Accrual Based Earnings Management and Stock Returns in Mergers and Acquisitions in the pre and post Sarbanes-Oxley and Dodd-Frank periods.

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ABSTRACT
Sarbanes-Oxley Act and Dodd–Frank Wall Street Reform and Consumer Protection Act have influenced the business environment for mergers and acquisitions. We examine how accrual based earnings management in mergers and acquisitions changed in the pre and post Sarbanes-Oxley and Dodd-Frank periods. We further explore whether or not the change of accrual based earnings management affects an abnormal stock return around the merger announcement. Our results show that after the introduction of Sarbanes-Oxley and Dodd-Frank accrual based earnings management by acquirers tends to decline and to be negatively associated with their stock returns around the merger announcement. These findings are prevalent in cash merger attempts. The negative impact seems to be much stronger in cash merger attempts than in stock merger attempts. In targets, however, we do not find a decrease in accrual based earnings management. Its impact on stock returns has changed to be insignificant after the introduction of Sarbanes-Oxley.

Key Words: Earnings Management, Merger, Sarbanes-Oxley, Dodd-Frank
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1. Introduction

In 2011, Hewlett Packard (HP) purchased Autonomy, a European unstructured data analytics software maker, for $11 billion with an expectation of positive synergy between HP and Autonomy. After one year, however, this purchase turned out to be a disaster to HP. HP alleged Autonomy artificially cooked its financial statements through improper transactions with software resellers and questionable accounting practices to inflate its value at the time of purchasing. HP insisted this transaction caused nearly a $9 billion loss and filed a fraud case against Autonomy (http://www.zdnet.com/article/worst-tech-mergers-and-acquisitions-hp-and-autonomy-google-and-motorola-and-more/).

This case shed light on how earnings management and its potential manipulative characters affect the outcomes of mergers and acquisitions and post-merger litigation.

Earnings management is a well-known practice in the academia and industry. As a survey by Graham et al (2005) indicates, firm managers have clear reasons to engage in earnings management. Managers generally want to maintain or improve their firms' credibility and stock prices. To do so, they need to show good performance by meeting or exceeding earnings benchmarks – quarterly earnings in the previous year and analysts' earnings estimate. Interestingly, managers also show their willingness to sacrifice a value maximizing investment decision to meet earnings benchmarks.

By the same token, as shown in the case of HP and Autonomy, managers in mergers and acquisitions are believed to have good reasons to engage in earnings management. A seller or target who wants to receive an attractive offer price for a share or merger terms may be willing to engage earnings management and enhance credibility and stock price. Through managing earnings, a buyer or bidder also may be tempted to improve its financial status and stock price to have a favorable stock exchange rate in a stock merger attempt or reduce its financing costs of acquiring the target in a cash merger attempt. Supporting this argument, Erickson and Wang (1999) show that a buyer or bidder in a stock merger tends to inflate earnings and increase its stock price around a merger announcement to reduce the cost of the acquisition. Gong, Louis, and Sun (2008) argue that in a stock merger this type of earnings management is associated with post-merger lawsuits.

Prior literature has classified earnings management into two types: accrual based earnings management and real activities manipulation. Accrual based earnings management involves the choice of accounting methods or timing of recognition within accounting principles to artificially inflate or deflate earnings (Dechow and Skinner 2000, Roychowdhury 2006). Real activities manipulation involves actions that change operating, investing, or financing activities to introduce purposeful earnings. Somehow both earnings managements have the intention of misleading investors to believe in the artificial performance of firms. Accrual based earnings managements generally do not change direct cash flows, whereas real activities manipulations tend to change direct cash flows (Roychowdhury 2006 and Gunny 2010). Cohen, Dey and Lys (2008), Barton and Simko (2002) and Gunny (2010) argue that accrual based earnings management draws serious attention from auditors and regulators. Thus, firms are limited in actively using accrual based earnings management.

In this paper, we explore how this accrual based earnings management is associated with mergers and acquisitions over the time period, especially around Sarbanes-Oxley (SOX) in 2002 and Dodd-Frank (DF) in 2010. Both are believed to have changed the business environment. Sarbanes-Oxley (SOX) is designed to protect investors from accounting manipulation or frauds. Sarbanes-Oxley (SOX) requires information transparency and responsibility of financial managers. On the other hands, Dodd-Frank (DF) was introduced after the financial crisis caused by risky investments of financial institutions in 2008. Dodd-Frank (DF) oversees financial institutions and market risks. Especially, Dodd-Frank (DF) amends the Bank Holding Company Act to limits certain activities of bank holding companies in their mergers and acquisitions, lending, etc to stabilize the financial market. (https://www.law.cornell.edu/wex/dodd-frank_title_VI). We believe these regulations/policies may generate new business environment, improving quality of earnings and limiting the use of earnings management in mergers and acquisitions. They may reduce the level of accrual based earnings management.

Secondly, we test the impact of accrual based earnings management on stock returns (measured by $CAR_{-1 \text{ to } 1}$) of acquirers and targets during the pre and post Sarbanes-Oxley and Dodd-Frank periods. It is

well known that the stock returns of acquirers and targets relate to post-merger synergy or performance expectation. Thus, if Sarbanes-Oxley (SOX) and Dodd-Frank (DF) are designed to restrict manipulative characters of accrual based earnings management and to improve transparency in financial statements, the introduction of SOX or/and DF may cause stock prices to negatively respond to accrual based earnings management.

