 2. Retrieved from <http://commons.ln.edu.hk/ljbfe/vol2/iss1/5>
- Caylor, R. (2009). Strategic revenue recognition to achieve earnings benchmarks. *Journal of Accounting and Public Policy*.
- Cormier, D., & Magnan, M. (1996). Decision. *CA Magazine*, 129(7), 38.
- Dechow, P. M. (1994). Accounting Earnings and Cash Flows as Measures of Firm Performance the Role of Accounting Accruals. *Journal of Accounting and Economics*, 18, 3–42. [http://dx.doi.org/10.1016/0165-4101\(94\)90016-7](http://dx.doi.org/10.1016/0165-4101(94)90016-7)
- Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The accounting review*, 77(1), 35–59. <http://dx.doi.org/10.2308/accr.2002.77.s-1.35>
- Dechow, P. M., Kothari, S. P., & Watts, L. R. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133–168. [http://dx.doi.org/10.1016/S0165-4101\(98\)00020-2](http://dx.doi.org/10.1016/S0165-4101(98)00020-2)
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, 193–225.
- Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons*, 14(2), 235–250. <http://dx.doi.org/10.2308/acch.2000.14.2.235>
- Doyle, J. T., Lundholm, R. J., & Soliman, M. T. (2003). The predictive value of expenses excluded from pro forma earnings. *Review of Accounting Studies*, 8(2–3), 145–174. <http://dx.doi.org/10.1023/A:1024472210359>
- Ebrahim, A. (2001). Auditing quality, auditor tenure, client importance, and earnings management: An additional evidence. *Journal of Audit Practices*, 1(4), 78–99.
- Finger, C. A. (1994). The ability of earnings to predict future earnings and cash flow. *Journal of Accounting Research*, 32(2), 210–23. <http://dx.doi.org/10.2307/2491282>
- Jones, J. J. (1991). Earnings Management during Import Relief Investigation. *Journal of Accounting Research*, 29, 193–228. <http://dx.doi.org/10.2307/2491047>
- Healy, P. M. (1985). *The effect of bonus schemes on accounting decisions*. *Journal of Accounting and Economics*, (April), 85–107. [http://dx.doi.org/10.1016/0165-4101\(85\)90029-1](http://dx.doi.org/10.1016/0165-4101(85)90029-1)
- Hirshleifer, D., Hou, K., & Teoh, S. H. (2009). Accruals, cash flows, and aggregate stock returns. *Journal of Financial Economics*, 91(3), 389–406. <http://dx.doi.org/10.1016/j.jfineco.2007.11.009>
- Islam, Md., Aminul, A. R., & Ahamd, Z. (2011). Is Modified Jones Model Effective in Detecting Earnings Management? Evidence from A Developing Economy. *International Journal of Economics and Finance*, 3(2).
- Kang, Q., Liu, Q., & Qi, R. (2010). Predicting stock market returns with aggregate discretionary accruals. *Journal of Accounting Research*, 48(4), 815–858.
- Kim, M., & Kross, W. (2005). The ability of earnings to predict future operating cash flows has been increasing—not decreasing. *Journal of Accounting Research*, 43(5), 753–780. <http://dx.doi.org/10.1111/j.1475-679X.2005.00189.x>
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of accounting and economics*, 39(1), 163–197. <http://dx.doi.org/10.1016/j.jacceco.2004.11.002>
- Luo, M. (2008). Unusual operating cash flows and stock returns. *Journal of Accounting and Public Policy*, 27(5),

420–429. <http://dx.doi.org/10.1016/j.jaccpubpol.2008.07.004>

- McNichols, M. F. (2001). Research design issues in earnings management studies. *Journal of accounting and Public Policy*, 19(4), 313–345.
- Myers, J. N., Myers, L. A., & Skinner, D. J. (2007). Earnings Momentum and Earnings Management. *Journal of Accounting, Auditing and Finance*, 22, 249–284.
- Orpurt, S. F., & Zang, Y. (2009). Do direct cash flow disclosures help predict future operating cash flows and earnings? *The Accounting Review*, 84(3), 893–935. <http://dx.doi.org/10.2308/accr.2009.84.3.893>
- Rangan, S. (1997). Earnings Management and the Performance of Seasoned Equity Offerings. *Journal of Financial Economics*, 50, 101–122. [http://dx.doi.org/10.1016/S0304-405X\(98\)00033-6](http://dx.doi.org/10.1016/S0304-405X(98)00033-6)
- Roman, L. W. (2009). Quality of Earnings and Earnings Management. *Journal of AICPA*. Retrieved from <http://www.aicpa.org/ForThePublic/AuditCommitteeEffectiveness>
- Shivakumar, L. (2006). Accruals, Cash Flows and the Post Earnings Announcement Drift. *Journal of Business Finance & Accounting*, 33(1–2), 1–25. <http://dx.doi.org/10.1111/j.1468-5957.2006.01425.x>
- Sloan, R. (1996). Do Stock Prices fully reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review*, 71, 289–316.

Appendix

Explanation of Jones Model and Modified Jones Model from Bartov, Gul and Tsui (2000):

The Jones Model for non-discretionary accruals is based on the following equation:

$$NDA_t = \alpha_1(1/At - 1) + \alpha_2[(\Delta REV_t / At - 1) + \alpha_3(PPE_t / At - 1)]$$

Where:

NDA = Non-Discretionary Accruals

At - 1 = Total assets at t - 1

ΔREV_t = Revenues in year t less revenues in year t-1

PPPt = Fixed Assets in year t

The Modified Jones Model to remove errors in measuring discretionary accruals in relation to revenue recognition: The equation is changed to the following:

$$NDA_t = \alpha_1(1/At - 1) + \alpha_2[(\Delta REV_t - \Delta RECT) / At - 1] + \alpha_3(PPE_t / At - 1)$$

Where,

NDA = Non-Discretionary Accruals

At - 1 = Total assets at t - 1

ΔREV_t = Revenues in year t less revenues in year t-1

$\Delta RECT$ = Accounts Receivable in year t less revenues in year t-1

PPPt = Fixed Assets in year t

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