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Does Target Firm's Earnings Management Affect Shareholder's Gains? Evidence from China

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Abstract

This study tests the hypothesis that the target firms are involved in earnings management activities in quarters leading to a takeover announcement. Using a sample of 3,455 Chinese listed firms that are targets of successful acquisitions over the period 2007 – 2020, and for a matched sample of non-targets, we find that target firms manipulate earnings in quarters leading to the announcement date. Further, we find evidence of a negative relationship between earnings management and short-term gains to shareholders. Our result remains robust after controlling for various deal characteristics. The study also suggests that pre-merger earnings management in target firms is not fully anticipated by the market before the takeover announcement. We find no evidence of earnings management immediately after the announcement quarter.

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JEL Classification: G14, G34, M41

I. Introduction

This study aims to investigate earning management (hereafter EM) in target firms before the acquisition announcement and the impact on shareholders'

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gains. A large body of researchers document EM as an important issue and identify many economic and contracting reasons that motivate the management to manipulate earnings. For instance, the management manipulates in structuring financial transactions either to maximize its self-interest (*Healy*, 1985), get some private benefit (*Schipper*, 1989), get benefits at equity issuance (*DuCharme* et al., 2004; *Friedlan*, 1994), or to show better economic performance and influencing contractual outcomes (*Healy* & *Wahlen*, 1999) including meeting of debt agreements (*DeFond* & *Jiambalvo*, 1994; *Jaggi* & *Lee*, 2002), avoiding earning decreases to beat the analysts' forecast (*Burgstahler* & *Dichev*, 1997), reducing the intervention of regulatory bodies (*Jones*, 1991) and decreasing the tax liabilities (Keating & Zimmerman, 1999).

In an M&A context, studies indicate that the firms involved in a merger manipulate earnings near the takeover announcement to maximize shareholders' wealth and market valuation. Evidence suggests that the acquiring firms tend to inflate their earnings to reduce the acquisition cost of target firms when the acquisition is financed by equity (*Botsari* & *Meeks*, 2008; *Erickson* & *Wang*, 1999; *Louis*, 2004). Moreover, post-acquisition negative performance is due to the reversal effect of EM activities by acquiring firm (*Louis*, 2004). On the other hand, an upward EM by the target firm raises the transaction price and results in an overpayment that is favorable to the target firms' shareholders; therefore, they also have incentives to manipulate earnings. For instance, previous evidence shows that the target firms' shareholders gain as a result of successful takeovers (*Jensen* & *Ruback*, 1983). In a study, *Shleifer* and *Vishny* (2003) find that target firms manipulate earnings to influence short-term stock performance. Some other studies identify that an upward EM by the target firm results in an increase in deal premium (*Antoniou* et al., 2008; *Moeller* et al., 2004). In addition, researchers study target firms' EM under precise settings, for example, *Easterwood* (1998) finds significant EM in target firms in a hostile takeover. *Eddey* and *Taylor* (1999) and *Ben-Amar* and *Missonier-Piera* (2008) find downward EM in friendly targets. While, *Anilowski* et al. (2009) find upward EM in the case of auctions as opposed to negotiated deals. In another study, *Anagnostopoulou* and *Tsekrekos* (2015) find downward EM in seeking buyer firms.

We find that the extant literature on pre-merger EM is based on developed countries, and they relate EM to the post-merger negative performance of acquiring firms, but in the context of developing countries the studies that relate EM activities to gains to the target firms' shareholders are limited. Therefore, this study aims to fill the gap and find the evidence of both the accrual based and real activities manipulation in target firms leading to takeover announcement and find the effect on shareholders' gains.

Using a sample of Chinese firms that are targets of successful acquisitions over the period between 2007 to 2020, and for a matched sample of non-targets, we

find that targets firms manage earnings in quarters leading to the announcement date. We employ two main proxies of EM that correspond to two main ways in which target firms manipulate earnings. One is discretionary current accruals (*Guenther*, 1994; *Louis*, 2004; *Mughal* et al., 2021; *Teoh* et al., 1998a; *Teoh* et al., 1998b), and the other is real EM (*Mughal* et al., 2021; *Zang*, 2012). Our results indicate that target firms manipulate accruals and real activities during the period leading up to the merger.

Next, we provide evidence of the relation between target firms' short-term returns and the pre-merger EM. Consistent with the literature[1], our results show that the target firms' shareholders get positive announcement abnormal returns. For the effect of EM on short-term returns, the prior literature[2] indicates that the short-term returns are positively related to accruals, and some indicate a negative relationship. In an M&A environment, *Louis* (2004) provides evidence of a negative relation between the acquirer's pre-merger EM and short-term returns; however, the studies relating the target firms' EM to their short-term returns are limited. Therefore, we provide evidence of a negative relationship between target firms' EM and shareholder's return. Our results also suggest that pre-merger earnings management in target firms is not fully anticipated by the market in the quarters prior to the takeover announcement.

Our paper is different from other studies in the following ways. First, it contributes to the EM literature under M&A settings in the largest emerging market China. Previous studies highlight that the target firms manipulate earnings to meet a promised performance (*Hou* et al., 2015; *Tao* et al., 2021). Most recently, *Mughal* et al. (2021) provided evidence of pre-merger earnings management by target firms in the US. However, in this study, we analyze earnings management at target firms in China and show that they manipulate earnings during the quarters leading to takeover announcement. Our study compares EM in target firms with a matched sample of non-targets and provides evidence of both the accrual and real activities manipulation.