Thirdly, we further explore whether the relationship between accrual based earnings management and stock returns is associated with a payment method in merger attempts. In the merger literature, the stock payment is believed to signal overvaluation of an acquirer's stock price and uncertainty of a target value (post-merger risk sharing). On the other hand, cash payment signals good post-merger performance and weak information asymmetry. Thus, this signaling effect may tempt managers of cash merger attempts to actively use accrual based earnings management. Accrual based earnings management in cash merger attempts (supposedly signaling good post-merger performance) may have a more negative impact on stock returns than in stock merger attempts.

We test these arguments, using accounting and finance information of 3,791 companies involved in mergers and acquisitions from 1987 to 2015. Our test results show that after the introduction of Sarbanes-Oxley and Dodd-Frank, accrual based earnings management by acquirers tends to decline. The positive relationship between accrual based earnings management and stock returns of acquirers changes to be negative. This pattern are prevalent in cash merger attempts. We also observe accrual based earnings management in cash merger attempts tends to have more negative impacts on stock returns than in stock merger attempts. In targets we do not find reduced earnings management. After the introduction of Sarbanes-Oxley its significant impact on the targets' stock returns becomes insignificant. Overall these findings imply that Sarbanes-Oxley and Dodd-Frank influence the level of accrual based earnings management and its relationship with stock returns in mergers and acquisitions.

This paper is composed of five sections. Section 2 introduces the literature review and hypotheses. Section 3 explains data and methodologies. Section 4 and 5 share our test results and conclusion.

2. Literature and Hypotheses

Surveying 401 financial executives, Graham et al (2005) report that managers tend to focus on earnings rather than cash flow. The two most important earnings benchmarks are quarterly earnings for the same quarter last year and the analyst consensus estimate. Meeting and exceeding earnings benchmarks is very important to build credibility with the market and to maintain or improve firms' stock prices. Managers are willing to trade off between the short term need to deliver satisfactory earnings and the long term objective of making value maximization investment decisions.

Erickson and Wang (1999) argue that acquirers in stock for stock mergers have incentives to increase their own stock prices. The increased stock price will reduce the cost of acquiring the target firm. Acquirers may prefer to use accrual based earnings management, such as accelerating recognition of revenues, deferring expenses, etc. After testing 55 stock merger cases from 1985 to 1990, they find that acquirers in stock for stock mergers tend to inflate earnings prior to the merger agreement in order to reduce the cost of the merger attempt. The magnitude (measured by abnormal accrual difference during a period of Q-2 to Q+3. Here Q is a quarter of a merger announcement) of accrual based earnings management positively relates to the size of transaction. However, they find no evidence of accrual based earnings management in cash mergers.

Louis (2004) explores market efficiency and earnings management. Specifically, he tests how accrual based earnings management relates to post-merger underperformance of acquirers in stock for stock mergers. Exploring 373 cash and stock mergers during the period of 1992 and 2000, he finds that acquirers in stock mergers tend to inflate earnings in the quarter preceding a merger announcement. Abnormal returns of acquirers over one month (trading 21 days) prior to the merger announcement negatively relate to accrual based earnings management. The post-merger long term

(3 year) performance of acquirers in stock mergers also negatively associates with accrual based earnings management. This is partially attributable to the reversal effect of accrual based earning management. However, he finds a positive relationship between the post-merger long term performance and accrual based earnings management in cash mergers.

Interestingly the effect of accrual based earnings management by acquirers is not noticed during the post-merger period. Rather, the effect starts to be observed at financial analysts' forecasting one quarter after the merger announcement. And he argues this earnings management effect somehow relates to the incentive plans to management.

Gong, Louis, and Sun (2008) state that there is a positive association between pre-merger abnormal accruals of acquirers and post-merger announcement lawsuits in stock merger attempts. The market only partially anticipates the effects of post-merger announcement lawsuits at the merger announcement. The long-term post-merger underperformance is largely limited to litigated acquisitions. Investors not only partially understand the effect of earnings management on a stock price but also consider the contingent legal costs associated with earnings management.

Roychowdhury (2006) test three types of possible real manipulation: sales manipulation through price discount, reduction of discretionary expenditure of R&D, advertising costs, and SG& A expenses, and reduction of COGS production costs. He explores annual financial information of 4,252 firms (in non-financial and regulated industries) from 1987 to 2001 and focuses on suspect-firms just meeting zero earnings target. He finds suspect-firms tend to show low cash flows from operations (CFO) resulting from price discounts, low discretionary expenses and overproduction resulting in earnings improvement. These patterns generally appear in a period of zero or low earnings. This real earnings management is somehow associated with debt amounts, growth opportunities, and industry membership of a firm.

Cohen et al (2008) explore the annual financial information of non-financial firms during the period of 1987 to 2005. They divide the period into pre Sarbanes-Oxley (1987 through 2001) and post Sarbanes-Oxley (2002 through 2005). They further subdivide the pre Sarbanes-Oxley into two time periods: the period of prior major corporate scandals (1987 through 1999) and the period immediately preceding the passage of Sarbanes-Oxley (2000 and 2001). They notice an increase in accrual based earnings management during the pre Sarbanes-Oxley period (1987 through 2001) and even larger increases in the scandal period (1987 through 1999). Following the passage of Sarbanes-Oxley (2002 through 2005), however, accrual based earnings management declines while real management based on cash flow from operation, discretionary expenses, and production costs (Roychowdhury 2006) increases. They find these patterns of accrual based and real management are prevalent in suspect-firms, which have very low earnings close to forecasted earnings by analysts. And the increase of accrual based earnings management relates to the contemporaneous increase of option-based compensation.

