Long-term stock returns following stock splits, do markets under-react?

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ABSTRACT

We address the conflict in the literature on stock splits where some studies report positive post-announcement abnormal returns while others report zero returns. We show that many stock splits are conducted by firms whose stock prices reflect inflated reported earnings. Using regression and portfolio tests, we find that pre-split earnings management using both accruals and real activities management predicts long-term post-split abnormal returns and that earnings management is an omitted issue in studies of stock split post-announcement returns. Our results address the importance of agency problems around stock splits and could help reconcile the contradictory findings in the literature.

Keywords: Stock splits, long-term stock returns, under-reaction, overreaction, earnings management.

JEL classification: G11, G12, G14, G35, M41.

I. INTRODUCTION

Market reaction to stock splits received considerable attention in the finance literature. However, the evidence on the split post-announcement returns is inconclusive. On one hand, several studies find no evidence of long term abnormal returns following stock splits (Fama, Fisher, Jensen and Roll, 1969, henceforth, FFJR; Byun and Rozeff, 2003). On the other hand, another series of studies report positive abnormal returns following stock splits (Grinblatt, Masulis and Titman, 1984, henceforth GMT; Desai and Jain, 1997; Ikenbery and Ramnath, 2002; Chemmanur, Hu and Huang, 2014)[1]. The former studies interpret results as a support for the efficient market hypothesis. The latter studies interpret result as a support for market under-reaction to firm specific events. Studies in both streams presumed that high earnings and returns leading up to stock splits are always genuine and that split stocks are at least fairly priced -if not underpriced- at the time of the stock splits.

Most prior literature neglects the possible agency issues associated with stock splits. Positive reaction to split announcements might tempt agents of overvalued firms to split their stocks. This argument has been first proposed by GMT (1984) who state that "under the optimal trading range hypothesis, managers of some overvalued firms might have little concerns about the trading range of their firm's stock and split simply to obtain a temporary increase in its price." A temporary price increase and a delay of price correction might benefit current agents[2] at the expense of future agents and long-term shareholders. Several recent studies provide empirical

[1] Most of the papers belonging to the two abovementioned groups use different sample periods. What is puzzling is that Ikenberry and Ramnath (2002) and Byun and Rozeff (2003) find completely contradicting results although they are using almost the same sample. Boehme and Danielson (2007) provide an explanation for this puzzle. They argue that while Ikenberry and Ramnath (2002) measure long-term returns starting with the split announcement date, Byun and Rozeff (2003) begin their measurement after the split effective date.

[2] Possible agent's benefits might include higher stock related compensations, gains from stock trades and empire building through stock financed acquisitions (Liu, Guo and Sun, 2008; and Elnahas, Jain and McInish, 2014)

evidence that support GMT conjectures by investigating how stock splits are related to other self-select decisions. Guo, Liu and Song (2008) show evidence of managers' opportunistic use of forward splits before acquisitions. They interpret their results as evidence of temporary stock price manipulation using forward stock splits. Similar results have been reported by Elnahas, Jain and McInish (2014) who show that, to receive personal gains, managers sometimes participate in several stock price manipulation tactics including earnings management, excessive hiring and growth and stock splits. Chemmanur et. al. (2014) show that institution investors seem to be able to differentiate between signaling splits and less value-relevant splits, and trade on information produced from splits. In this study, we conduct a novel test for the optimal trading range hypothesis through providing the first comprehensive evidence that many overvalued firms conduct stock splits.

We provide evidence that many stock splits are conducted by firms with inflated rather than genuinely high reported earnings. Our split announcement returns results show that markets react positively to all stock split announcements, so at stock split announcements, investors do not distinguish between split announcements of inflated and other stocks. Our split post-announcement returns results show that stock splits preceded by both aggressive accruals and real activities management (RAM) significantly underperform stock splits without aggressive earnings management at long horizons. Reporting negative relationship between pre-event earnings management and post-events returns is not surprising for many corporate events. However, prior literature shows that stock split is one of the exceptions to this accruals anomaly. Louis and Robinson (2005) show that, when combined with a positive signal like stock split, discretionary accruals signal managerial optimism instead of opportunism.

Our results of negative long-term returns after manipulative stock splits are consistent with the overreaction hypothesis of Barberis, Shleifer and Vishney (1998) who argue that securities that have a long strand of good news tend to become overpriced. They also propose that the good returns around stock splits should ultimately be reversed. Prior studies on stock splits fail to provide evidence to support this conjecture. This study provides the first evidence that a record of good news cause stocks to be overpriced around stock splits. The series of good news here include earnings increases through discretionary accruals, additional earnings increases through RAM and are concluded by announcing stock split.

Earnings management has been defined by Healy and Wahlen (1999) as "managers' use of judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting practices." There is a rich accounting and finance literature that investigates the association between pre-event accruals and post-event stock performance around several corporate actions such as seasonal equity offerings (Teoh, Welch and Wong, 1998b), management buyouts (Perry and Williams, 1994), initial public offerings (IPOs) (Teoh, Welch and Wong, 1998a; and Shivakumar, 2000), stock-for-stock mergers (Erickson and Wang, 1999, and Louis, 2004), acquisitions (Efendi, Srivastava and Swanson, 2007), and repurchase announcements (Gong, Louis and Sun, 2008). Besides accruals, managers could also use real activities management to manipulate their earnings (Baber, Fairfield and Haggard, 1991; Bartov, 1993; Fudenberg and Tirole, 1995; Bushee, 1998; Healy and Wahlen 1999; Dechow and Skinner, 2000; Bens, Nagar and Wong, 2002; Thomas and Zhang, 2002; and Roychowdhury, 2006.)