Secondly, under the Chinese context, this paper shows that pre-merger EM has a negative effect on the target firm's shareholder returns supporting the rational expectation hypothesis (*Shivakumar*, 2000). Previous studies investigate the effect of acquirer's EM on shareholder's return and provide mixed findings (*Farooqi*, 2017; *Louis*, 2004). *Mughal* et al. (2021) provide evidence of a negative relationship between the target firm's EM and shareholder's returns in the US context. However, our study complements the literature and shows that inves-

[1] *Jensen* and *Ruback* (1983), *Lang, Stulz*, and *Walkling* (1989), *Franks, Harris*, and *Titman* (1991), *Healy, Palepu*, and *Ruback* (1992), (*Berkovitch* & *Narayanan*, 1993), *Smith* and *Kim* (1994).

[2] *Sloan* (1996), *Subramanyam* (1996), *Louis* and *Robinson* (2005), *Bowman* and *Navissi* (2003), *Xu* and *Lacina* (2009), *Cooper, Downes*, and *Rao* (2018).

tors rationally undo the effect of pre-merger EM at merger announcement resulting in a fall in share price, implying an inverse relationship between pre-merger EM and shareholder's returns. Hence, we provide evidence that higher EM in target firms is associated with lower shareholders' gains.

The rest of the paper is organized as follows: Section 2 presents the literature review. Section 3 formulates the hypothesis and explains the sample selection process. Section 4 presents the methodology. Section 5 discusses the empirical results. Finally, Section 6 concludes the paper.

II. Literature Review

1. Earnings Management in Target Firms

EM occurs when managers structure transactions to alter financial reports (*Healy* & *Wahlen*, 1999). One way to manage earnings is through discretionary accruals (*Schipper*, 1989), and the other way is through real operational activities, which include manipulation through sales, production, and discretionary expenses (*Roychowdhury*, 2006; *Zang*, 2012).

Most of the studies on EM under settings of particular events provide mixed results. For example, *DeAngelo* (1986) studies management buyouts and finds no evidence that the managers adopt EM activities before a buyout of public stocks. Similarly, in a study, *Liberty* and *Zimmerman* (1986) examine earnings during contract negotiations and find no evidence of EM. On the other hand, *DeAngelo* (1988) finds that during the proxy contest the managers increase reported earnings to persuade the voting shareholders about their efficient performance. Managers of target firms also have an incentive to manipulate reported earnings. For example, higher reported earnings can raise the market price and the deal premium from the acquirer, which discourages the hostile acquirer, and it may also prevent a takeover. These arguments provide the basis for the takeover defense hypothesis formulated by (*Easterwood*, 1998), which states that when target firms anticipate acquiring firms pre-takeover EM, they raise their reported earnings to increase the deal premium. In response to acquiring firms' strategy, the Easterwood considers income-increasing EM as a "takeover defense". *Erickson* and *Wang* (1999) argue that the target and the acquirer both rationally expect that the other party manipulates earnings, so both of them adjust the deal price in anticipation of EM. Financial incentive hypothesis explains another reason for the target firms' EM. For example, for a target firm, stock returns and premiums measure the success of a merger. *Shleifer* and *Vishny* (2003) find that the exchange ratio is set in a way that is beneficial for the target firms' shareholders, and they receive premium above the market price. Therefore, by selling their shares, the target firms' shareholders get higher gains in the

short run. Target firms also gain substantially in the form of deal premiums as *Moeller* et al. (2004) find significant average deal premiums for public acquisitions in the US between 1980 and 2001. Similarly, *Antoniou* et al. (2008) also find higher deal premiums for firms in the UK between 1986 and 2004, so higher deal premiums also provide an incentive to manage earnings. Moreover, researchers *Barth* et al. (1999), *Xie* (2001), *Bartov* et al. (2002), *Skinner* and *Sloan* (2002), *Pincus* et al. (2007) study the market reward for meeting or beating analysts' expectations and provide evidence that the target firms can artificially increase their share prices to get higher gains. In short, the wealth benefits for the target firms give rise to a financial incentive to manipulate earnings prior to the takeover.

2. Earnings Management and Stock Returns

Studies provide mixed findings for the relation between stock returns and EM. In a study *Sloan* (1996) finds that high accruals results in a decline in cash flows, and stock returns are negatively related to accruals. On the other hand, *Subramanyam* (1996) shows that high accruals indicate growth prospects and they are positively related to stock returns. Similarly, many other researchers also find a positive relation between accruals and stock returns. *Demski* (1998), for example, maintains that high accruals are indicative of managerial expertise and higher future returns. *Louis* and *Robinson* (2005) studies discretionary accruals around stock split and find that higher accruals before a stock split signal that managers are optimistic, and this stock split further reinforce this optimism. *Xu* and *Lacina* (2009) argue that firms with a lower level of accruals experience lower returns in contrast to firms with a higher level of accruals. *Bowman* and *Navissi* (2003) study the association between EM and abnormal returns under price control regulations and find a positive relationship between discretionary accruals and abnormal returns, and indicate that firms' abnormal returns predict downward discretionary accruals under price control settings. *Louis* (2004) finds a negative relation between abnormal returns and abnormal accruals for the acquirer and discusses that the post-merger negative performance of the acquirer is partially due to the reversal of pre-merger EM. *Gong* et al. (2008) also provide evidence that post-repurchase performance is determined by pre-repurchase EM. *Cooper* et al. (2018) studies real EM prior to stock repurchases and provide evidence that there is a negative relationship between real EM and abnormal returns and indicate that firms with downward real EM experience positive and larger abnormal returns in the following period. Recently, *Mughal* et al. (2021) investigate pre-merger EM at target firms in the US and show that pre-merger accrual and real EM both negatively affect the shareholders' returns.

