

EARNINGS MANAGEMENT AND FIRM'S SUBSEQUENT PERIOD PERFORMANCE – A STUDY ON NON-FINANCIAL INDIAN LISTED FIRMS

Abstract

While studies internationally have found an association between earnings management and the firm's future performance, there is limited literature concerning Indian firms. Prior research in the Indian context has revealed the existence of opportunistic accruals management. However, its impact on a firm's future performance remains unexplored. Thus, this study examines the impact of accrual-based earnings management on future performance among listed non-financial Indian firms. This study estimates accruals management proxies for 2006-2017 using the widely accepted modified-Jones model of discretionary accruals. Firm performance is measured using ROA, ROE, and PE ratio. This study uses a one-step System Generalised Method of Moments (GMM) to address the problem of endogeneity in the dynamic panel model. The result from the estimator indicates that discretionary accruals have a negative impact on accounting-based performance measures (ROA and ROE) and a positive impact on the market-based performance measure (PE ratio). These results are consistent for the three estimators (OLS, FE, and GMM), establishing a robust relationship between accrual management and firm performance. The findings of this study are consistent with the signaling hypothesis and suggest the likelihood of accruals reversal.

Keywords: Accrual Management; Earnings Management; Generalised Method of Moments; India; Firm Performance

1. Introduction

Earnings management (EM) is a deliberate attempt to mask a firm's actual performance either to mislead stakeholders or to avail contractual benefits. Prior studies have reported several empirical evidence concerning EM behavior and have examined EM through diverse theoretical perspectives. In particular, two theories extend opposing views in explaining EM - agency theory and revelation principle.

The agency theory provides the best explanation for the opportunistic EM behavior of the firm. Since shareholders and managers have non-congruent goals where both parties aim at maximizing their individual gain (*respective utility functions*) without giving due consideration to each other's role, it adds to the agency problem. Further, shareholders pursue different investment horizons. Some investors focus on the immediate or short-term value, while others may be interested in the firm's long-term value. Similarly, from the managerial perspective, those managers who plan to pursue long-term career growth are interested in the firm's long-term value and emphasize the growth of shareholders' wealth.

In contrast, managers interested in high pay-off or job switchover are short-sighted and would invest in projects that reflect appealing performance for the firm in the short-run without any regard for shareholder's wealth. Therefore, the extent of agency problem determines managerial behaviour. As the agency problem intensifies, the behaviour of managers changes from obedience to self-interest and thereafter to opportunism. This progressive change in managerial behaviour involves earnings management (Giroux, 2004).

The Revelation Principle, on the other hand, is an attempt to identify ideal situations in which the EM is not a serious concern. It epitomizes a firm in an ideal situation with no agency problem. The managers are better off revealing the truth to avoid penalties for misreporting a firm's poor performance (Romen & Yaari, 2008). As the management's effort is dedicated to improving the firm's performance (Milgrom & Roberts, 1992), shareholders can maximize their utility. In this way, the interests of both parties are met, and the problem of conflict of interests is resolved. However, the assumptions of the revelation principle are far from real-world situations and are often not met. Violation of the assumptions of revelation principle is explained by three economic theories viz. contracting theory, bounded rationality, and information asymmetry. These violations make the revelation principle inapplicable, leaving scope for earnings manipulation by managers (Walker, 2013).

EM is achieved by exercising management discretion to report the desired level of earnings either through accounting choices or operating decisions¹. In EM literature, the former is popularly known as accrual management (AM) and the latter known as real earnings management (REM). This study is directed towards understanding the impact of accrual management on a firm's future performance.

Accrual management occurs when management exercises discretion over accounting choices in reporting a transaction in the books of accounts. Such discretion merely classifies a business transaction uniquely from among the available accounting choices. It does not affect the real cash flows of the firm. For example, while adopting an alternate method for inventory valuation or depreciation, the value of the inventories or the operating expenses will alter, but without any change in cash flows. Likewise, under/overstatement of provision for bad debts would affect earnings and not actual cash flows. These management discretions often raise questions on the legality of such practices. However, EM per se is not illegal. There is a difference between legal and illegal EM, the latter termed as fraudulent accounting. (Dechow & Skinner, 2000, p. 239) explain this difference by characterizing different management choices into two broad categories. They are: (1) within Generally Acceptable Accounting Principles (GAAP) and (2) violating GAAP. The management choices within the provisions of GAAP are classified as EM, while those that violate GAAP are termed fraudulent accounting. Therefore, as long as the discretions over accounting choices conform with GAAP, EM is not classified as an illegal activity.