Extending these findings we explore how accrual based earnings management is associated with mergers and acquisitions over the time period, especially around Sarbanes-Oxley (SOX) and Dodd-Frank (DF). In the past 20 years we've experienced two major crises, which prompted Sarbanes-Oxley (SOX) and Dodd-Frank (DF). One of purposes of Sarbanes-Oxley is to protect investors from accounting manipulation or frauds. Sarbanes-Oxley requires information transparency and responsibility of financial managers. Thus, Sarbanes-Oxley would discourage managers' willingness to undergo earnings management and possibly, reduce the degree of information asymmetry between a buyer and a seller in merger attempts. On the other hands, Dodd-Frank (DF) is introduced after the financial crisis caused by risky investments of financial institutions in 2008. Dodd-Frank oversees financial institutions and market risk to stabilize the

financial market. Dodd-Frank regulates derivatives (credit swaps), risky assets investment, corporate governance, performance compensation, etc. Especially, Dodd-Frank amends the Bank Holding Company Act to limit certain activities of bank holding companies in their mergers and acquisitions, lending, etc., to stabilize the financial market (https://www.law.cornell.edu/wex/dodd-frank_title_VI). We believe these regulations may prompt a new business environment to improve the quality of earnings and limit the use of earnings management in mergers and acquisitions. They may reduce the level of accrual based earnings management. Contrary to these expectations, however, there is a good chance that firms in mergers and acquisitions comply with accounting rules and principles and continuously manage earnings even under new business environment. The earnings management offers an advantageous bargaining position in mergers and acquisitions. These arguments introduce our first testable null hypothesis:

H_0: Sarbanes-Oxley (SOX) and Dodd-Frank (DF) do not affect accrual based earnings management in mergers and acquisitions.

Secondly, we test the impact of accrual based earning management on stock price returns around the period of Sarbanes-Oxley and Dodd-Frank. In the literature, it is well known that the stock return depends on the post-merger synergy or performance that the buyer or bidder expects to achieve. We believe Sarbanes-Oxley (SOX) and Dodd-Frank (DF) may improve investors' perceptions on earnings management and its manipulative characters. Thus accrual based earnings management noticed by a bidder or buyer may be associated with a discount of prospective post-merger synergy and performance. It may also negatively affect a stock price. Supporting this proposition, Sloan (1996) shows that accruals in accounting negatively relate to expected cross-sectional returns. Investors misunderstand accruals as part of persistent component of earnings. On the other hand, if bidders or financial analysts already considered accrual based earnings management, regardless of Sarbanes-Oxley and Dodd-Frank, the stock price is not related to accrual based earnings management. Supporting no influence of earnings management, scholars (Desai, Rajgopal, and Venkatachalam (2004), Cheng and Thomas (2006) and Ball, Gerakos, Linnainamaa, and Nikolaev (2016)) argue that accruals do not explain the value premium in stock price and the expected cross sectional returns. Especially, Gerakos, Linnainamaa and Nikolaev (2016) point out that instead of accruals, cash-based operating profitability well explains expected returns, even 10 years ahead. These competing arguments introduce the second testable null hypothesis:

H_0: Accrual based earnings management around Sarbanes-Oxley and Dodd-Frank does not affect a stock return around a merger announcement.

The stock return around the merger announcement varies depending on a payment method – cash or stock. This is believed to relate to signaling of information asymmetry or/and valuation (Hansen (1987) and Travlos (1987)). Stock payment signals overvaluation of an acquirer's stock price and uncertainty of a target value (post-merger risk sharing). Supporting this argument, Erickson and Wang (1999) show evidence that in stock merger attempts, acquirers tend to artificially inflate earnings to increase stock price and reduce the transaction cost of a merger. On the other hand, a cash payment implies good post-merger performance and weak information asymmetry. Thus, accrual based earnings management caught in cash merger attempts (supposedly

signaling good post-merger performance) may have a more negative impact on a stock return than in stock merger attempts. These arguments suggest the third testable null hypothesis:

H_0: Accrual based earnings management and stock return around a merger announcement does not associate with a payment method in mergers and acquisitions.

3. Data and Model

3.1. Data

We use SDC and collect merger and acquisition information during the period of 1987 to 2015. For our research purpose we explore acquirers and targets, respectively. As shown in Table 1, the availability of accounting data leaves us 3,801 company information involving mergers and acquisitions (2,416 acquirers and 1,385 targets). A sample of acquirers (targets) shows an average transaction size of $441.53 ($823.73) million. Around 32 percent of acquirers use a stock payment whereas 27 percent of targets receive cash. Not many of acquirers or targets use tender offers to complete mergers. Regarding a merger attitude, about 98 percent of acquirers involve friendly merger attempts. Sixty-one percent of targets show a friendly attitude. Table 1 also displays a distribution of sample sizes over the periods and of two digit SICs. Around 60% of acquirers and 70% of targets come from the period of 1990 to 2000. Industries of SIC 28 (Chemical & Allied Products), SCI 36 (Electronic & Other Electric Equipment), SCI 38 (Instruments & Related Products), SCI 48 (Communications), SCI 73 (Business Service) have at least 10 % of acquirer samples, respectively. Industries of SCI 28 (Chemical & Allied Products), SCI 36 (Electronic & Other Electric Equipment), SCI 48 (Communications), and SCI 73 (Business Service) have at least 10% of target samples, respectively.