III. Research Design

1. Hypothesis Development

As literature review provides evidence that the target firms have the incentive to manipulate earnings leading to the announcement date of the merger, we expect that target firms exhibit significant and higher EM during the four quarters leading to announcement date as compared to non-targets. In notational terms, we formulate our first hypothesis as:

$$H_1 : DISCCACC_{TRGT} > DISCCACC_{NONTRGT}$$

Where *DISCCACC* is the discretionary current accrual, a proxy for EM while *TRGT* and *NONTRGT* subscripts are used for target and non-target firms respectively.

Since previous studies provide evidence that there are multiple strategies based on accrual and real activities that firms can adopt to manipulate (*Cohen* & *Zarowin*, 2010; *Roychowdhury*, 2006). *Graham* et al. (2005) indicate that managers prefer real activities manipulation as opposed to accrual based EM. Similarly, in another study *Zang* (2012) also provide evidence that the firms favor real activities manipulation as compared to accrual based EM when the cost of doing so is high. Therefore, we also test a second hypothesis for real activities manipulation with the expectation that the real EM in target firms is higher than that of non-targets. Using notational terms, the second hypothesis is as follows:

$$H_2 : REMTOTAL_{TRGT} > REMTOTAL_{NONTRGT}$$

Where REMTOTAL represents total real activities manipulation.

The previous literature provides mixed findings concerning the relation between EM and gains in the form of short-term abnormal returns. Moreover, to the best of our knowledge, studies that provide evidence of the effect of target firms' EM on the gains to target firms' shareholders are limited, so we test another hypothesis and examine the association. We formulate the hypothesis as:

H3: Target firms earning management has a negative effect on short-term gains to shareholders.

2. Sample Selection

The current research covers the acquisition of companies announced between the period from 2007 to 2020 in China. The sample consists of 3455 firms that are targets of successful acquisitions obtained from CSMAR M&A database.

We follow *Mughal* et al. (2021) to construct the matched sample of non-target firms. We use propensity score matching procedure and select the Chinese companies which are from the same industry and have the closest propensity scores. All financial and stocks data are obtained from CSMAR.

IV. Methodology

1. Propensity Score Matching

Propensity score matching (PSM), just like the traditional matching methods, selects a control firm with similar firm characteristics from a sample of non-targets. The conventional method finds the matched firm by matching the firm's financial characteristics (*say x*) directly, whereas the PSM procedure finds the control firm based on the probability *p(x)* known as propensity score. Propensity score is the probability of receiving a treatment conditional on characteristics that are observable in the treatment and control sample.

$$p(x) = pr(D = 1 \mid x)$$

Where D represents the event, and it takes the value 1 for target firms and 0 for non-target firms. Researchers use probit or logit (a discrete choice model) to calculate the conditional probability known as propensity score, as explained by (*Heckman* et al., 1997; *Rosenbaum* & *Rubin*, 1983, 1985). *Dehejia* and *Wahba* (2002) identify that PSM also controls for the ex-ante observable characteristics and endogeneity issues. *Lemmon* and *Roberts* (2010) find that observable characteristics are essential in an acquisition decision and PSM combines all such characteristics in propensity scores.

Following the literature, we use dummy as a dependent variable taking the value one "1" for target firms and zero "0" otherwise. We use those firm-level financial characteristics as explanatory variables that affect the likelihood of becoming a target firm (*Mughal* et al., 2021; *Powell*, 2001). The variables include I_MGT to represent inefficiency of the management (*Asquith*, 1983; *Kennedy* & *Limmack*, 1996; *Powell*, 1997). MB is market-to-book ratio which represents undervaluation (*Hasbrouck*, 1985). FCF represents free cash flow (*Jensen*, 1986; *Lehn* & *Poulsen*, 1989; *Palepu*, 1986; *Powell*, 1997). FSIZE represents firm size (*Palepu*, 1986; *Powell*, 1997). RP represents real property assets (*Ambrose* &

Megginson, 1992). LEV represents firm leverage, LIQUID represents firm liquidity (*Palepu*, 1986), and DSALE represents the change in sales. After regression analysis, we then construct a matched sample from the available pool of non-target firms based on propensity scores.

2. Measurement of Earnings Management

a) Accrual Earnings Management

We argue that the managers manipulate earnings prior to the takeover announcement as a tool to increase the market valuation or as a defensive strategy against the takeover. Therefore, we test EM in target firms during the quarters prior to the takeover announcement. Prior studies use discretionary accrual as a proxy for earnings manipulation. Many researchers find *Jones* (1991) and *Dechow* et al. (1995) models efficient for the estimation of discretionary accruals. *Healy* (1985) indicates that discretionary long-term accruals make only a small difference in total accruals. Besides, *Guenther* (1994) points out that managers have more discretionary options in the short term as opposed to the long term. Therefore, following *Guenther* (1994), *Teoh* et al. (1998a), and *Teoh* et al. (1998b), we use the discretionary current accrual model rather than discretionary long-term accrual.

We use quarterly data from CSMAR and regress current accruals on change in sales using all firms in the same industry as the target firm, but excluding the target and acquiring firms. We scale all the variables by total assets at the beginning of the quarter.

$$(1) \qquad \frac{CACC_{j,t}}{TA_{j,t-1}} = \alpha_0\left(\frac{1}{TA_{j,t-1}}\right) + \alpha_1\left(\frac{\Delta\ SALES_{j,t}}{TA_{j,t-1}}\right) + \varepsilon_{j,t}\ ,\ j \in \textit{estimation sample}$$

We compute discretionary current accruals (DISCCACC) using parameter estimates from equation (1). Following *Teoh* et al. (1998a) and *Kothari* et al. (2005) we subtract the change in trade receivables from a change in sales. In addition, following *Louis* (2004) and *Kothari* et al. (2005) we delete observations in which the absolute value of total current accruals are greater than one.