The accrual accounting system provides scope for ample discretion to management over accounting choices in recording a transaction. When used judiciously in the interest of shareholders (*for example, to disclose additional information not known to the outsiders*), discretion over accounting choices would result in an increased value of the firm. However, opportunistic use of discretions by management for their self-interest results in a loss in the firm's value.

2. Review of Literature & Hypothesis Development

The extant literature on EM suggests that management either uses discretionary accruals for opportunistic behavior or to signal private information about the firm. When managers exercise discretion in accounting choices to make personal benefits at the expense of the shareholders,

² What is Earnings Management? p.1. http://www.swlearning.com/pdfs/chapter/0324223250_1.PDF. Accessed on April 15, 2019.

it is termed as opportunistic EM. However, managerial discretion in accounting choices can also be used to signal private information about the prospects of the firm.

2.1 Earnings Management and Firm Performance

A negative relationship between EM and a firm's future performance has been documented in several studies in the literature. Firms that engage in EM for informative purposes show improved performance in subsequent periods while those engaging for opportunistic purposes end up showing poor performance in subsequent periods (Chen et al., 2013). Accordingly, opportunistic EM leads to decline in performance of firm in subsequent periods, as managers indulge in it to hide poor performance or inefficiencies about firm's future prospects. When market discovers the hidden information on poor firm performance, the expectations of investors shatter and lead to downfall in firm's stock price. The management's attempt to hide unfavourable information about the firm through EM, accumulate over time. The accumulated hidden negative information, on reaching its tipping point, becomes unsustainable and managers end up dumping them in the market at once, as was in the case of Satyam Computers Scam of 2009, that result in huge negative return for the firm's share in the market (Francis et al., 2016).

On the other hand, when managers engage in EM to reveal private information (*informative purposes*) about the firm to outsiders, the additional information revealed by them assist investors to make more informed decision about firm's future prospects. Since, the management will reveal information only after careful evaluation of several internal and external factors affecting firm's future prospects, the investors are likely to be benefited by using such information in their decision-making.

Prior research advocates that management indulges in opportunistic EM behaviour causing underperformance of firm's stock in the future (Shivakumar, 2000; Yang et al., 2013) or cause poor operating performance of firms (Gill et al., 2013; Tang & Chang, 2015).

2.2 Accrual Earnings Management and Firm Performance

EM is influenced by a wide set of factors. While examining the factors affecting EM among Indian listed firms, (Das et al., 2018) find prevalence of both AM and REM in the Indian listed firms. They conclude that firm-specific factors such as market-to-book ratio, financial leverage, return on asset, and business group affiliation are significantly positively associated with EM, whereas firm's size, age and institutional ownership are negatively associated. Further, EM practices are likely to vary among firms based on the sector in which they operate. For example,

(Goel, 2012) provides statistically significant evidence of EM through income-increasing discretionary accruals in their sample and show a sector-wise differences in earnings manipulation practised by firms. While service sector firms adopt income-increasing discretionary accruals, the non-service sector firms engage in income-decreasing discretionary accruals. Earlier literature also indicate that EM practices are more prominent for firms undergoing a financial turmoil. In this regard, (Agrawal & Chatterjee, 2015), upon examination of 150 financially distressed Indian firms, report less distressed firms to engage more in accrual-based earnings management.

Prior studies have examined the impact of accrual-based earnings management in corporate events like initial public offerings (IPOs), seasoned equity offerings (SEOs) on the post-issue performance of the firm. The evidence from the literature suggests that entrepreneurs opportunistically manipulate accruals upward, prior to going public, in order to portray better prospects for their firms and extract high issue price from investors (DuCharme et al., 2001; Teoh, Wong, et al., 1998). However, in subsequent periods when accruals reverse², firms show poor performance with decline in earnings, leading to decreased post-IPO returns to the investors. Similar findings are also documented for firms going for SEO (Rangan, 1998; Shivakumar, 2000; Teoh, Welch, et al., 1998). The poor subsequent period performance for firms engaged in opportunistic accrual management in current period can thus be attributed to reversal of accounting accruals in subsequent periods.

The literature review indicates that though EM in the current period project good performance of a firm, it jeopardizes its future performance. Consequently, the investors and the market identify firm's EM activities and incorporate such information in the future valuation of stocks. Accordingly, the study hypothesises that accruals management has a negative impact on future performance of firms and frames the hypothesis as:

H₁: Accruals management affects firm's future performance negatively.