The effect of the aggressiveness of earnings management has also attracted special attention. Teoh, Welch and Wang (1998b) find that firms which report pre-SEO inflated income using discretionary accruals have lower post-issue long-term abnormal returns. They show that the worst post-issue performance is reported for issuers with an unusually large income-increasing accounting adjustment prior to the offering. Teoh, Welch and Wang (1998a) also address the effect of earnings management aggressiveness on post-IPO long-term returns. They document that IPO issuers in the most aggressive quartile of earnings management have 20 percent less three-year abnormal returns than IPO issuers in the most conservative quartile. Gong, Louis and Sun (2008) show that the negative association between pre-repurchase discretionary accruals and post-repurchase abnormal returns is largely driven by firms reporting the largest income-decreasing abnormal accruals. Further, Allen, Larson and Sloan (2013) show that extreme accruals exhibit high frequency of subsequent reversals which predict future accruals, earnings and stock returns.

The aforementioned papers study the aggressiveness of earnings management in the form of having extreme discretionary accruals. Another form of aggressiveness has been investigated by Cohen and Zarowin (2010) who show that SEO firms engage not only in accruals management but also in RAM. They argue that post-SEO reversal in operating performance is related more to pre-SEO RAM than to pre-SEO accruals management. Similar results have been documented by Kothari, Mizik and Roychowdhury (2013) who show that firms that participate in both accruals and RAM in the pre-issue period have consistent negative returns in the post-issue period.

In this study, we show that when firms conduct stock splits in conjunction with accruals and RAM, stock prices deviate more from their fundamental values and investors become overly

optimistic about the firms' prospects. Consistent with the prior literature, our results show that the most prominent negative (positive) post-split abnormal returns are reported for firms with the most (least) aggressive evidence of pre-split earnings management.

Earnings management preceding stock splits has been studied by Louis and Robinson (2005) who show that a combination of stock split and positive discretionary accruals reflects managerial optimism rather than opportunism. By focusing on managers' use of discretionary accruals before stock splits, Louis and Robinson (2005) neglect an important element of earnings management, the real activities management. RAM is of special importance to stock split firms with an incentive to temporarily boost stock prices. Split firms have always been described as being larger than average (Byun and Rozeff, 2003) and having exceptional pre-split growth (FFJR, 1969). Larger and growing firms are expected to receive more attention from investors, analysts, and regulators. Split firms with an incentive to temporarily affect stock prices are then expected to use RAM as a safer and less detectable earnings management vehicle.

Our story and results complement rather than contradict those of Louis and Robinson (2005). We show that when real activities management is added to their "split-accruals scheme", one cannot accept managerial optimism as a straightforward explanation anymore. Firms that participate in RAM in addition to accruals management prior to stock splits experience negative split post-announcement returns.

Our results on split announcement returns are consistent with prior literature (FFJR, 1969; GMT, 1984). Split announcement returns are significantly positive. Further, we show that investors perceive split announcements favorably regardless of whether managers actually have any positive information about future earnings or not. These results are consistent with those of

GMT (1984) and their interpretation of the Akerlof (1970) arguments. We show that a large number of overvalued firms, lemons in our context, conduct forward splits. However, those lemons fortunately do not dominate the split sample yet.[3,4]

Using both regression and portfolio tests, we find that pre-split earnings management negatively predicts split post-announcement returns. A trading strategy that buys stocks with the most conservative pre-split earnings management and sells short stocks with the most aggressive pre-split earnings management yields positive long-term abnormal returns of around 100 basis points per month for a 12 month holding period. Regression tests show that the effect of pre-split earnings management on post-split long-term abnormal returns is not presumed by the effect of past returns or other stock characteristics such as size, growth, dividends, leverage and splitting price and factor.

Our results can help reconcile the contradicting findings in the extant literature on split post-announcement returns. These results assume that previous studies might have mixed two ex ante distinguishable groups of stock splits.[5] While some undervalued firms use forward splits as a vehicle to convey good private information, some firms conduct splits while they have negative information about the future.[6] These firms possibly split their stocks to take advantage of the

[3] The symmetric market reaction to overvalued splits and other splits show that investors do not distinguish between both. According to Akerlof (1970) under reaction to "good" splits might be seen as an evidence of investors' awareness that some splits are "lemons". GMT argue that according to Akerlof theorem, if "lemon splits" dominate the split sample, firms with good information to signal will not split their stocks anymore. As a result, lemons' dominance will cause the entire split market to vanish. Since 2013 experience good number of stock splits, then it is safe to conclude that "lemon splits" do not dominate the split market yet.

[4] We formally investigate this conjecture by reporting the percentage of firms that conduct splits in conjunction with both accruals and real activities management in the internet appendix

[5] We do not have earnings management data to replicate the sample period of FFJR (1969) or Desai and Jain (1997) who test long-term returns following stock split during 1927-1950 and 1976-1991, respectively. We have earnings management data to test the results of Byun and Rozeff that abnormal returns are not significantly different from zero during 1991-1996. This test is reported in the robustness section

[6] Since earnings management is a zero-sum game. Managers who aggressively participate in earnings management should expect an earnings and returns reversal in the near future (Allen, Larson and Sloan (2013).)

temporary positive reaction to the split announcement (Guo, Liu and Song, 2008; and Elnahas, Jain and McInish, 2014). Our results show that investors can use information on accruals and RAM prior to stock splits to predict the long-term stock price performance.