We compute discretionary current accruals (DISCCACC) for firm *i* in quarter *t* from residuals (see equation (2)).

$$(2) \qquad DISCCACC_{i,t} \equiv \left(\frac{CACC_{i,t}}{TA_{i,t-1}}\right) - \left(\hat{\alpha}_0\left(\frac{1}{TA_{i,t-1}}\right) + \hat{\alpha}_1\left(\frac{\Delta\ SALES_{i,t} - \Delta\ TR_{i,t}}{TA_{i,t-1}}\right)\right)$$

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Where CACC is current accrual for firm i in quarter t, ΔSALES, ΔTR and TA indicate the change in sales, quarterly change in trade receivable and total assets respectively.

b) Real Earnings Management

Following *Zang* (2012), we construct three proxies of real activities manipulation. i) Abnormal Level of Production Cost and ii) Abnormal Level of Discretionary Expenses iii) Total Level of Real EM.

Abnormal Level of Production Cost

For abnormal level of production cost, we run the following regression for each industry and quarter using all firms but excluding the targets and the acquirers.

$$\frac{PROD_{j,t}}{TA_{j,t-1}} = \alpha_0\left(\frac{1}{TA_{j,t-1}}\right) + \alpha_1\left(\frac{SALES_{j,t}}{TA_{j,t-1}}\right) + \alpha_2\left(\frac{\Delta\ SALES_{j,t}}{TA_{j,t-1}}\right) + \alpha_3\left(\frac{\Delta SALES_{j,t-1}}{TA_{j,t-1}}\right) + \varepsilon_{j,t} \tag{3}$$

We compute abnormal level of production cost (ABPROD) for each firm i in quarter t by taking the difference between actual production cost and the normal level of production cost predicted using the estimates from equation (3).

Abnormal Level of Discretionary Expenses

Similarly, to obtain abnormal level of discretionary expenses, we first run the following regression for each industry and quarter excluding the targets and the acquirers.

$$\frac{DISCEXP_{j,t}}{TA_{j,t-1}} = \alpha_0\left(\frac{1}{TA_{j,t-1}}\right) + \alpha_1\left(\frac{\Delta SALES_{j,t-1}}{TA_{j,t-1}}\right) + \varepsilon_{j,t} \tag{4}$$

Then we compute abnormal level of discretionary expenses (ABDISCEXP) for each firm i and quarter t by taking the difference between the actual level of discretionary expense and normal level of expense predicted using the estimates from equation (4).

In above equations, PROD represents quarterly production costs and DISCEXP represents discretionary expenses and $j \in$ estimation sample.

Total Level of Real EM

Following *Zang* (2012), we then combine abnormal production cost and abnormal discretionary expenses for further analysis. We first multiply ABDISCEXP by negative one and add it to ABPROD to get total real EM (REMTOTAL).

3. Excess Returns and Earnings Management

To find the effect of EM on excess returns of target firms' shareholders, we first use the index model (market-adjusted model) and market model to analyze the excess stock returns of target firms' shareholders around the announcement date of a merger.

Index Model is given by the equation:

$$AR_{it} = R_{it} - R_{mt} \tag{5}$$

Where AR_{it} represents market-adjusted returns for firm i in time t, R_{it} represents security returns for firm i in time t and R_{mt} represents returns on market portfolio in time t.

Market model is a linear function of returns on market portfolio and is given by the equation:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{6}$$

Where R_{it} represents returns on security i in time t and R_{mt} represents returns on market portfolio in time t.

Using these models first we compute market-adjusted returns (MAR), abnormal returns (AR) and cumulative abnormal returns (CAR) during a forty-one day (–20, +20), eleven day (–5, +5) and three day (–1, +1) event windows. We estimate model parameters over a 100-day window (–130, –31) using weighted index as a market proxy.

For univariate and bivariate analysis, we divide the target firms into tertiles on the basis of EM such that the top tertile contains firms with the highest EM and the bottom tertile contains firms with the least EM. Then for regression analysis, we create two dummy variables Accrual Dummy (ACC_D) for accrual based and Real Dummy (REM_D) for real EM such that the dummy takes the value of one if firms exhibit the highest EM and zero otherwise.

In the first stage, we only include the measures of EM in the regression model. In the next stage, we include extra control variables to evaluate the impact of EM on excess returns. We estimate the following regression models for target firms.

$$CAR = \alpha + \beta(ACCRUAL\ Dummy) \tag{7}$$

$$CAR = \alpha + \beta_1 (ACCRUAL\ Dummy) + \beta_2 (REM\ Dummy) \tag{8}$$

$$\begin{aligned} CAR = {} & \alpha + \beta_1 (ACCRUAL\ Dummy) + \beta_2 (REM\ Dummy) + \beta_3 (RSIZE_{i,t}) \\ & + \beta_4 (RLTD_{i,t}) + \beta_5 (DSIZE_{i,t}) \end{aligned} \tag{9}$$

Where CAR is the cumulative abnormal return from the merger announcement. *RSIZE* represents relative size which is the ratio of the target's total assets to the acquiring firm's total assets; *RLTD* is relatedness, which equals one if the target and the acquirer are in the same industry; *DSIZE* represents deal size, which is the log of deal value.

a) Estimation Results

This section presents the results of the study, including a comparison of the target firms' EM with the matched sample obtained using the PSM procedure. This section also presents the analysis to show the effect of target firms' pre-merger EM on shareholders' returns. Specifically, the main tests include PSM regression analysis, estimates of EM, estimates of target firms' abnormal returns, and regression analysis to find the association between target firms' EM and gains to shareholders.