3. Data, Variables and Model

3.1. Sample and Data

This study uses data gathered from the Prowess IQ database, maintained by the Centre for Monitoring Indian Economy (CMIE). The sample selection process for this study begins with

² Accounting accruals are reversing in nature. Income-increasing accruals inducted in the current period reverses and becomes income-decreasing accruals in the subsequent period (Baber, Kang, and Li, 2011).

all non-financial firms listed on NSE as of March 31, 2016. Our initial sample consisted of 1,696 non-financial NSE listed firms belong to 63 diverse industries as per 2-digit NIC classification. In order to compute AM measures, at least 20 observations from an industry must be available. Thus, in the third step, we further eliminate 303 firms, leaving behind 1,393 firms across 25 industries. Moreover, to compute future performance, data relating to performance measures are required on a lead year basis (2006-2018). These criteria lead to further exclusion of 1,285 firms on account of non-availability of data for the entire study period (2006 - 2018). Our final sample thus comprises a balanced panel of 108 non-financial firms for 12 years (2006-2017) belonging to 21 different industries as per the 2-digit NIC classification.

3.2. Variable Measurement

3.2.1 Accruals Management (AM) Measure

The most widely used measures of AM in the accounting research are based on different variants of the (Jones, 1991) model. These model variants classify companies in different industries to compute discretionary accruals (DA) - a proxy for accruals-based earnings management.

The original model of (Jones, 1991) had no scope for capturing discretionary revenue management and hence was modified by (Dechow et al., 1995). The latter study differenced out the changes in receivables from the changes in revenues which was used as one of the regressors in the original model of Jones. Further, the original model of Jones used time-series data to compute firm-specific DA, which led to the problems of non-stationarity, survivorship biases, etc. To overcome such problems, (DeFond & Jiambalvo, 1994) suggest a cross-sectional approach to compute industry-year specific DAs instead of firm-specific DAs as a proxy for accruals management.

The present study uses two variants of the Jones model to derive the accruals management proxy. The first metric of accruals management is derived by using the method of (Dechow et al., 1995). The following cross-sectional equation is estimated for each industry (*at two-digit of the NIC code*) and year with at least 20 observations from the companies listed on the Bombay Stock Exchange (BSE):

$$TAC_{it} = \alpha_0 + \alpha_1 \frac{1}{TA_{it-1}} + \alpha_2 \Delta AdjREV_{it} + \alpha_3 PPE_{it} + \varepsilon_{it} \quad (1)$$

Where,

TAC_{it}	is total accruals (net income <i>minus</i> cash flow from operations) of the firm 'i' in year 't' scaled by lagged total assets;
TA_{it-1}	is lagged total assets of the firm 'i';
$\Delta AdjREV_{it}$	is the change in sales revenue less change in receivables of the firm 'i' in year 't' over year 't-1' scaled by lagged total assets;
PPE_{it}	is property, plant, and equipment (gross) of the firm 'i' in year 't' scaled by lagged total assets.

The residuals ε_{it} from the equation 1, measures discretionary accruals (DAC_1).

The second variant of discretionary accrual used in the study is a performance adjusted measure of DA. (Kothari et al., 2005) suggest the inclusion of a performance measure: the return on assets (ROA), in the modified Jones model to control for the impact of firm's performance on unexpected accruals. The following model is estimated cross-sectionally for each industry and year with at least 20 observations from the companies listed on the BSE for each industry:

$$TAC_{it} = \alpha_0 + \alpha_1 \frac{1}{TA_{it-1}} + \alpha_2 \Delta AdjREV_{it} + \alpha_3 PPE_{it} + \alpha_4 ROA_{it} + \varepsilon_{it} \quad (2)$$

where:

ROA_{it} Return on Assets of the firm 'i' in year 't' is computed as Net Income over lagged total assets.

The remaining variables: TAC_{it} , $\Delta AdjREV_{it}$, and PPE_{it} , are defined as in the previous model (1). The estimated residuals of the equation (2) measure the performance-adjusted discretionary accruals (DAC_2).

3.2.2 Firm Performance Measure

Several measures of financial performance have been used in the literature on corporate financial performance. These can be broadly categorised as accounting-based measures, market-based measures, and comprehensive measures. For instance, (Kyereboah-Coleman, 2007) use Return on Assets (ROA) and Return on Equity (ROE). In another study, (Chakravarthy, 1986) use Return on Sales (ROS), Return on Total Capital (ROTC) and Return on Equity (ROE) as profitability measures of firm's performance. In addition, (Chakravarthy, 1986) have also used MTB (Market to Book Ratio) as a market measure of performance, and Altman's Z factor as a comprehensive measure of firm performance. Similarly, (Zeitun & Tian,

2007) used both accounting measures of firms' performance (ROA, ROE, and EBIT) and market-based performance measures such as the Price Earnings ratio (P/E), the Market value to the book value of equity (MTB) and the Tobin's Q.