This study makes several contributions to the literature. We provide new evidence regarding long-run returns following stock splits by showing for the first time that post split long-term returns are systematically negative for an identified group of firms. Our results are consistent with the widely accepted under-reaction hypothesis only for a subsample of stock split events. However, for firms that aggressively manage pre-split earnings using both accruals and RAM, we show that markets actually overreact. We show that observing managerial discretion prior to stock split events could help investors and stock analysts in predicting long-term post-split returns. One can argue that this result can be used to improve market efficiency. Dating back to Grossman and Stiglitz (1980), researchers have been deeply interested in the economics of information to facilitate investors' trading (Karpoff, 1986; Holthausen and Verrecchia, 1990). One general conclusion is that investors choose to become informed through research and are compensated by the expected positive abnormal returns. Thus, researchers improve financial market efficiency by studying the market and trading with their research findings. Our contribution to the earnings management literature is twofold: using forward split event, we provide additional evidence that post-event returns are significantly correlated with pre-event earnings management, and we also show that when discretionary accruals and RAM are jointly used to manage earnings, they impose significantly negative consequences on firm value.

The remainder of this paper is organized as follows. Section II presents data and research methods. Section III reports results for split announcement returns. Section IV reports results for long-term abnormal returns following stock splits. Section V provides evidence on the

relationship between splits and subsequent returns and earnings restatements. Section VI presents robustness tests and section VII concludes.

II. DATA AND METHODOLOGY.

Data

Our study starts with the entire sample of 17,560 forward stock splits that took place during 1926-2012 by all NYSE, AMEX and NASDAQ firms.[7] Our sample includes stock splits conducted by ordinary stocks, so we exclude splits conducted by ADRs, REITs, SBIs and closed-end funds. We retrieved stock returns data from the Center for Research in Security Prices (CRSP). To estimate discretionary accruals and real activities management variables, we use data from COMPUSTAT. Because COMPUSTAT provides data starting from 1980, we ended up with a final sample of 11,427 stock splits that took place during 1980-2012.

In table 1 we provide descriptive statistics for the entire sample of stock splits during 1980-2012. Panel A reports the number of splits per year. Split events are well distributed over the sampling period. There is a relatively higher number of stock splits during bull years like the late 1990s. After the financial crisis of 2008, the number of splits declined significantly to less than 100 cases per year. Our size and market to book value (MTBV) statistics show that for all years, most stock splits are conducted by large and glamour stocks. Panel B categorizes split events by listing exchange. Around 35 percent, 9 percent and 56 percent of splits are conducted by NYSE, AMEX and NASDAQ listed firms, respectively. Panel C categorizes split events by

[7] Desai and Jain (1997) show that their results are not different between the sample of stock splits and the sample of large stock dividends. So, we do not distinguish between these two groups in our study.

splitting factor and shows that the overwhelming majority of firms use 1.5:1 to 2:1 splitting factors when splitting their stocks. Panel D reports the number of stock split firms that belong to every size and MTBV quintile. More than 60 percent of stock splits are conducted by firms within the top two size and MTBV quintiles. These statistics are consistent with those of Desai and Jain (1997) and Byun and Rozeff (2003).

[Please insert Table 1 here]

Accruals and real activities management

Following Teoh, Welch and Wong (1998a, 1998b) we calculate total accruals (T_ACR) as follows,

$$T\_ACR \equiv \Delta[ACC\_REC + INV + OTHER\_CA] - \Delta[ACC\_PAY + TAX\_PAY + OTHER\_CL] \quad (1)$$

Where, *ACC_REC* is accounts receivables (Compustat data item 2). *INV* Is total inventories (Compustat data item 3). *OTHER_CA* is total other current assets (Compustat data item 68). *ACC_PAY* is accounts payable (Compustat data item 70). *TAX_PAY* is taxes payable (Compustat data item 71). *OTHER_CL* is total other current liabilities (Compustat data item 72). We identify discretionary accruals as the residual, $\boldsymbol{\varepsilon_i}$ from the modified Jones (1991) model as described in Dechow, Sloan and Sweeney (1995)[8].

Specifically, for each calendar year and two-digit SIC-code, we estimate the following equation:

$$T\_ACR_{i,t} = \beta_1 1/TA_{i,t-1} + \beta_2 (\Delta SALE_{i,t} - \Delta ACC\_REC_{i,t}) + \beta_3 PPE_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where *T_ACR* is total accruals defined above. TA_{t-1} is the firm's lagged total assets. Δ*SALE* is the change in sales. ΔACC_REC is the change in accounts receivables. *PPE* is lagged property, plant, and equipment. ε is a random error term. We follow the accounting literature in

[8] This version of Jones (1991) discretionary accruals model takes into account the possibility of managers' manipulation through exercising their discretion over revenues. For more details, please read Dechow, Sloan and Sweeny (1995)

scaling all variables by total assets at the beginning of the year. We then calculate non-discretionary accruals for each firm year observation as the fitted value from the estimation and the discretionary accruals as the model's residual, ε_i.

Roychowdhury (2006) shows that manipulative firms can use sales manipulation and/or discretionary expenses manipulation to manage earnings. While firms can manipulate sales through excessive discounts and lenient credit terms, they can manipulate discretionary expenses through vehicles like research and development (R&D) costs, sales, general and administrative (SG&A) costs and advertising expenses. In this study we focus on RAM using sales manipulation[9]. Firms that use sales manipulation experience unusually low cash flows from operations.