1) Propensity Score Matching - Selection of Control Firms

This paper adopts the propensity score matching (PSM) procedure and constructs the matched sample of non-target firms in the same industry. A PSM regression analysis is presented in Table 1. The chi-square statistics and pseudo R-squares show the significance and explanatory power of the model. After estimating the propensity scores, a sample of matched firms is constructed from the available pool of non-target firms.

Table 1

Propensity Score Matching Diagnostics (Logit Analysis)

Variables	*Coefficient*	*Std. Error*	*p-value*
Intercept	0.335	0.328	0.273
MB	0.012	0.005	0.022**
FSIZE	0.130	0.004	0.000***
LEV	–0.543	0.181	0.000***
FCF	0.014	0.004	0.000***
I_MGT	0.000	0.001	0.781
RP	–0.434	0.037	0.000***
LIQUID	0.712	0.024	0.000***
DSALE	–0.002	0.000	0.025**
Time FE	Yes		
Industry FE	Yes		
Obs	3455		
Chi^2	26761.21		
P-value	0.000		
Pseudo R^2	0.089		

Note(s): The table shows the regression results of propensity score matching. The dependent variable is a dummy that takes a value of 1 for the target firm and 0 otherwise. For explanatory variables, those firm-level characteristics have been used that affect the likelihood of becoming a target firm. MB is the market-to-book ratio indicating firm undervaluation. FSIZE is the log of total assets indicating firm size. LEV is the leverage. FCF is the free cash flow. I_MGT is management inefficiency. RP is real property. LIQUID is firm liquidity. DSALE is the change in sales. Chi-square statistics and pseudo R-square values show the significance and explanatory power of the model. Time and target industry dummies are also included to control for time and industry effects. ***, **, and * denote the level of significance at 1%, 5%, and 10%, respectively.

Table 2 compares the financial characteristics of the treatment and control firms. We follow the literature and select firm-level characteristics that have been identified as affecting EM. These are leverage (LEV) (*Dechow* et al., 1995), firm size (FSIZE) (*Bartov* et al., 2000; *Park* & *Shin*, 2004), market to book ratio (MB) (*Carey* & *Simnett*, 2006), return on assets (ROA), and free cash flow (FCF) (*Kothari* et al., 2005). The post-match mean differences of all the variables indicate good matching quality.

Table 2

Propensity Score Matching Quality

Variables	*Treatment sample*			*Matched-pair sample*			*Mean difference*
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*t–stat*
FSIZE	3455	4.544	0.006	3455	4.545	0.007	0.071
ROA	3455	–0.020	0.002	3455	–0.025	0.001	–1.632*
LEV	3455	0.291	0.002	3455	0.289	0.001	0.261
FCF	3455	0.001	0.001	3455	0.021	0.002	0.897
MB	3455	3.854	0.236	3455	3.899	0.183	0.178

Note(s): The table shows a comparison of firm-level characteristics that have been identified as affecting EM. FSIZE is the log of total assets. ROA is the return on assets. LEV is the leverage. FCF is the operating cash flow. MB is the market to book ratio. All variables have been calculated using the data on CSMAR. t-test is the mean difference between the treatment sample (target firms) and control sample (matched firms). ***, **, and * denote the level of significance at 1 %, 5 %, and 10 %, respectively.

2) Earnings Manipulation Prior to Merger Announcement

Table 3 Panel A and B present the Spearman and Pearson correlations between the EM proxies used in this research. High correlation between REMTOTAL and ABPROD, and between REMTOTAL and ABDISCEXP is because REMTOTAL is the sum of the two real earnings management proxies. The correlation between DISCCACC and REMTOTAL is significant and positive (Spearman 5 % and Pearson 3 %). This positive correlation explains that the target firms are involved in both the accrual and real activities management at the same time. Moreover, the results show that DISCCACC has a significant positive correlation with abnormal production (ABPROD) (Spearman 9 % and Pearson 3 %). Similarly, the Spearman correlation between abnormal discretionary expenses (ABDISCEXP) and DISCCACC is positive, while the Pearson correlation is negative, but both are insignificant. On the other hand, the correlation between ABPROD and ABDISCEXP is significantly negative (Spearman 32 % and Pearson 6 %), indicating that the combined effect of real EM is stronger.

Table 3

Panel A: Spearman Correlations among EM Proxies

	DISCCACC	*REMTOTAL*	*ABPROD*	*ABDISCEXP*
DISCCACC	1			
REMTOTAL	0.0553***	1		
ABPROD	0.0950***	0.7097***	1	
ABDISCEXP	0.0091	–0.8242***	–0.3250***	1

Panel B: Pearson Correlations among EM Proxies

	DISCCACC	REMTOTAL	ABPROD	ABDISCEXP
DISCCACC	1			
REMTOTAL	0.0300***	1		
ABPROD	0.0348***	0.6311***	1	
ABDISCEXP	–0.0104	–0.8145***	–0.0641***	1

Note(s): Table 3 Panel A and B shows Spearman and Pearson correlations among various EM proxies. DISCCACC represents discretionary current accruals, a proxy for accrual based EM. REMTOTAL represents total real EM. ABPROD represents abnormal level of production cost. ABDISCEXP represents abnormal level of discretionary expenses where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&G expenses. REMTOTAL, ABPROD, and ABDISCEXP are the proxies for real EM. ***, **, and * denote the level of significance at the 1 %, 5 %, and 10 %, respectively.