The studies investigating the effect of EM on future performance of firms often use ROA as an accounting measure of performance (Cohen & Zarowin, 2010; Gunny, 2005; Huang & Sun, 2017; Tang & Chang, 2015; Taylor & Xu, 2010). A few other measures of firm performance that is used by previous scholars are Cash flow from operating activities (OCF) scaled by total assets (Huang & Sun, 2017; Taylor & Xu, 2010), size-adjusted stock returns (SAR) (Taylor & Xu, 2010), Tobin's Q ratio (Tang & Chang, 2015), and abnormal stock returns (Gong et al., 2008).

The present study uses three measures of firm performance i.e., two accounting-based measures of performance - Return on Assets (ROA) and Return on Equity (ROE), and one market-based performance measure - Price-to-earnings ratio (PE). The definitions of these variables are highlighted in **Table 1**.

Table 1 : Variable Definition

Variables	Definition
<i>Dependent Variables</i>	
ROA_{t+1}	Profit after tax net of prior period and extraordinary transactions divided by average of total assets at the beginning and at the end of the year
ROE_{t+1}	Profit after tax net of prior period and extraordinary transactions divided by net worth
PE_{t+1}	Price-earnings ratio
<i>Control Variables</i>	
SIZE	Natural logarithm of total assets
GROWTH	Difference of Sales revenue in the year t and t-1 divided by the sales revenue in the year t-1
ZSCORE	Altman's Z-Score measured as $3.3 \times [\text{EBIT} / \text{Total Assets}] + 1.0 \times [\text{Sales} / \text{Total Assets}] + 1.4 \times [\text{Retained earnings} / \text{Total Assets}] + 1.2 \times [\text{Working capital} / \text{Total Assets}]$
DE	Ratio of debt to equity of a firm as measure of leverage.

Source: The Authors

3.2.3 Control Variables

This study uses Firm Size (SIZE), Sales Growth (GROWTH), Altman Z-score (ZSCORE) and Debt Equity Ratio (DE) as control variables.

Generally, firm size and firm profitability is expected to depict a positive association implying that if a firm grows in size, profitability of the firm would rise. Larger firms possess greater resources and are considered to be endowed with many advantages such as lower costs and higher returns on account of economies of scale. . In this regard, Kuncová et al. (2016) while examining firm size as a determinanat of firm performance finds that larger firms reached higher economic performance compared with smaller ones indicating the role of economies of scale available to firms with larger size. In contrast, (Raja & Kumar, 2005) finds that firm size has negative and significant association with manufacturing firms in India. In line with existing literature, we have employed the log of total assets as the measure of size in this study.

A positive growth rate in sales is indicative of higher business volume and higher revenues. In a situation where changes in expenses do not exceed the changes in sales and assuming all other factors constant, a positive growth rate in sale will enhance firm's performance. In similar direction, (Odalo et al., 2016) examined the effect of sales growth on financial performance and found a positive and significant effect with some performance measures (ROA and ROE) while a negative but insignificant effect on other (EPS). Contrarily, in a situation where expenses of the firm exceed far beyond the sales growth, both accounting and market performance of a firm will decrease. Thus, there appears a negative relationship between sales growth and firm performance.

The Altman Z-score is a measure of the credit strength of a firm and gauges how likely a firm is towards bankruptcy. An Altman Z-Score of less than 1.8 is undesirable as such firms are prone to bankruptcy. Thus, higher Z-score means a firm is financially sound and strong.. In Indian context, the results from previous studies indicate a positive association between Z-Score and firm performance. For instance, in a study conducted by (Liang & Pathak, 2019)the researchers found a statistically significant and positive relationship between performance and Z-score among Indian manufacturing firms.

Leverage is widely used in prior studies concerning firm performance (Bothwell et al., 1984; Paint, 1991). Leverage magnifies the shareholders' earnings when the cost of debt is lower than the company's rate of return. A highly leveraged firm, in addition to incurring higher interest expenses, will also face restrictions on certain business activities due to debt covenants Therefore, there arises a negative relationship between firm performance and leverage. We used the ratio between debt and equity to compute leverage, which indicates the owner's stake in the business.

3.3 Model Specification

This study estimates the following dynamic panel model to examine the relationship between AM and firms' future performance:

$$FirmPerf_{i,t+1} = \beta_0 + \beta_1 AM_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 ZSCORE_{i,t} + \beta_5 DE_{i,t} + \beta_6 FirmPerf_{i,t} + \beta_7 YearDummies + \varepsilon_{i,t+1} \quad (3)$$

The dependent variable $FirmPerf_{i,t+1}$ is measured by two accounting-based and one market-based firm performance as specified above in **Section 3.2.2**. The key explanatory variable in the model, $AM_{i,t}$ has two proxies: DAC_1 and DAC_2 as explained in **Section 3.2.1**. The coefficient β_1 captures the relationship between AM and firm's future performance. If AM has a negative impact on firm's future performance, the coefficient β_1 would be significantly negative.