We calculate abnormal cash flows as the residual,$\boldsymbol{\varepsilon_i}$, from the model of Roychowdhury (2006). Specifically, for each calendar year and two-digit SIC-code, we estimate the following equation:

$$\mathrm{CFO_{i,t}} / \mathrm{TA_{i,t-1}} = \alpha_0 + \alpha_1(1/\mathrm{TA_{i,t-1}}) + \beta_1(\mathrm{SALE_{i,t}}/\mathrm{TA_{i,t-1}}) + \beta_2(\Delta SALE_{i,t}/\mathrm{TA_{i,t-1}}) + \varepsilon_{i,t} \quad (3)$$

where $\mathrm{CFO_{i,t}}$ is cash flows from operating activities (Compustat data item 308); $\mathrm{TA_{i,t-1}}$ is firm's lagged total assets (Compustat data item 6). $SALE_{i,t}$ is firm's net sales (Compustat data item 12). And $\Delta S_{i,t}$ is the change in sales. We then calculate normal cash flow for each firm-year observation as the fitted value from the above regression and the abnormal cash flow as the model's residual, $\varepsilon_{i,t}$.

[9] In a separate test we also add real activities management using discretionary expenses. Results are also consistent with our conjectures. When firms inflate their pre-split earnings using accruals and RAM using both sales manipulation and R&D, post split long-term returns are significantly lower than those reported for firms that use less complex schemes. I.e., the higher the capacity of pre-split earnings manipulation the lower the post split returns. results for this test is reported in the internet appendix.

Earnings management portfolios.

Our portfolio construction is straight forward. We double sort stock splits based on pre-split discretionary accruals and abnormal cash flows terciles. This results in nine groups of stock split firms. In order to rank these nine groups according to the degree of manipulation, we first follow the conjecture of Kothari, Mizik and Roychowdhury (2013) that RAM is more value destroying than accruals management. Second, inside each RAM tercile, we rank firms based on accruals where the middles tercile (no. abnormal accruals) is the least suspicious and the upper tercile (high abnormal accruals) is the most suspicious[10]. This ranking results in nine portfolios M1: M9. Where, portfolio M1 "the least suspicious portfolio" consists of firms with no evidence of discretionary accruals or RAM (no discretionary accruals + high abnormal cash flows) prior to stock split. Portfolio M9 "the most suspicious portfolio" on the other extreme consists of firms with evidence of both aggressive accruals management and RAM (high discretionary accruals + low abnormal cash flows) prior to stock split .We report descriptive statistics (means) for the nine manipulation-ranking portfolios M1: M9 in table 2.

[Please insert Table 2 here]

Statistics in table 2 do not exhibit any clear pattern at any variable related to our manipulation ranking[11]. Portfolios at the bottom of the manipulation ladder (such as M1, M2 and M3) are not significantly different from those at the top (such as M7, M8 and M9) with respect to size, growth, sales, pre-split returns, and splitting factors or split announcement returns. Our

[10] Although manipulation is usually associated with positive discretionary accruals, both extremes are considered suspicious. So we assume that the least manipulative stock would be associated with around zero discretionary accruals and the most manipulative stocks would be associated with high positive pre-split discretionary accruals.

[11] Please note that the pattern in abnormal cash flows and discretionary accruals is there by design. Our methodology dictates that less manipulative strategies (such as M1, M2 and M3) have around zero discretionary accruals and positive abnormal cash flows. On the other extreme more manipulative strategies should have positive discretionary accruals and negative abnormal cash flows.

main contribution is that portfolios at the two sides of the manipulation ladder have strikingly different post-split abnormal returns. While portfolio M1 has a mean 1-year buy and hold positive abnormal returns of 11.9 percent, portfolio M9 has a mean 1-year buy and hold negative abnormal returns of -7.1 percent during the same period.

Table 3 reports pair wise correlation coefficients among our variables. There is a significant positive correlation between 1-year post-split BHAR and abnormal cash flows one year before the split event. Firms that aggressively manage earnings using RAM experience lower post-split returns. 1-year post-split BHAR is also negatively correlated with pre-split discretionary accruals, so managing accruals prior to stock splits also results in post-split return reversals. Consistent with our hypotheses, split announcement returns measured by $CAR_{-1, +1}$ are not significantly correlated with pre-split earnings management using either accruals or RAM.

[Please insert Table 3 here]

These statistics lend preliminary support to our story. At the split announcements, investors do not seem to use earnings management estimates to detect possibly inflated versus genuinely high stock prices. Consequently, as we will show, investors on average react positively to split announcements even when conducted by firms with inflated stock prices. Therefore, stock splits may result in deviating "already inflated" stock prices more from their fundamental values. At the long-run, managers' actual private information reveals to the market causing sharp stock price decline for firms initially conducted inflated price stock splits.

III. STOCK SPLIT ANNOUNCEMENT RETURNS.

In this section, we test the link between earnings management and stock split announcement returns. We hypothesize that -despite their usefulness- investors do not use pre-split earnings management estimates to distinguish between stock splits conducted by genuinely high versus artificially high priced stocks. If investors distinguish between the two groups at the announcement time, then announcement returns should be asymmetric among our nine manipulation ranking portfolios. Our story assumes that there is no significant relationship between pre-split earnings management estimates and split announcement returns. We test the relationship between earnings management and split announcement returns using both portfolio and regression analysis.