Table 4 Panel A and B shows bivariate results of quarterly EM around merger announcement. Consistent with *Easterwood* (1998) we find that during the quarters leading to the announcement DISCCACC is positive and significant for the target firms showing that the firms are engaged in accrual EM activities while the matched sample of non-target firms shows insignificant EM. Similarly, our proxies for real EM are higher in target firms than non-targets. Researchers find that higher values of production cost and discretionary accruals indicate that firms are involved in both types of EM activities (*Cohen* & *Zarowin*, 2010; *Zang*, 2012). Thus, Panel A and B provide support for our hypotheses *H1* and *H2* that target firms EM is higher as opposed to non-target firms. Target firms' involvement in EM activities before the announcement date also supports the argument that the information about the possible merger is leaked well before the actual announcement, and they are involved in such activities to affect the deal in a favorable way. Further, we find insignificant EM in quarters after the announcement date providing support to the fact that firms do not involve in EM activities after the announcement quarter as it is too late for the target firm to manage earnings.

Table 4

Panel A: Earning Management Proxies around Announcement (Bivariate Results)

Earnings Management		t–4	t–3	t–2	t–1	t	t+1
DISCCACC	Target Firms	0.0554**	0.0536**	0.0534**	0.0529**	0.0524**	0.0203
		(2.75)	(2.72)	(2.81)	(2.81)	(2.81)	(0.68)
	Matched Firms	–0.0261	–0.0255	–0.0249	–0.0246	–0.0244	–0.0131
		(–0.90)	(–0.90)	(–0.91)	(–0.91)	(–0.91)	(–0.33)
ABPROD	Target Firms	–1.561***	–1.522***	–1.506***	–1.492***	–1.478***	–1.737
		(–6.38)	(–6.36)	(–6.45)	(–6.44)	(–6.44)	(–1.59)
	Matched Firms	–0.982	–0.958	–0.914	–0.905	–0.897	–1.230
		(–3.07)	(–3.07)	(–3.04)	(–3.04)	(–3.04)	(–1.03)
ABDISCEXP	Target Firms	1.952***	1.905***	1.833***	1.815***	1.798***	2.096
		(7.98)	(7.96)	(7.92)	(7.91)	(7.9)	(1.46)
	Matched Firms	0.195	0.19	0.244	0.241	0.239	0.737
		(0.53)	(0.53)	(0.69)	(0.69)	(0.69)	(1.87)

Panel B: Total Real Earnings Management around Announcement (Bivariate Results)

REMTOTAL	Target Firms	–3.667***	–3.577***	–3.483***	–3.450***	–3.418***	–3.819
		(–8.66)	(–8.63)	(–8.66)	(–8.65)	(–8.63)	(–1.44)
	Matched Firms	–1.313	–1.280	–1.284	–1.272	–1.260	–1.990
		(–2.55)	(–2.55)	(–2.65)	(–2.65)	(–2.65)	(–1.36)

Note(s): Table 4 Panel A and B show bivariate results of quarterly EM proxies around merger announcement. DISCCACC represents discretionary current accruals, a proxy for accrual based EM. REMTOTAL represents total real EM. ABPROD represents abnormal level of production cost. ABDISCEXP represents abnormal level of discretionary expenses where discretionary expenses are the sum of R&D expenses, advertising expenses and SG&G expenses. REMTOTAL, ABPROD, and ABDISCEXP are the proxies for real EM. t represents the event quarter. ***, **, and * denote the level of significance at the 1 %, 5 %, and 10 %, respectively.

3) Shareholder Gains around Merger Announcement

In this section, we first present the effect of merger announcement on all target firms, and then we perform univariate and multivariate analysis to show the impact of EM on shareholders' gains.

Table 5 displays the abnormal return (AR), market-adjusted abnormal return (MAR), commutative abnormal stock returns (CAR), and the commutative market-adjusted abnormal returns (CMAR) of all target firms on each day of the event window (–20,+20). We find statistically significant AR and MAR around the event date. On the event day 0, the AR and MAR in percentage terms is 27.8 %. The commutative abnormal returns (CAR) and commutative

market-adjusted abnormal return (CMAR) for the 41-day event window (–20,+20) in percentage terms are 44.7 % and 44.5 %, respectively, and all are positive around the event window. Thus, the results show that the market has reacted positively to the merger announcement. Market adjusted model is an approximation of the market model, so there is no significant difference in the values of CAR and CMAR, as can be seen from the table.