Table 1. Data Description

	Acquirer	Target
Numbers	2416	1385
Transaction Value (Unit: $ million)	$441.53	$823.73
Max	$72,671.00	$89,167.72
Min	$0.01	$0.023
Stock Payment (%)	32.04%	26.64%
Tender offer (%)	3.15%	6.00%
Attitude (Friendly, %)	97.88%	60.58%
Attitude (Hostile, %)	0.54%	1.95%

Year	Acquirer (Number of Firms)	Target (Number of Firms)
1987	41	57
1988	42	75
1989	80	125
1990	91	96
1991	66	51
1992	108	67
1993	141	70
1994	117	106
1995	118	107
1996	158	122
1997	210	85
1998	182	105
1999	133	96

2000	131	64
2001	85	23
2002	72	12
2003	65	15
2004	65	14
2005	70	12
2006	84	18
2007	62	14
2008	47	10
2009	30	9
2010	46	10
2011	43	5
2012	35	1
2013	26	2
2014	42	8
2015	26	6

2 Digit SIC	Acquirer (Number of Firms)	Target (Number of Firms)
10 (Metal, Mining)	1	0
13 (Oil &Gas Extraction)	142	72
20 (Food & Kindred Products)	46	33
22 (Textile Mill Products)	0	1
23 (Apparel & Other Textile Products)	2	0
27 (Printing & Publishing)	1	1
28 (Chemical & Allied Products)	276	149
30 (Rubber & Miscellaneous Plastics Products)	4	9
33 (Primary Metal Industries)	9	5
34 (Fabricated Metal Products)	24	28
35 (Industrial Machinery & Equipment)	240	0
36 (Electronic & Other Electric Equipment)	320	172
37 (Transportation Equipment)	18	6
38 (Instruments & Related Products)	258	129
48 (Communications)	277	145
49 (Electric, Gas & Sanitary Services)	0	106
50 (Wholesale Trade – Durable Goods)	82	59
51 (Wholesale Trade – Nondurable Goods)	16	12
54 (Food Stores)	0	1
58 (Eating & Drinking Places)	38	36
59 (Miscellaneous Retail)	12	8
73 (Business Service)	295	158
79 (Amusement & Recreation Services)	8	6
80 (Health Services)	126	74
87 (Engineering & Management Services)	9	6
99 (Non-Classifiable Establishments)	2	1

3.2. Periods

To test the trend of accrual based earnings management over the sample period of 1987 to 2015, we discretionally divide our sample period into several time periods: the period of 1987 to 1989, in which world stock market crashed and many savings and loan institutions started to close (BASE), the post financial crisis period of 1990 to 1999 (POSTCR), the pre Sarbanes-Oxley period of 2000 to 2001 (PRESOX), the Sarbanes-Oxley period of 2002 to 2007 (SOX), the period of pre Dodd-Frank of 2008 to 2009 (PREDF), the Dodd-Frank period of 2010 to 2011 (DF), and post Dodd-Frank period of 2012 to 2015 (POSTDF), during which the global crisis associated with European debts occurred. For a sensitivity test, we also use another Dodd-Frank (DF) period of 2010 to 2015. However test results are the same regardless of a different period for Dodd-Frank (DF).

3.3. Accrual Based Earnings Management

To measure quarterly accrual based earnings management, we use a cross-sectional model (Jones 1991) as described in Dechow et al (1995). For each quarter, we estimate a model for every industry classified by its two digit SIC code. Thus, the model partially controls for industry wide changes in economic conditions while allowing the coefficients to vary across time.

$$\frac{TA_{it}}{Assets_{i,t-1}} = k_{1t}\frac{1}{Assets_{i,t-1}} + k_2\frac{\Delta REV_{it}}{Assets_{i,t-1}} + k_3\frac{PPE_{it}}{Assets_{i,t-1}} + \varepsilon_{it}$$

Here TA = EBXI (earnings before extraordinary items and discontinued operations, Compustat 123) – CFO (operating cash flow from the statement of cash flow, Compustat 308- Compustat 124); Assets = Asset (Compustat data item 6); ΔRev = change of account receivable (change of Compustat data item 12); PPE = gross value of property, plant, and equipment (Compustat 7). Firm i and Quarter t are denoted as i and t, respectively. Following Kothari et al (2005), we consider ROA and two digit SIC to calculate normal accruals (estimated TA/Assets in the equation above). Then we estimate accrual based earnings management (discretionary accrual) by subtracting normal accruals (estimated TA/Assets) from actual TA/Assets of each sample (firm i).

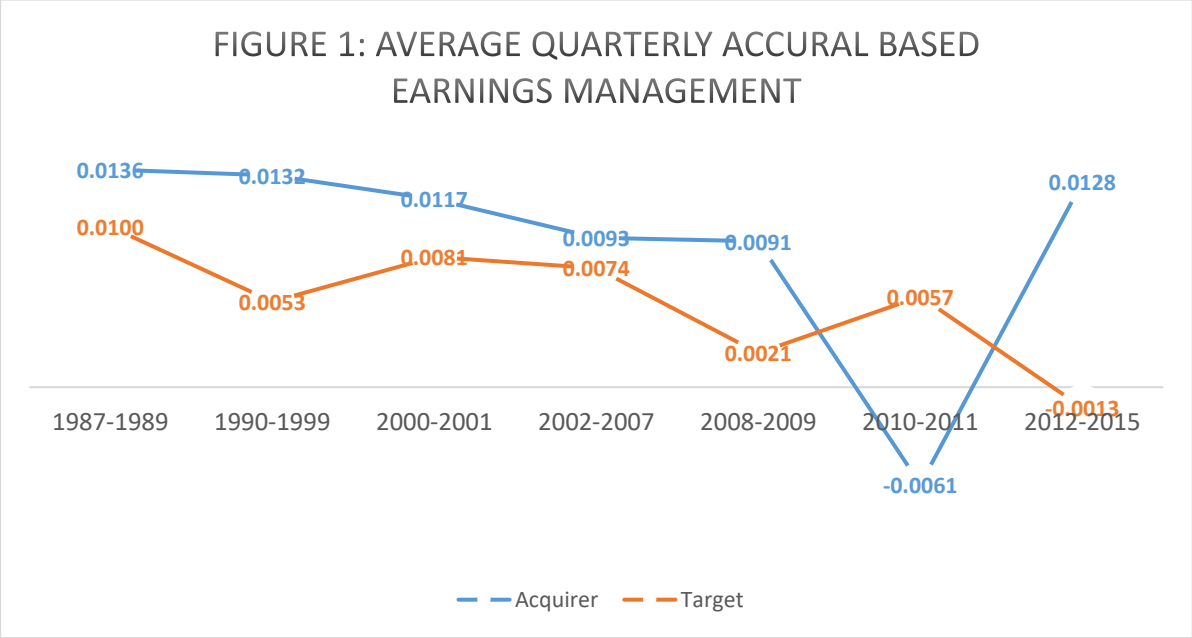
We measure quarterly accrual based earnings management over five quarters around a merger announcement (Q-4 to Q, Q is a Quarter of a merger announcement). Table 2 presents that on average acquirers have accrual based earnings management of 0.0109 (Q-4), 0.0083 (Q-3), 0.0125 (Q-2), 0.0115 (Q-1) and 0.0126 (Q) over five quarters, indicating positive and increasing quarterly earnings management before or around the merger announcement. Targets also show the similar pattern before or around the merger announcement. Their quarterly accrual based earnings management is 0.0110 (Q-4), 0.0035 (Q-3), 0.0044 (Q-2), 0.0070 (Q-1), and 0.0061 (Q).