We calculate cumulative abnormal returns of firm i in the split announcement period as

$$\mathrm{CAR}_{-\mathrm{k},+\mathrm{k}} = \sum_{t-k}^{t+k}(R_{it} - E(R_{it})) \quad (4)$$

Where, $\boldsymbol{R_{it}}$ is the stock i daily actual returns and $\boldsymbol{E(R_{it})}$ is stock i daily expected returns calculated by the market model estimated over the six month period that ends 10 days before the split announcement day. Table 4 reports CAR for the nine manipulation ranking portfolios as well as for the entire sample of stock splits.

[Please insert Table 4 here]

For the entire split sample, the average $CAR_{-1,+1}$ is 2.6 percent which is significant at 1percent level, while the ten days announcement returns $CAR_{-5,+5}$ is 2.9 percent which is also significant at 1percent level. Our results show that $CAR_{-k,+k}$ for all nine portfolios are positive and significant at 1percent level. Buying stock splits one day before the official split

announcement can achieve 180 to 330 basis points abnormal returns over a 3 days holding period. These results are similar to GMT (1984) and Louis and Robinson (2005) who report split announcement returns of 3.4 percent and 2.4 percent, respectively. According to GMT (1984), these strong positive announcement returns may act as a motivation for overvalued firms to split their stocks without having any positive information to signal.

In summary, results in Table 4 lend support to our conjecture that Split announcement abnormal returns are not related to pre-split earnings management. The difference between CARs of more manipulative portfolios and less manipulative portfolios is neither economically nor statistically significant at any acceptable level[12].

To formally test the relationship between pre-split earnings management and split announcement returns, we run the following OLS regression

$$CAR_{i,-k,+k} = \propto + \beta_1 Pre - Split\_Returns_i + \beta_2 Size_i + \beta_3 MTBV_i + \beta_4 Split\_price_i + \beta_5 Leverage_i + \beta_6 Splitting\ factor_i + \beta_7 Acfo_i + \beta_8 Dacc_i + (\beta_7 + \beta_8) Portfolio\_M1 - M9 + \varepsilon \quad (5)$$

Where, $CAR_{i,-k,+k}$ is stock split announcement cumulative abnormal returns. In table 5, for specifications 1 and 2 dependent variable is $CAR_{-1,+1}$. For specifications 3 and 4 dependent variable is $CAR_{-3,+3}$. For specifications 5 and 6 dependent variable is $CAR_{-5,+5}$. *Pre-split_returns*$_i$ is the stock raw returns during the 12 month prior to the split month. *Size*$_i$ is decile rank based on total assets. *MTBV*$_i$ is decile rank based on market to book value. *Split_price*$_i$ is the price in the day just following the split effective day. *Leverage*$_i$ is the ratio of long term debts to total assets. *Splitting factor*$_i$ is the stock split factor. *Acfo*$_i$ is the pre-split abnormal cash flow estimated as the

[12] We test the difference between the lowest three portfolios at the earnings management ranking (M1, M2 and M3) and portfolio 9. None of these portfolios have significant different announcement CARs from portfolio 9. These results are reported in the internet appendix.

residuals from the Roychowdhury (2006) model. $Dacc_i$ is the pre-split discretionary accruals estimated as the residuals from the modified Jones (1991) model. *Portfolio_M1-M9* is a dummy variable which takes the value"1" if the firm belongs to portfolio M1 and "0" if it belongs to portfolio M9.

Table 5 reports coefficient estimates of the OLS regression. Neither abnormal cash flows nor discretionary accruals are significantly related to split announcement CARs. Specifications which include a dummy variable *Portfolio_M1-M9* also do not show any significant relationship between pre-split earnings management and split announcement returns. Investors seem to react more positively to split announcements by small and value stocks. Announcement return is positively related to Splitting factor. This finding is consistent with of McNicholas and Dravid (1990) who assert that investors seem to perceive splitting factors as a signal of the nature of managers' private information

[Please insert Table 5 here]

Results in this section show that investors do not use pre-split earnings management estimates to evaluate stock split announcements. Since the majority of stock splits are conducted by firms with genuinely high stock prices, investors seem to naively consider all stock splits as genuine. By doing so, investors deviate "already inflated" stocks even more from their fundamental values. Akerlof (1970) arguments assume that overvalued firms will continue to split their stocks until investors start to believe that more stocks are conducted by inflated rather than genuinely high priced stocks. Our findings could help investors to differentiate between these two groups of splits and to react more efficiently to different stock split announcements.

IV. LONG-TERM ABNORMAL RETURNS FOLLOWING STOCK SPLITS.

Literature on long-term abnormal returns propose two broad methodologies, buy and hold abnormal returns (BHAR) and calendar-time portfolio. On one hand, Lyon, Barber and Tsai (1999) and Loughran and Ritter (2000) prefer the BHAR methodology. On the other hand, Fama (1998) and Mitchell and Stafford (2000) strongly favor calendar-time portfolio approach. In this study, we test the relationship between pre-split earnings management and post-split long-term abnormal returns using both methodologies.

Buy and hold abnormal returns.