Table 5

Target Firms' Stock Returns during 41-Day Event Window

Day	*AR*	*t-stat*	*CAR*	*t-stat*	*MAR*	*t-stat*	*CMAR*	*t-stat*
–20	0.002	1.133	0.002	1.133	0.003	1.448	0.003	1.448
–19	0.000	–0.255	0.002	0.817	0.000	–0.129	0.003	1.223
–18	–0.002	–1.188	0.000	–0.054	–0.002	–1.026	0.001	0.387
–17	0.003	1.912	0.003	0.957	0.004	1.945	0.005	1.405
–16	0.004	1.248	0.007	1.572	0.004	1.277	0.009	1.942
–15	0.005	1.673	0.013	2.223**	0.006	1.706	0.014	2.583**
–14	0.004	1.939	0.017	2.861***	0.004	2.093**	0.019	3.287***
–13	0.001	0.703	0.018	2.927***	0.001	0.762	0.020	3.354***
–12	0.004	2.416**	0.022	3.494***	0.004	2.191**	0.024	3.860***
–11	0.004	1.730	0.026	3.707***	0.003	1.522	0.027	3.996***
–10	0.004	2.070**	0.030	4.188***	0.004	1.962	0.031	4.467***
–9	0.005	2.575**	0.035	4.788***	0.006	2.788**	0.037	5.206***
–8	0.005	2.594**	0.040	5.296***	0.005	2.697**	0.041	5.847***
–7	0.004	1.992	0.044	5.698***	0.005	2.061**	0.046	6.322***
–6	0.005	2.532**	0.050	6.059***	0.005	2.584**	0.051	6.719***
–5	0.007	2.855**	0.056	6.589***	0.007	2.936**	0.058	7.288***
–4	0.006	3.211***	0.063	7.004***	0.006	3.087***	0.065	7.712***
–3	0.011	4.541***	0.074	7.874***	0.011	4.641***	0.075	8.746***
–2	0.008	3.593***	0.081	8.350***	0.007	3.447***	0.082	9.301***
–1	0.018	6.833***	0.099	9.771***	0.018	6.683***	0.101	10.804***
0	0.278	15.649***	0.378	19.005***	0.278	15.641***	0.378	19.954***
1	0.069	8.749***	0.446	22.721***	0.068	8.690***	0.447	23.977***
2	0.001	0.919	0.447	22.765***	0.001	0.887	0.448	24.130***
3	–0.001	–0.772	0.447	22.578***	–0.001	–1.292	0.446	23.952***
4	0.000	–0.042	0.447	22.470***	0.000	0.089	0.446	23.897***
5	0.002	2.194**	0.449	22.375***	0.002	1.809	0.448	23.861***
6	–0.001	–1.471	0.448	22.263***	–0.001	–1.706	0.447	23.824***
7	0.000	–0.486	0.447	22.162***	0.000	–0.351	0.447	23.793***
8	0.000	–0.517	0.447	22.039***	0.000	–0.393	0.446	23.768***

Day	*AR*	*t-stat*	*CAR*	*t-stat*	*MAR*	*t-stat*	*CMAR*	*t-stat*
9	0.000	–0.246	0.446	21.904***	0.000	–0.078	0.446	23.707***
10	–0.001	–1.266	0.445	21.730***	–0.001	–1.225	0.445	23.592***
11	0.001	1.358	0.447	21.677***	0.001	1.302	0.447	23.625***
12	0.001	0.895	0.448	21.668***	0.001	1.071	0.448	23.738***
13	–0.001	–1.347	0.446	21.477***	–0.001	–1.894	0.446	23.600***
14	–0.001	–0.824	0.446	21.311***	–0.001	–1.595	0.445	23.479***
15	0.000	0.581	0.446	21.233***	0.001	0.986	0.445	23.495***
16	0.000	0.472	0.446	21.186***	0.001	0.870	0.446	23.550***
17	–0.001	–0.727	0.446	21.071***	–0.001	–1.618	0.445	23.440***
18	0.001	0.983	0.447	21.022***	0.001	1.081	0.446	23.535***
19	0.000	0.056	0.447	20.912***	0.000	–0.154	0.445	23.516***
20	0.001	0.610	0.447	20.801***	–0.001	–0.631	0.445	23.417***

Note(s): Table 5 shows the excess returns for sample target firms in the event window (-20,+20). MAR is the market adjusted return, CMAR is cumulative market adjusted return, AR is for abnormal return and CAR is for the cumulative abnormal return. ***, **, and * denotes the level of significance at the 1 %, 5 %, and 10 % respectively.

Table 6 presents the results of t-stat to examine whether the excess returns are statistically significant in multiple event windows. We find that all *CARs* and *CMARs* are significant at 1 %. *CAR (–1,+1), (–5,+5)* and *(-20,+20)* are 44.6 %, 44.8 % and 44.7 % respectively while *CMAR (–1,+1), (–5,+5)* and *(–20,+20)* are 44.7 %, 44.8 % and 44.5 % respectively.

Table 6

Abnormal Returns across all Target Firms – Multiple Event Windows

Return	*Event Window*	*Return Value %*	*t–statistic*
CAR	(–20,20)	44.7	20.801***
CMAR	(–20,20)	44.5	23.417***
CAR	(–1,+1)	44.6	22.721***
CMAR	(–1,+1)	44.7	23.976***
CAR	(–5,+5)	44.8	22.374***
CMAR	(–5,+5)	44.8	23.861***

Note(s): Table 6 shows the excess returns across multiple event windows. CARs(-20,+20), CMARs (–20,+20), CARs (–1,+1), CMARs (–1,+1), CARs (–5,+5) and CMARs (-5,+5) for the full sample and t statistics are reported. ***, **, and * denotes the level of significance at the 1 %, 5 %, and 10 % respectively.

4. Shareholder Gains and Earnings Management

a) Univariate Analysis

In this section, we perform univariate analysis by dividing the sample based on the level of EM. Table 7 Panel A and B demonstrate the impact of accrual and real EM on shareholders' excess returns, respectively. We split the sample firms based on accrual and real EM into (i) High EM firms and (ii) Low EM firms. We find that the firms with low EM exhibit higher and significant values of *CAR (–20,+20), CAR (–1,+1), CMAR (–20,+20)* and *CMAR (–1,+1).* Likewise, values for *AR (–1,+1)* and *MAR (–1,+1)* are also higher and significant. These results support our argument and hypothesis H3 that low EM activities are associated with high returns.