4. Results and Discussions

4.1. Descriptive statistics

Table 2 presents the descriptive statistics of the variables. Comparing the two accounting measures of performance, it is observed that ROE of the sample firms is relatively better than their ROA. The mean value of 0.178 for ROE while that of 0.095 for ROA, indicates that firms in the sample are providing about 18 percent return to equity shareholders but are generating only about 10 percent of return from their assets. The high standard deviation of ROE (0.100) compared to (0.062) for ROA signifies high risk characteristic of equity shareholders. The variations in ROE among sample firms are higher than the variations in their ROA. The ROE varies in the range of about 1 to 50 percent while the ROA varies in the range of 0.03 to 30.5 percent. The average value of PE ratio – the market measure of performance – is 17.58 implying that on an average market price of shares is about 18 times its earnings per share (EPS).

The mean value of DAC_1 is 0.008, which indicates that firms on average manage earnings upwards to the extent of 0.08 percent of total assets. On the other hand, the mean value of -0.012 for DAC_2 indicates downward EM by firms to the extent of 1 percent of their total assets. The minimum and maximum values of -0.211 and 0.245 respectively for DAC_1 and -0.223 and 0.222 respectively for DAC_2, indicates that firms in the sample engage in both income-increasing as well as income-decreasing AM.

Table 2: Descriptive Statistics

Variables	N	Mean	Median	Std. Dev.	Min	Max
ROA	1,296	0.095	0.082	0.062	0.003	0.305
ROE	1,296	0.178	0.164	0.100	0.009	0.504
PE	1,296	17.584	14.435	13.597	2.450	82.210
DAC_1	1,296	0.008	0.008	0.077	-0.211	0.245
DAC_2	1,296	-0.012	-0.012	0.074	-0.223	0.222
SIZE	1,296	9.428	9.364	1.409	6.023	13.296
ZSCORE	1,296	5.366	3.632	4.780	1.208	28.268
GROWTH	1,296	0.147	0.125	0.187	-0.289	0.870
DE	1,296	0.579	0.440	0.556	0.000	2.330

Source: The Authors

The mean (median) value of firm size is 9.428 (9.364) with a minimum of 6.023 and a maximum of 13.296. The average Altman's Z-Score value of 5.366 is well above the cut-off value of 1.8 (*below which a firm is considered to be financially distressed*). This signifies that on an average, firms in the sample are financially well off. However, the minimum value of ZSCORE is 1.208 which indicates that the sample includes some firms that are financially distressed. The mean value of 0.147 for GROWTH implies that firms in the sample have an average annual sales growth rate of about 15 percent. The mean of 0.579 for Debt-Equity Ratio (DE) indicates larger composition of debt in the capital structure of sample firms.

4.2. Correlation analysis

Table 3 reports the Pearson's correlation coefficient among the variables. ROA and ROE show a positive and significant correlation with DAC_1 and a negative and significant correlation with DAC_2. Since DAC_1 and DAC_2 portray correlations in opposite directions with ROA and ROE, the relationship between AM and accounting performance of firm is inconclusive. Similarly, PE ratio shows positive but insignificant correlation with both discretionary accrual measures. Overall, the relationship between EM and future firm performance is not clear from the bivariate analysis. The correlation coefficients are statistically significant for almost every pair but are not too high in magnitude ($|r| \geq 0.7$) among the explanatory variables. Hence, multicollinearity among explanatory variables can be ruled out (Dormann et al., 2013). and we can safely move towards the multivariate analysis.

Table 3: Correlation Matrix

	ROA	ROE	PE	DAC_1	DAC_2	SIZE	ZSCORE	DE
ROE	0.849***							
PE	-0.007	-0.113***						
DAC_1	0.152***	0.061**	0.010					
DAC_2	-0.076***	-0.108***	0.016	0.910***				
SIZE	0.125***	0.082***	0.247***	0.107***	0.041			
ZSCORE	0.588***	0.323***	0.400***	0.083***	-0.080***	0.156***		
DE	-0.373***	-0.039	-0.181***	-0.025	0.087***	-0.109***	-0.544***	
GROWTH	0.311***	0.404***	-0.063**	0.007	0.001	-0.056**	-0.001	0.170***

Note: ** and *** indicates significance at 5% and 1% level or stronger.