As shown in Figure 1, the average of five quarterly accrual based earning management (Q-4 to Q) of acquirers and targets tend to decline over sub-periods (e.g. Pre-SOX, SOX, Pre-DF, DF, etc). On average, acquirers seem to show more earnings management than targets.

Table 2. Accrual Based Earnings Management of Acquirers and Targets

Acquirer	Q-4	Q-3	Q-2	Q-1	Q
Mean	0.0109	0.0083	0.0125	0.0115	0.0126
Max	0.4836	0.5426	0.3492	0.4500	0.7286
Min	-0.3677	-0.3031	-0.4359	-0.2167	-0.8265
Standard Deviation	0.0510	0.0518	0.0476	0.0575	0.0599

Target	Q-4	Q-3	Q-2	Q-1	Q
Mean	0.0110	0.0035	0.0044	0.0070	0.0061
Max	0.5566	0.4522	0.6863	0.4615	0.6528
Min	-0.2262	-0.3700	-0.8397	-0.3716	-0.4202
Standard Deviation	0.0589	0.0601	0.0740	0.0635	0.0655



3.4. Stock Return

To measure stock price movement, using a market model, we calculate a cumulative abnormal return (CAR) from one day before to one day after the announcement (-1 to +1). The market model estimating period (window) is -250 to -46.

4. Test result

4.1. Trend of Accrual Based Earnings Management

To test the first hypothesis, we regress annual accrual-based earnings management on dummy variables of each sub-period (e.g. Pre-SOX, SOX, DF, etc.). Here, annual accrual-based earnings management is a summation of quarterly accrual based earnings management during Q-4 to Q-1. Q is a Quarter of a merger announcement. Each sub-period dummy variable has a value of 1 or 0. An intercept is a coefficient of BASE period (1987-1989). A coefficient of another sub-period variable indicates how much annual accrual based earning management of that period changes over that of BASE period. If the coefficient is statistically insignificant, both sub-period and BASE period tend to show a similar level of accrual based earnings management.

Table 3 reveals that acquirers' accrual based earnings managements tend to diminish over the periods. Especially, the decrease of accrual based earnings management during the periods of Dodd-Frank (DF, -0.0777) and post Dodd-Frank (POSTDF, -0.0286) is more noticeable than during the period of Sarbanes-Oxley (SOX, -0.0162) in Model 1. As shown in Model 2, 3, and 4, a positive and significant coefficient (0.0145) of a stock payment dummy variable indicates that overall acquirers in stock merger attempts are found to involve more accrual based earnings management than those in cash merger attempts. Accrual based earnings management seems to

gradually reduce in cash merger attempts, not stock merger attempts, over sub periods of Pre Sarbanes-Oxley (PRESOX) to Dodd-Frank (DF).

Variability or level measured by of accrual based earnings management, measured by absolute value, also tends to decrease after Sarbanes Oxley. Changes of accrual based earnings management during the Pre Dodd-Frank (PREDF, -0.0456), Dodd-Frank (DF, -0.0354) and post Dodd-Frank (POSTDF, -0.0499) are more noticeable than during the period of Sarbanes-Oxley (SOX, -0.0341) in Model 5. Model 6, 7, and 8 show that acquirers in stock merger attempts (0.0176) tend to engage more accrual based earnings management than in cash merger attempts. Over sub periods, variability or level of accrual based earnings management reduces more in stock merger attempts than in cash merger attempts.