Table 7

Panel A: Stock Returns and Earnings Management (Accrual EM)

Returns	*EM*	*Value %*	*t-stat*	*Returns*	*Value %*	*t-stat*
CAR (–20,+20)	High	44.15	15.45***	AR (–20,+20)	0.199	1.07
	Low	47.05	11.19***		–0.088	–0.548
CMAR (–20,+20)	High	43.29	17.11***	MAR (–20,+20)	0.003	0.022
	Low	46.18	13.12***		–0.22	–1.52
CAR (–1,+1)	High	43.85	17.02***	AR (–1,+1)	5.82	4.97***
	Low	46.83	12.75***		7.87	4.45***
CMAR (–1,+1)	High	43.66	17.98***	MAR (–1,+1)	5.74	4.92***
	Low	46.64	13.51***		7.93	4.45***

Panel B: Stock Returns and Earnings Management (Real EM)

Returns	*EM*	*Value %*	*t-stat*	*Returns*	*Value %*	*t-stat*
CAR (–20,+20)	High	39.72	14.89***	AR (–20,+20)	0.09	0.58
	Low	46.92	12.80***		–0.02	–0.174
CMAR (–20,+20)	High	36.73	16.68***	MAR(–20,+20)	–0.03	–0.206
	Low	46.36	15.38***		–0.11	–0.99
CAR (–1,+1)	High	37.92	16.12***	AR (–1,+1)	5.77	5.24***
	Low	46.63	14.39***		8.16	5.70***
CMAR (–1,+1)	High	36.23	17.26***	MAR(–1,+1)	5.68	5.09***
	Low	46.63	15.57***		8.06	5.62***

Note(s): Table 7 Panel A and B show the stock returns in high and low EM firms. CAR is cumulative abnormal return, CMAR is cumulative market adjusted return, AR is abnormal return and MAR is market adjusted abnormal return. We categories the sample firms into high and low EM firms by dividing them into tertiles. Return value in percentage terms and t-stats are reported. ***, **, and * denotes the level of significance at the 1 %, 5 %, and 10 % respectively.

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b) Multivariate Analysis

In this section, we perform a multivariate analysis to show the impact of EM on shareholders' abnormal returns (CAR).[3] Initially, we only include both forms of EM in cross sectional regression. In the next stage, we introduce other control variables and assess their effect on abnormal returns and the significance of EM.

Table 8 contains the results of OLS regressions of equations 7 through 9. Column 1 shows the results for accrual EM (ACC_D). In the base case, when target firms have low accrual EM, gains to target firms' shareholder on the average are 25.25 %. If target firms exhibit high accrual EM, these gains are reduced by 7.1 %. As evidence suggests that target firms are involved in both types of EM activities so we include real EM (REM_D) in regression model. Column 2 lists the results of accrual and real EM. In the base case, when target firms have a low level of accrual and real EM, the gains are 26 % on the average. If target firms have high accrual and real EM, the gains to target firms' shareholders are reduced by 13.52 %. The inclusion of real EM reduces the magnitude of accrual EM in absolute terms, but both coefficients remain statistically significant and support the argument that the firms are involved in both kinds of EM activities.

Column 3 presents regression results after the addition of control variables. the coefficient of accrual EM (–0.044) and real EM (–0.083) is virtually unchanged in terms of significance and magnitude and shows that the combined effect of two kinds of EM is greater. Consistent with the findings of *Sloan* (1996), *Louis* (2004), *Cooper* et al. (2018), and *Mughal* et al. (2021), our results support hypothesis *H3* that high EM decreases the gain to target firms' shareholders. The relatively low explanatory power of the regression model is not unusual since *Servaes* (1991) argues that this is not uncommon for the regressions where researchers use market model residuals.

[3] Use of CMAR in regression analysis produces similar results.

Table 8

Cross-Sectional Regression of Abnormal Returns and Earnings Management

	(1)	*(2)*	*(3)*
INTERCEPT	0.253***	0.260***	0.234***
	(3.12)	(3.20)	(3.21)
ACC_D	–0.071**	–0.046**	–0.044**
	(2.32)	(2.33)	(–2.24)
REM_D	–	–0.088**	–0.083**
		(–2.45)	(–2.50)
RSIZE	–	–	–0.032**
			(–2.40)
RLTD	–	–	0.048**
			(2.45)
DSIZE	–	–	–0.002
			(–0.15)
F-VALUE	70.96	85.24	49.27
R^2	0.0031	0.0072	0.0083
N	3455	3455	3455
Firm & Time FE	Yes	Yes	Yes

Note(s): Abnormal returns are computed for target firms as the cumulative market model. The regression model is estimated using OLS. Description of independent variables: ACC_D is an indicator variable equal to one if the target firm's accrual EM is high. REM_D is an indicator variable equal to one if the target firm's real EM is high. RLTD is an indicator variable, which equals one if the two firms are in the same industry and zero otherwise. RSIZE is the relative size of the target to the acquirer. DSIZE is the log of deal value.

c) Conclusion

This paper investigates EM at target firms and its relationship with shareholders gains over the period from 2007 to 2020. Our findings provide evidence that target firms not only are involved in accrual based EM activities, but they are also engaged in real activities manipulation, and their combined effect is larger. Consistent with previous literature, we also show that the target firm's shareholders gain as a result of a takeover. As for the relationship between EM and shareholders' gains, the results indicate that the target firms' shareholders returns are greater in firms that exhibit low EM showing an inverse relationship between pre-merger EM and shareholders' gains. The addition of control variables in the regression model supports our main results. The results are consistent with previous literature. This study also supports the takeover defense and financial incentive hypothesis found in previous studies. Our findings also indicate that the pre-merger EM by target firms is not fully anticipated by the mar-

ket in the quarters preceding the announcement date. We do not find evidence of EM immediately after the announcement quarter.

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