Source: The Authors

4.3. Multivariate analysis – OLS and fixed-effect (FE) estimators

The empirical results from the multivariate analysis using OLS, and FE estimators are presented in **Table 4**. DAC_1 and DAC_2 in OLS regression depict a negative and highly significant coefficients when regressed against ROA_{t+1} and ROE_{t+1} . Therefore, AM has a negative impact on firm's future accounting performance which is consistent with our hypothesis. However, DAC_1 and DAC_2 display a positive and significant relationship with PE_{t+1} , and, is inconsistent with the stated hypothesis. The positive association between PE ratio and AM is suggestive of signalling hypothesis where the managers choose to reveal their expectations about the future prospects of a firm's cash flow (Holthausen, 1990; Holthausen & Leftwich, 1983).

The control variable ZSCORE is positively and significantly related to all the three performance measures, signifying that financially strong firms show better performance in subsequent period. On the other hand, DE is related negatively with ROA_{t+1} indicating that high leveraged firms exhibit poor performance in the subsequent period. Sales growth (GROWTH) shows positive and significant association with ROE_{t+1} and ROA_{t+1} (*when DAC_2 is used as AM proxy in the model*). The relationship of firm size with PE_{t+1} , is positive and significant as larger firms command a better reputation in the market and are preferred by investors (Reinganum & Smith, 1983).

Overall, the results of OLS estimators indicate that firms engaged in AM in current period although tend to show poor accounting performance but they report better market performance

in the subsequent period. Larger firms show better market performance because investors prefer large firms over small firms (Reinganum & Smith, 1983). Similarly, financially healthy firms tend to perform better in the subsequent period across both performance measures.

Alike OLS estimator, the results of FE estimator –presented in **Table 4** – show a significant negative relationship between AM proxies DAC_1 and DAC_2 and the accounting performance measures ROA_{t+1} and ROE_{t+1} . The strong negative relationship supports the hypothesis that AM has a negative impact on the firm's future performance. Consistent with the results of OLS estimators, the relation between discretionary accruals and P/E ratio is significantly positive. Thus, the relation between AM and firm's future performance is uniform across both OLS and FE estimators, thereby signifying robustness of the results.

From the results of OLS and FE estimators, an important point to be noted is that the coefficients of performance measures are positive and highly significant (*at 1 per cent level*). This indicates that firm's future performance is positively associated with its past performance and develops a dynamic relationship between AM and firm's future performance. However, the OLS estimators are biased and inconsistent in a dynamic panel model, and the fixed-effect (FE) estimators suffer from Nickell (1981) downward biasness (Baltagi, 2013, pp. 155–156)³. Therefore, the study subsequently have used the Generalised Method of Moments (GMM) estimators to obtain efficient estimates for the dynamic panel model.

³ According to Baltagi (2013, p. 155-156), the OLS estimator is biased upwards while the FE estimator is downward biased in case of a dynamic panel model.

Table 4: OLS and Fixed-Effect estimation results for the impact of AM on firm's future performance

Variable	Expected Sign	ROA _{t+1}				ROE _{t+1}				PE _{t+1}			
		OLS		FE		OLS		FE		OLS		FE	
Intercept	?	0.043*** (5.03)	0.044*** (5.17)	0.429*** (8.75)	0.431*** (8.81)	0.062*** (4.64)	0.060*** (4.79)	0.663*** (8.88)	0.670*** (9.02)	-3.473* (-1.67)	-3.536* (-1.69)	-21.263 (-1.47)	-21.805 (-1.51)
DAC_1	(-)	-0.063*** (-4.26)		-0.046*** (-3.14)		-0.119*** (-4.64)		-0.098*** (-3.72)		8.249** (2.23)		7.030** (1.93)	
DAC_2	(-)		-0.056*** (-3.58)		-0.041*** (-2.71)		-0.099*** (-3.67)		-0.085*** (-3.07)		8.481** (2.19)		8.571** (2.26)
SIZE	?	-0.000 (-0.52)	-0.001 (-0.59)	-0.043*** (-7.65)	-0.043*** (-7.69)	0.001 (0.63)	0.001 (0.51)	-0.066*** (-7.62)	-0.067*** (-7.74)	1.063*** (4.97)	1.088*** (5.10)	3.781** (2.15)	3.873** (2.22)
GROWTH	?	0.012 (1.58)	0.014* (1.74)	0.021*** (2.79)	0.022*** (2.94)	0.025* (1.88)	0.026** (1.95)	0.044*** (3.47)	0.046*** (3.60)	-2.229 (-1.39)	-2.154 (-1.34)	-5.232*** (-3.25)	-5.228*** (-3.25)
ZSCORE	(+)	0.002*** (5.42)	0.002*** (5.40)	0.001*** (2.79)	0.001*** (2.78)	0.002*** (3.60)	0.002*** (3.30)	-0.000 (-0.37)	-0.000 (-0.49)	0.356*** (4.13)	0.379*** (4.37)	0.258*** (2.63)	0.277*** (2.81)
DE	(-)	-0.007*** (-3.17)	-0.007*** (-3.27)	-0.007* (-1.73)	-0.007* (-1.74)	0.005 (1.33)	0.006 (1.44)	0.020*** (2.79)	0.020*** (2.84)	-0.005 (-0.01)	-0.036 (-0.05)	0.796 (0.57)	0.661 (0.47)
ROA	(+)	0.628*** (19.53)	0.608*** (19.26)	0.463*** (12.81)	0.448*** (12.54)								
ROE	(+)					0.630*** (25.14)	0.616*** (24.58)	0.466*** (15.19)	0.452*** (14.79)				
PE	(+)									0.490*** (11.07)	0.485*** (11.03)	0.254*** (5.63)	0.249*** (5.55)
Year Dummies		Yes	Yes	Yes	Yes	Yes							
Adjusted R²		0.5817	0.5872	0.6276	0.6271	0.5664	0.5664	0.6156	0.6156	0.4529	0.4529	0.5070	0.5075
F		106.93***	95.69***	28.72***	28.13***	100.52***	99.35***	49.16***	48.44***	64.06***	64.07***	37.36***	37.35***
Prob. > F		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N		1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296