Table 3. Changes of Accrual Based Earnings Management in Acquirers

	Accruals				Absolute Values of Accruals			
	All Mergers (Model 1)	All Mergers (Model 2)	Cash Mergers (Model 3)	Stock Mergers (Model 4)	All Mergers (Model 5)	All Mergers (Model 6)	Cash Mergers (Model 7)	Stock Mergers (Model 8)
Intercept	0.0543**	0.0386**	0.0594**	0.0441**	0.1540**	0.1331**	0.1431**	0.1760**
	(7.2375)	(16.2003)	(6.9957)	(2.9568)	(19.9269)	(54.2341)	(16.5864)	(11.2948)
1990 to 1999	-0.0036		-0.0137	0.0132	-0.0052		-0.0005	-0.0192
(POSTCR)	(-0.4476)		(-1.5077)	(0.8469)	(-0.6369)		(-0.0574)	(-1.1797)
2000 to 2001	-0.0148		-0.0212*	-0.0009	-0.0120		0.0025	-0.0442**
(PRESOX)	(-1.4921)		(-1.9279)	(-0.0408)	(-1.1733)		(0.2266)	(-2.0327)
2002 to 2007	-0.0162*		-0.0224**	0.0049	-0.0341**		-0.0216**	-0.0712**
(SOX)	(-1.8262)		(-2.3272)	(0.2171)	(-3.7470)		(-2.2001)	(-3.0238)
2008 to 2009	-0.0179		-0.0269*	0.0164	-0.0456**		-0.0374**	-0.0515
(PREDF)	(-1.3480)		(-1.9488)	(0.4531)	(-3.3422)		(-2.6614)	(-1.3593)
2010 to 2011	-0.0777**		-0.0838**	-0.0614*	-0.0354**		-0.0228*	-0.0682*
(DF)	(-6.1595)		(-6.3523)	(-1.7567)	(-2.7209)		(-1.7003)	(1.8665)
2012 to 2015	-0.0286**		-0.0346**	-0.0132	-0.0499**		-0.0374**	-0.0814**
(POSTDF)	(-2.5346)		(-2.8877)	(-0.4507)	(-4.2903)		(-3.0680)	(-2.6645)
Stock Payment		0.0145**				0.0176**		
		(3.4347)				(4.0607)		
R-square	2.4176%	0.4863%	3.1290%	0.9713%	2.4312%	0.6784%	2.1923%	2.4668%
Sample	2416	2416	1642	774	2416	2416	1643	773

Dependent variable is a sum of accruals or absolute values of accruals over Q-4 to Q-1 before Q (Quarter of Announcement). Dummy variables for 1987 to 1989, 1990 to 1999, 2000 to 2001, 2002 to 2007, 2008 to 2009, 2010 to 2011, and 2012 to 2015 are used as independent variables to estimate impacts of each period on accruals. In these models, an intercept indicates an amount of accrual based earnings management during the period of 1987 to 1989. * is significant at p-value of 0.1. ** is significant at p-value of 0.05.

Table 4 shows that accrual based earnings management of targets seems to diminish over the periods. But Model 9, 10, 11 and 12 indicate the changes (coefficients) are statistically insignificant regardless of the payment method after the period of post financial crisis (POSTCR). The insignificance of coefficients of period dummy variables shows that Sarbanes-Oxley (SOX) and Dodd-Frank (DF) are unlikely to affect accrual based earnings management of target firms. During Pre Sarbanes-Oxley (PRESOX) period, however, a significant decrease led by cash merger attempts is observed. As shown in Model 13, 14, 15 and 16, variability (or level) of accrual based earnings management in targets also does not significantly diminish except for a period of post Dodd-Frank. Unlike acquirers, targets in stock merger attempts show less variability of earnings management than in cash merger attempts.

Overall, these findings reveal that Sarbanes-Oxley (SOX) and Dodd-Frank (DF) negatively affect acquirers' accrual based earnings managements, but weakly or insignificantly do targets' ones. Especially the impact of Dodd-Frank (DF) is much stronger than that of Sarbanes-Oxley (SOX). These findings imply that risk management requirements imposed on financial institutions also discourage the usage of accrual based earnings management. Cash merger attempts, not stock merger attempts, show a gradual reduction of acquirers' accrual based earnings management over periods. It is also confirmed that acquirers involved

in stock merger attempts tend to inflate their earnings more than acquirers involved in cash merger attempts. This finding supports the previous finding that acquirers tend to manage earnings to inflate stock price to reduce a merger transaction cost (Erickson and Wang (1999)).

Table 4. Changes of Accrual Based Earnings Management in Targets

	Accruals				Absolute Values of Accruals			
	All Mergers (Model 9)	All Mergers (Model 10)	Cash Mergers (Model 11)	Stock Mergers (Model 12)	All Merges (Model 13)	All Merges (Model 14)	Cash Mergers (Model 15)	Stock Mergers (Model 16)
Intercept	0.0442**	0.0279**	0.0473**	0.0201	0.1773**	0.1753**	0.1793**	0.1620**
	(5.8214)	(7.3027)	(5.7838)	(0.9203)	(22.9949)	(42.2333)	(21.4022)	(7.6179)
1990 to 1999	-0.0233**		-0.0247**	-0.0035	-0.0089		-0.0058	-0.0069
(POSTCR)	(-2.7063)		(-2.6009)	(-0.1529)	(-1.0181)		(-0.5948)	(-0.3048)
2000 to 2001	-0.0176		-0.0373*	0.0269	0.0096		0.0248	0.0038
(PRESOX)	(-1.1667)		(-1.8992)	(0.9348)	(0.6263)		(1.2365)	(0.1339)
2002 to 2007	-0.0115		-0.0117	0.0085	-0.0184		-0.0006	-0.0328
(SOX)	(-0.7524)		(-0.6139)	(0.2866)	(-1.1901)		(-0.0291)	(-1.1323)
2008 to 2009	-0.0358		-0.0318	-0.0495	-0.0357		-0.0250	-0.0879
(PREDF)	(-1.2364)		(-0.9953)	(-0.6945)	(-1.2135)		(-0.7630)	(-1.2647)
2010 to 2011	-0.0279		-0.0192	-0.0272	-0.0482		-0.0395	-0.0542
(DF)	(-0.8611)		(-0.4805)	(-0.4788)	(-1.4684)		(-0.9673)	(-0.9771)
2012 to 2015	-0.0415		-0.0522	-0.0105	-0.0842**		-0.0801*	-0.0742*
(POSTDF)	(-1.3594)		(-1.1760)	(-0.2334)	(-2.7184)		(-1.7599)	(-1.6985)
Stock		-0.0077				-0.0238**		
Payment		(-1.0327)				(-3.1664)		
R-square	0.6271%	0.0770%	0.8604%	0.9097%	0.8967%	0.7197%	0.0997%	1.9692%
Sample	1385	1385	1016	369	1385	1385	1016	368