In this section, we investigate the relationship between pre-split earnings management and post-split long-term returns using buy and hold abnormal returns (BHAR) method. We calculate the 1 year post-split buy and hold abnormal returns (BHAR) as follows,

$$BHAR_i = \prod_{t=1}^{T}[\,1 + R_{i,t}) - \prod_{t=1}^{T}[\,1 + E(R_{i,t})] \quad (6)$$

where, $R_{i,t}$ is the actual return of stock i on month t and $E(R_{i,t})$ is the expected return for security i on month t. Expected return $\boldsymbol{E(R_{i,t})}$ is measured as the return for size and book-to-market matched portfolio. To form reference portfolios, we first assign split firms to size and book-to-market[13] quintiles based on NYSE breakpoints. Then we compare the stock price performance of split firms to 25 portfolios formed on size and book-to-market quintiles using NYSE breakpoints (Fama and French (1992, 1993)). Stock splits are usually preceded by very high price run ups (Byun and Rozeff, 2003). Therefore, many stock splits are significantly driven

[13] Following Fama and French (1997) we calculate book equity as total shareholders' equity, minus preferred stocks (when available), plus deferred taxes (when available), plus investment tax credit (when available), plus post retirement benefit liabilities (when available).
Book-to-market equity is calculated as the ratio of fiscal year end book equity divided by market capitalization of common stock at calendar year end.

by market-wide and industry-wide movements[14]. To control for the possibility that post-split returns are driven by persistence or reversal of such movements, besides size and book-to-market matched portfolios, we report results using two other proxies for expected returns $E(R_{i,t})$, returns for S&P500 composite index and Fama-French 48 industry returns[15].

Table 6 presents buy and hold abnormal returns for each of the nine earnings management sorted portfolio as well as the return differential between portfolio M1 and M9[16].

[Please insert Table 6 here]

Results reported in table 6 show that, especially for strategies with the most aggressive and the most conservative pre-split earnings management, post-split returns are negatively associated with pre-split earnings management. 1-year buy and hold abnormal returns using size and book-to-market reference portfolios ($BHAR_{ref)}$ for portfolio M1 is 5.5 percent. This high and positive return is on stark contrast to portfolio M9 which has $BHAR_{ref}$ of -16 percent. $BHAR_{ref}$ is positive and significant for the least manipulative portfolios M1-M3, is not significantly different from zero for portfolios at the middle of the earnings management ladder, portfolios M4-M6 and is significantly negative for highly manipulative portfolios M7-M9.

Buy and hold abnormal returns using market returns ($BHAR_{sp500}$) and firm specific industry returns ($BHAR_{ind}$) as proxies for expected returns yield similar results. The average 1-year $BHAR_{sp500}$ is 11.9 percent for the most conservative stocks in portfolio M1 and is significantly negative at -7.1 percent for the most aggressive stocks in portfolio M9. $BHAR_{ind}$ is 5.5 percent for the most conservative stocks in portfolio M1 and is significantly negative at -5.8

[14] For example, as shown in table 1, good market years like 1998 have high number of stock splits
[15] Industry adjusted buy and hold abnormal return is calculated by submitting from the split firm return the average return for the associated 48 Fama-French industry returns.
[16] The internet appendix also presents return differentials between more manipulative portfolios and portfolio M9.

percent for the most aggressive stocks in portfolio M9. Our results show that the most conservative measure of abnormal returns is the industry adjusted buy and hold abnormal return ($BHAR_{ind}$). This confirms the idea that returns around stock splits are significantly driven by industry-wide trends. These results show that; neither size and book-to-market reference portfolios nor market returns or industry returns could explain the significantly large difference in post-split returns between the most conservative and the most aggressive stock splits.

Regression analysis.

In this section we test the link between pre-split earnings management and post-split stock returns using regression method. We estimate cross sectional predictive regression of post-split long-term returns on pre-split earnings management aggressiveness and a wide variety of other control variables. Our specification is as follows,

$$BHAR_i = \alpha + \beta_1 Pre - split\_returns_i + \beta_2 Size_i + \beta_3 MTBV_i + \beta_4 Split\_price_i + \beta_5 Leverage_i + \beta_6 Splitting\ Factor_i + \beta_7 Portfolio\_M1 - M9 + \varepsilon_i \quad (7)$$

Where, the dependent variable $BHAR_i$ is the post split 1-year BHAR. Size and book-to-market reference portfolio ($BHAR_{ref}$) is used in specifications 1 and 2, $BHAR_{sp500}$ is used in specifications 3 and 4 and $BHAR_{ind}$ is used in specifications 5 and 6. *Pre-split_returns*$_i$ is the stock raw returns during the 12 month prior to the split month. *Size*$_i$ is decile rank based on total assets. *MTBV*$_i$ is decile rank based on market to book value. *Split_price*$_i$ is the price in the day just following the split effective day. *Leverage*$_i$ is the ratio of long term debts to total assets.

Splitting factor$_i$ is the stock split factor. *Portfolio M1-M9* is a dummy variable which takes the value "1" if the firm belongs to portfolio M1 and "0" if it belongs to portfolio M9.[17]

[Please insert table 7 here]

Table 7 reports results of the regression analysis. Coefficient estimates show that pre-split earnings management aggressiveness significantly predicts future returns. The average return differential between the least aggressive stock splits in portfolio M1 and the most aggressive stock splits in portfolio M9 ranges from 19 percent to 22 percent for 1 year post-split holding period. Such return differential reduces to 11 percent when controlling for size, growth, momentum, split price, leverage and splitting factor. Regression results show that the higher the price run-up prior to the split announcement the lower the post-split returns. Post split returns are higher for large and glamour stocks. Splitting factors do not seem to provide any predictability power to the post-split long-term abnormal returns.

These results are consistent with Kothari, Mizik and Roychowdhury (2013) who find evidence of long-term consistent negative returns associated with firms that manage earnings using both accruals and RAM during the pre-SEO periods.

In summary, the regression results in table 7 show that the returns effect associated with pre-split accruals and RAM is robust to controlling for past returns, size, growth, split price, leverage and splitting factors.