Note: t-statistics are in parentheses; *, ** and *** indicate 10%, 5% and 1% level of significance respectively.

Source: Author's Compilation

4.4. Multivariate analysis – GMM estimator

With an aim to overcome the problem of endogeneity and unobserved heterogeneity in dynamic panel models, (Arellano & Bond, 1991) propose first-difference Generalised Method of Moments (FD-GMM) estimator. FD-GMM uses additional lag values of regressors as instruments to give consistent estimates. Additionally, (Blundell & Bond, 1998) suggest a more efficient “System GMM estimator” as an improvement over the FD-GMM model. Following (Bond et al., 2001), the study uses system GMM estimator to estimate the dynamic panel model as presented in *Equation 3*. The results of the GMM estimation are presented in **Table 5**.

Two critical specification tests were performed before using GMM estimation in a dynamic panel model. The first test relates to second-order serial correlation, which checks if enough lags have been used to control for the dynamic relationship. This test is crucial as GMM estimation assumes that there exists no second-order serial correlation [AR (2)] in the error term of the first-differenced equation. The requirement of no AR (2) for GMM estimator is to ensure that lags beyond the second lags of regressors are strictly exogenous to the model. The test for no second-order serial correlation [AR (2)] proposed by Arellano and Bond (1991) is not rejected (refer to **Table 5**), thereby validating the condition of no second-order serial correlation. The second test relates to the validity of instruments used in the GMM estimation. Sargan test statistic and Hansen J-statistics are performed to check the validity of instruments used in Blundell-Bond one-step system GMM estimation. Both the test statistics reported in **Table 5** are rejected indicating that the instruments chosen are valid.

The two AM proxies viz. DAC_1 and DAC_2 is found to have a significant negative impact on ROA_{t+1} , which is consistent with the findings of OLS and FE estimators presented in **Table 4**. The estimated coefficient of DAC_1 is -0.085 while that of DAC_2 is -0.047. Both are significant at 1 percent level of significance supporting the hypothesis that AM has a negative impact on firm’s subsequent period ROA. The results further show a significant negative relationship between the both AM proxies and ROE_{t+1} . The estimated coefficient of DAC_1 is -0.139, and that of DAC_2 is -0.078, and both are significant at 1 percent level of significance. This provides support for the hypothesis that AM by firms affects their ROE negatively in subsequent period, and is also consistent with the findings of OLS and FE estimators.