Dependent variable is a sum of accruals or absolute values of accruals over Q-4 to Q-1 before Q (Quarter of Announcement). Dummy variables for 1987 to 1989, 1990 to 1999, 2000 to 2001, 2002 to 2007, 2008 to 2009, 2010 to 2011, and 2012 to 2015 are used as independent variables to estimate impacts of each period on accruals. In these models, an intercept indicates an amount of accrual based earnings management during the period of 1987 to 1989. * is significant at p-value of 0.1. ** is significant at p-value of 0.05.

4.2. Market Response to Accrual Based Earnings Management and Payment Method

To test the second and third hypotheses, we examine whether or not accrual based earnings management relates to a stock return. For the stock return, we use a measurement of $CAR_{-1\ to\ +1}$ (cumulative abnormal return, -1 to +1) as a dependent variable. Annual accrual based earnings management is measured by the summation of earnings managements during Q-4 to Q-1 is used to represent the level of pre-merger accrual based earnings management and be an independent variable.

Table 5 reveals the test results about accrual based earnings management of acquirers and their $CAR_{-1\ to\ 1}$ in several sample types: all samples, only cash merger attempts, and only stock merger attempts. We observe that in the post financial crisis period (POSTCR), a positive and significant influence (0.0382) of accrual based earnings management on acquirers' stock returns ($CAR_{-1\ to\ +1}$). During Sarbanes-Oxley (SOX) and pre Dodd-Frank (PREDF) periods, however, we notice a change of the sign. Acquirers' accrual based earnings management (-0.0603 and -0.1894, respectively) significantly and negatively associates with their stock returns. Pre Dodd-Frank (PREDF, -0.1894) period generates a much stronger negative impact on stock returns than Sarbanes-Oxley (SOX, -0.0603). No significant impact of accrual based earnings management is found during Dodd-Frank (DF) and post Dodd-Frank (POSTDF) periods. This pattern is predominant in cash merger attempts, not stock merger attempts. Test results with only cash payment and only stock payment samples also indicate that around or after the introduction of Sarbanes-Oxley, accrual based earnings management associated with cash payment negatively influences stock returns more than with stock payment over periods.

Table 5. CAR (cumulative abnormal return) and Pre-Merger Accrual Based Earnings Management – Acquirers

All samples	1987-1989 (Base)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	0.0011	0.0061**	-0.0016	0.0032	-0.0029	0.0024	0.0057	0.0039***
	(0.2497)	(3.3069)	(-0.2973)	(1.3557)	(-0.3021)	(0.5947)	(1.2708)	(3.1397)
4 Pre-merger Quarters	0.0150	0.0382**	0.0247	-0.0621**	-0.1493*	0.0033	-0.0238	0.0156
	(0.3737)	(2.1697)	(0.3625)	(-2.2776)	(-1.6764)	(0.0759)	(-0.4020)	(1.2120)
R-square	0.1034%	0.4476%	0.0759%	1.4522%	4.4742%	0.0000%	0.1598%	0.0752%
Sample	137	1049	175	354	62	75	103	1955

Only cash payment	1987-1989 (BASE)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	-0.0079	0.0078	-0.0051	0.0034	0.0009	0.0006	-0.0001	0.0035**
	(-1.5585)	(3.4844)	(-0.9218)	(1.4226)	(0.1323)	(0.1641)	(-0.0191)	(2.5397)
4 Pre-merger Quarters	0.0822	0.0570**	-0.0752	-0.0603**	-0.1894**	-0.0203	0.0042	0.0250*
	(1.5524)	(2.6662)	(1.0281)	(-2.2024)	(-2.1228)	(-0.4989)	(0.0766)	(1.7309)
R-square	2.6078%	1.1336%	0.8318%	1.4977%	7.9749%	0.3874%	0.0068%	0.2184%
Sample	92	622	128	321	54	66	88	1371

Only stock payment	1987-1989 (Base)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	0.0131	0.0035	0.0068	0.0015	-0.0363	0.0155	0.0354**	0.0049*
	(1.4954)	(1.1455)	(0.5075)	(0.1447)	(-1.2863)	(1.1565)	(2.3660)	(1.8388)
4 Pre-merger Quarters	-0.0211	0.0095	-0.0740	-0.0888	0.3128	0.6527**	-0.1351	-0.0037
	(-0.3259)	(0.3180)	(-0.4911)	(-0.6134)	(0.8308)	(2.2814)	(-0.3966)	(-0.1388)
R-square	0.2463%	0.0238%	0.5330%	1.1990%	10.3174%	42.6447%	1.1957%	0.0033%
Sample	45	427	47	33	8	9	15	584

Dependent variable is $CAR_{-1 \text{ to } 1}$. An independent variable is a summation of accruals over four pre-merger quarters (Q-4 to Q-1). * is significant at p-value of 0.1. ** is significant at p-value of 0.05.

Table 6 shows test results about impacts of accrual based earnings management of targets on their stock returns ($CAR_{-1 \text{ to } +1}$). Targets' accrual based earnings managements are found to positively affect stock returns ($CAR_{-1 \text{ to } 1}$) only during the post financial crisis period (POSTCR). From the pre Sarbanes-Oxley period (PRESOX), however, the positive impact appears to be insignificant. This pattern of insignificance is also noticed in both cash and stock merger attempts.