[17] This regression uses data only for stocks in the most aggressive portfolio M9 and the most conservative portfolio M1. We replicate the same regression using another dummy variable *Portfolio all-M9* which is a dummy variable which takes the value "0" if the firm belongs to portfolio M9 and takes the value "1" otherwise. Results for that test are similar and are available upon request.

Calendar time portfolios.

In this section, we analyze the relationship between pre-split earnings management and future returns by estimating the post-split returns to calendar portfolios of stocks sorted by pre-split earnings management aggressiveness. Specifically, we evaluate the monthly returns of zero-investment portfolio of buying portfolio with the most conservative pre-split earnings management (M1) and selling short portfolio with the most aggressive pre-split earnings management (M9).

We use the calendar-time methodology to compute average monthly returns from portfolio of stocks formed at the end of each month t on the basis of 1-year pre-split earnings management. In order to adjust returns for risk exposures and stock characteristics, we also estimate intercepts from the four-factors model[18] that includes the Fama-French (1993) factors and the Carhart (1997) momentum factor [19]as follows,

$$R_t = \alpha + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \epsilon_t \quad (8)$$

where R_t is the monthly return of the earnings management based calendar month portfolio at month t, $RMRF_t$is the month t value-weighted market return minus the risk-free rate, and the terms SMB_t (small minus big), HML_t (high minus low), and $Momentum_t$are the month t returns on zero-investment factor-mimicking portfolios designed to capture size, book to-market, and momentum effects, respectively.

[18] The internet appendix presents Fama-French (1993) three factor model alphas that are separately estimated for portfolios sorted by pre-split earnings management.

[19] Stock splits usually follow periods of exceptionally high stock returns. The Carhart (1997) momentum factor has been added to take into consideration the possibility of the persistence of pre-split good returns.

Table 8 presents the average monthly returns for both equally and value weighted calendar month portfolios.

[Please insert table 8 here]

Results reported in table 8 show that trading strategy that buys the least manipulative split stocks and short the most manipulative split stocks yields abnormal returns of around 100 basis points per month for holding periods of 12 post-split months. Portfolios that hold split stocks for two and three post-split years yield abnormal returns of 50 to 80 basis points per month, indicating that most of the mispricing caused by earnings management and splits is corrected within the first year following the stock split.

We note that the positive return differential between sell and buy pre-split earnings management sorted stocks is mostly due to the large and significant positive returns of stocks with the least aggressive pre-split earnings management. Therefore, short-sale constraints would not impair the profitability of such trading strategies.

To analyze the robustness of our results to different risk factors, we also report the estimated intercepts (Alphas) from the four factors model in table 9.

[Please insert Table 9 here]

Results reported in table 9 are similar to the average calendar month return results. After controlling for risk factors and momentum, the zero-investment portfolio that buys the least manipulative splits and shorts the most manipulative splits can achieve around 100 basis points for 12 month holding period. These results provide evidence that post-split returns are negatively related to pre-split earnings management aggressiveness. On one hand, the greatest stock split

under reaction is reported for portfolio M1 with the least pre-split earnings management. On the other hand, an evidence of overreaction is reported for the 12 month holding period value weighted portfolio that buys stocks with the most aggressive pre-split accruals and RAM six months after the split. Specifically, this portfolio loses around 20 basis points per month for 12 month holding period.

In summary, portfolio analysis provides further evidence that market under reacts to splits with the least pre-split earnings management evidence. Under-reaction to split announcements is negatively related to pre-split earnings management. Markets, on the other hand, overreact to stock splits conducted by firms that aggressively manage their pre-split earnings using both accruals and RAM.

V. STOCK SPLITS, ANOTHER LAYER OF MANIPULATION?

In this section, we test the hypothesis that when stock splits are preceded by accruals and RAM they increase mispricing by making investors more optimistic about firm's future prospects. I, e, we test whether stock splits affect mispricing over and above the effect of accruals management and RAM. We test this hypothesis by comparing long-term abnormal returns of a treatment group of firms that conduct stock split preceded by both aggressive accruals and RAM with those of a control group of matched non-split firms. We also test whether stock splits could represent another layer of manipulation or add to its severity. We test this hypothesis by comparing the likelihood of announcing earnings restatements between the treatment group of split firms with that of the control group of matched non-split firms. We use the U.S. Government Accountability Office (GAO) restatement announcements data to identify the number of restatement announcements conducted by treatment versus control firms.

Our treatment group (SPLITs) consists of firms that conduct stock splits preceded by 1-year aggressive accruals and real activities management. We begin with the entire set of stock splits during 1980-2012 that have Compustat data available. Following Kothari, Mizik and Roychowdhury (2013), we define treatment firms as split firms that have a one year pre-split positive discretionary accruals and negative abnormal operating cash flows. This result in 724 stock splits.

We match each (SPLIT) with a (NON_SPLIT) based on size, MTBV, two digits SIC code, year, discretionary accruals and abnormal cash flows. The matched control firm's size decile, MTBV decile, SIC code and year should be equal to those of the treatment (SPLIT) firm. Further, the matched control firm's discretionary accruals and abnormal cash flows should be within 70 percent and 130 percent of those of the treatment firm. Our final treatment and control samples comprise 716 pairs of SPLITs and NON_SPLITs.