Table 5: One-step system GMM estimation results for the impact of AM on the firm's future performance

Variable	Expected Sign	ROA _{t+1}		ROE _{t+1}		PE _{t+1}	
Intercept	?	0.055*** (5.34)	0.058*** (5.64)	0.074*** (4.76)	0.079*** (5.02)	-1.929 (-0.69)	-2.053 (-0.73)
DAC_1	(-)	-0.085*** (-4.42)		-0.139*** (-4.50)		10.628*** (2.54)	
DAC_2	(-)		-0.047*** (-2.56)		-0.078*** (-2.59)		9.706*** (2.50)
SIZE	(+/-)	-0.002** (-2.08)	-0.002** (-2.20)	-0.001 (-0.38)	-0.001 (-0.62)	1.614*** (5.04)	1.651*** (5.13)
GROWTH	?	-0.034*** (-3.30)	-0.032*** (-3.17)	-0.054*** (-3.32)	-0.052*** (-3.16)	-2.454 (-1.28)	-2.417 (-1.25)
ZSCORE	(+)	0.000 (0.87)	0.000 (0.89)	0.000 (-0.22)	0.000 (-0.36)	0.317** (2.42)	0.340*** (2.60)
DE	(-)	-0.003 (-0.92)	-0.004 (-1.24)	0.009** (2.03)	0.009* (1.91)	-0.841 (-0.92)	-0.862 (-0.94)
ROA	(+)	0.758*** (8.77)	0.735*** (8.80)				
ROE	(+)			0.728*** (13.17)	0.715*** (12.86)		
PE	(+)					0.241*** (6.55)	0.236*** (6.46)
Year Dummies		Yes	Yes	Yes	Yes	Yes	Yes
N		1,296	1,296	1,296	1,296	1,296	1,296
No of Firms		108	108	108	108	108	108
No. of Instruments		29	29	29	29	29	29
No AR (1) z-stat		-6.44***	-6.49***	-7.11***	-7.11***	-5.67***	-5.69***
Prob. > z		0.000	0.000	0.000	0.000	0.000	0.000
No AR (2) z-stat		-1.01	-1.10	-1.37	-1.46	0.31	0.31
Prob. > z		0.315	0.273	0.169	0.144	0.758	0.755
Sargan chi2(11)		10.92	10.72	13.10	14.02	10.16	9.75
Prob. > chi2		0.450	0.467	0.287	0.232	0.516	0.553
Hansen chi2(11)		11.43	12.05	14.11	15.42	18.51	18.11
Prob. > chi2		0.408	0.360	0.227	0.164	0.071	0.079
F		41.31***	41.78***	62.60***	59.32***	31.02***	31.00***
Prob. > F		0.000	0.000	0.000	0.000	0.000	0.000

Note: t-statistics are in parentheses; ** and *** indicate 5% and 1% level of significance respectively.

Source: The Authors

However, the relationship between AM and PE_{t+1} , is positive and significant. The coefficients of DAC_1 and DAC_2 is 10.628 and 9.706 respectively and are significant at 1 per cent level. This confirms the finding from **Table 4** that firms that engage in AM have better market performance in the subsequent period. This result contradicts, our stated hypothesis and is in favor of the signalling hypothesis of (Subramanyam, 1996) which states that managers use discretionary accruals to signal private information about the firm to shareholders who are otherwise relatively less informed about firm's operations and its future opportunities/profitability.

The control variable SIZE has a significant negative relationship with ROA_{t+1} . Similarly, GROWTH has significant negative relationships with both the accounting performance measures: ROA_{t+1} and ROE_{t+1} . Thus, large firms and growth firms tend to perform poorly in terms of accounting measures of performance. The control variables SIZE and ZSCORE have a significant positive relation with PE_{t+1} , which indicates that large firms and financially stable firms tend to show better market performance.

In conclusion, the results of the three estimators (*OLS, FE and GMM*) are consistent for the relationship between AM and the firm's future performance and thus, can be considered robust. The three estimators show a significantly positive relation between AM and firm's future market-based performance, while the relation between AM and firm's future accounting-based performance is significantly negative. Among the control variables, the relationship between firm size (SIZE) and PE_{t+1} and between financial health (ZSCORE) and PE_{t+1} is consistent in all the three estimation methods

5. Summary and Conclusion

This study focuses on the implications of AM on the future firm performance. Discretionary accruals are computed using two variants of the modified Jones model. It was found that discretionary accruals though have a negative impact on the accounting-based performance measures (ROA and ROE), its effect on the market-based performance (PE ratio) is positive. These results are consistent across all the estimators - OLS, FE and GMM, thereby establishing a robust relationship between AM and firm performance.

The evidences from this study indicate that firms that manage their earnings through accruals in current period tend to report better profit-to-earnings ratio and poor ROA and ROE in subsequent

period. The negative relationship of AM with accounting measures of performance can be attributed to the reversibility nature of accruals. Inflating (deflating) the incomes (expenses) to report desired earnings for current period results in poor accounting performance of the firm in future as accruals reverse. In contrast, the finding of positive relationship between AM and price-to-earnings ratio may be attributed the prevalence of signalling hypothesis of (Subramanyam, 1996) and justifies (Romen & Yaari, 2008) contention of beneficial EM.

6. References

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