Though not shown here, we also explored impacts of accrual based earnings management on stock return, $CAR_{(-45 \text{ to } 1)}$ in merger attempts. However we could not find a significant and consistent impact of accrual based earnings management on stock returns, $CAR_{(-45 \text{ to } 1)}$.

Table 6. CAR (cumulative abnormal return) and Pre-Merger Accrual Based Earnings Management – Targets

All sample	1987-1989 (Base)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	0.0451**	0.0517**	0.0231	0.0443**	0.0415	0.0515**	0.0938**	0.0487**
	(5.8673)	(11.4223)	(1.3723)	(2.2330)	(1.1207)	(2.4475)	(3.8041)	(13.3021)
4 Pre-merger Quarters	-0.0164	0.0774*	0.1817	0.1197	-0.2824	-0.3867	0.2601	0.0578*
	(-0.2562)	(1.8834)	(1.3103)	(0.5734)	(-0.3997)	(-1.3449)	(0.7635)	(1.7530)
R-square	0.0288%	0.4739%	2.6945%	0.5943%	0.1314%	18.4385%	4.6325%	0.2703%
Sample	230	747	64	57	14	10	14	1136

Only cash payment	1987-1989 (Base)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	0.0414**	0.0477**	0.0107	0.0537*	0.0524	0.0366	0.0812*	0.0448**
	(5.6661)	(10.0092)	(0.6273)	(1.8602)	(1.2484)	(0.8965)	(2.3620)	(11.6270)
4 Pre-merger Quarters	-0.0519	0.0769*	0.0207	0.3930	-0.4083	-0.3412	0.1552	0.0447
	(-0.8779)	(1.8700)	(0.1544)	(1.4547)	(-0.5040)	(-0.8357)	(0.3484)	(1.3571)
R-square	0.3764%	0.6530%	0.0882%	7.0265%	2.2570%	18.8822%	2.9450%	0.2236%
Sample	207	534	29	30	13	5	6	824

Only stock payment	1987-1989 (Base)	1990-1999 (POSTCR)	2000-2001 (PRESOX)	2002-2007 (SOX)	2008-2009 (PREDF)	2010-2011 (DF)	2012-2015 (POSTDF)	1987-2015 (All Periods)
Intercept	0.0684*	0.0616**	0.0250	0.0486*	N/A	0.0680*	0.1016**	0.0585**
	(1.8357)	(5.9154)	(0.8345)	(1.8123)		(2.4419)	(2.5474)	(6.8335)
4 Pre-merger Quarters	0.7615	0.0940*	0.3436	-0.4924	N/A	0.1256	0.3112	0.1213
	(1.7496)	(0.8520)	(1.3280)	(-1.4893)		(0.1209)	(0.5351)	(1.3313)
R-square	12.7227%	0.3429%	5.0731%	8.4597%	N/A	0.4846%	4.5548%	0.5684%
Sample	23	213	35	27	1	5	8	312

Dependent variable is $CAR_{-1 \text{ to } 1}$. Independent variables are a summation of accruals during pre-merger four quarters (Q-4 to Q-1). * is significant at p-value of 0.1. ** is significant at p-value of 0.05.

Overall these findings reveal that around or after the introduction of Sarbanes-Oxley, accrual based earnings management starts to negatively or insignificantly affect stock returns. This pattern prevails only in acquirers of cash merger attempts. Accrual based earnings management associated with cash payment has a more negative impact on stock returns than with stock payment. However, in targets, accrual based earnings management positively associates with stock returns during the post financial crisis (POSTCR). Around or after Sarbanes-Oxley (SOX), the positive and significant association starts to disappear. These findings imply the introduction of Sarbanes-Oxley (SOX) leads investors to be much cautious about a manipulative aspect of accrual based earnings management and its negative impact on acquirers' post-merger performance. Conflicting signals from accrual based earnings management (potential manipulation) and cash payment (positive post-merger performance) may increase uncertainty about post-merger performance of acquirers and decrease stock returns around the merger announcement.

5. Conclusion

In this paper we explore the change of accrual based earnings management over time and its impact on stock returns. Overall, our test results reveal Sarbanes-Oxley (SOX) and Dodd-Frank (DF) seem to

reduce accrual based earnings management of acquirers over the time period. During Sarbanes-Oxley (SOX) and Dodd-Frank (DF) periods, accrual based earnings management is much lower than in other periods. This pattern prevails in cash offer merger attempts and acquirers. On the other hand we do not find a significant decline of accrual based earnings management of targets over the time periods. Thus, we believe Sarbanes-Oxley (SOX) and Dodd-Frank (DF) affect accrual based earnings management of acquirers more than that of targets. And this pattern is prevalent in cash merger attempts.

This accrual based earnings management of acquirers tends to positively associate with their stock returns around the post financial crisis (POSTCR). After introduction of Sarbanes-Oxley, however, the positive association changes to be negative or insignificant. This pattern prevails in cash merger attempts. We also notice that accrual based earnings management with cash payment has a more negative impact on stock returns than accrual based earnings management with stock payment. In targets, we find that only during the post financial crisis (POSTCR), the relationship between earnings management and stock returns turns to be significantly positive. After that period, however, it becomes insignificant regardless of payment method.

Thus we believe Sarbanes-Oxley and Dodd-Frank affect the reduction of accrual based earnings management over time. Compared to Dodd-Frank, Sarbanes-Oxley has a stronger impact on the relationships between accrual based earnings management and stock returns around merger attempt announcements. Interestingly these findings are often noticed at the acquirers, instead of targets and in cash payment. It may be an interesting research topic in the future to explore why acquirers (buyer), instead of targets (sellers), and cash payment tend to show these patterns.

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