[Please insert Table 10 here]

Results reported in table 10 lends strong support to our idea that splits could be thought of as another layer of manipulation for some firms. Results reported in panel A show that the treatment group at which firms use stock splits in addition to accruals and RAM have negative significant 1-year buy and hold abnormal returns of -15.6 percent. This figure is significantly lower than the -9.6 percent reported for the control group. Similar results are reported when using S&P500 or Fama and French industry returns as expected returns. $BHAR_{sp500}$ ($BHAR_{ind}$) for SPLITs is 7.9 percent (4 percent) lower than that of NON_SPLITs.

Panel B in table 10 lends support to our second hypothesis. SPLITs firms announce significantly more restatements during the post-split period compared with NON_SPLITs.

During the first two years following split effective day, 43 SPLIT firms announce earnings restatements compared to 32 NON_SPLIT firms during comparable period. Within the following three years period, 57 SPLITs firms announce earnings restatements, a figure which is more than triple that of the NON_SPLIT firms during comparable period. Overall, 32 percent of our treatment group of SPLITs announces earnings restatements during 1997-2006[20]. This figure is significantly higher than the 19 percent reported for the NON_SPLITs group at 1 percent significance level.

These results are consistent with the conjectures of GMT (1984). We show that when firms use stock splits associated with inflated earnings, firms long-term value significantly decline. We show that when stock split is added to manager's manipulation tool box, stock prices deviate more from their fundamental values and investors become overly optimistic about firms' prospects.

The return differential between SPLITs and NON_SPLITs is core to our story. Our main explanation to the negative post-announcement returns for some stock splits is that managers possibly use splits to further deceive investors. This explanation would not be plausible if the post-split negative returns are fully explained by accruals and RAM. Our story assumes that stock splits impose mispricing over and above that caused by earnings management.

In order to formally test this hypothesis, we run the following regression,

$$BHAR_i = \alpha + \beta_1 Splitter + \beta_2 Pre - split\_returns_i + \beta_3 Size_i + \beta_4 MTBV_i + \beta_5 Leverage_i + \beta_6 Acfo_i + \beta_7 Dacc + \varepsilon_i \quad (9)$$

[20] GAO earnings restatement dataset covers the period 1997-2006. So we do not have restatement announcement data for the entire sample period 1988-2012. 32% out of the splits conducted during 1993-2005 have at least one restatement announcement at GAO dataset. All figures reported in table X are relative to number of splits during 1993-2005 not during the entire sample period 1988-2012.

Where, the dependent variable $BHAR_i$ is the post split 1-year BHAR. Size and book-to-market reference portfolio ($BHAR_{ref}$) is used in specifications 1 and 2, $BHAR_{sp500}$ is used in specifications 3 and 4 and $BHAR_{ind}$ is used in specifications 5 and 6. *Splitter* is a dummy variable which equals "1" if the firm belongs to the treatment group (SPLITs) and equals "0" if it belongs to the control group (NON_SPLITSPLITs). $Pre\text{-}split\_returns_i$ is the stock raw returns during the 12 month prior to the split month. $Size_i$ is decile rank based on total assets. $MTBV_i$ is decile rank based on market to book value. $Leverage_i$ is the ratio of long term debts to total assets. *Acfo* is the pre-split abnormal cash flow estimated as the residuals from the Roychowdhury (2006) model. *Dacc* is the pre-split discretionary accruals estimated as the residuals from the modified Jones (1991) model.

[Please insert Table 11 here]

Regression results reported in table 11 lends further support to our hypothesis. SPLITs 1-year post-split abnormal returns are significantly lower than that of NON_SPLITs. This return differential is robust to using different measures of abnormal returns and to controlling for size, BTMV, momentum, leverage, accruals and real activities management. RAM "*Acfo*" is positively associated with post-split returns which lends support to the conclusion of Cohen and Zarowin (2010) and Kothari, Mizik and Roychowdhury (2013) that RAM is more value destroying than discretionary accruals.

VI. ROBUSTNESS TESTS.

In this section, we investigate number of arguments presented in the stock split literature. We investigate the robustness of the profitability of the earnings management portfolio M1-M9 to different criteria. We test the profitability of this portfolio using one criterion at a time to test

the relationship between split long-term returns and dividends, size, growth, splitting factors and time.

Long-term performance and dividends

FFJR (1969) argue that markets react positively to the dividends increase associated with stock splits. And when controlling for such dividends component, stock splits do not have any information content. In order to show that our results are not presumed by dividends, we report 1-year abnormal returns for portfolios M1, M9 and M1-M9 for dividends payers, non-dividends payers, firms that simultaneously split and increase dividends and firms that split and do not increase dividends. Results in table 12 panel A show that market under reacts (overreacts) to least (most) manipulative stocks regardless of whether the firm pays dividends or not. Similar results are reported in panel B for dividends increase. Again, under reaction (overreaction) to least (most) manipulative stocks is independent of whether the firm simultaneously increases or decreases dividends.

[Please insert table 12 here]

These results show that earnings management is not a mere reflection of dividends payment or increase. This would have been the case if portfolio M1 (M9) is dominated by firms that do (do not) increase dividends simultaneously or shortly after the split announcements, which is not the case in our sample.

Long-term performance and size

Information is less available for small stocks. As a result, under reaction is expected to be more prominent for smaller firms (Atiase, 1985; Lakonishok and Vermaelen, 1990 and Desai

and Jain, 1997). Following the same intuition, overreaction to pre-split manipulation should also be more severe for smaller stocks. We expect more negative abnormal returns associated with smaller firms in portfolio M9. Results in table 12 panel C are consistent with this assumption. Among M9 portfolio stocks, smaller firms have 1-year $BHAR_{ref}$ of -19 percent as compared to -14 percent for larger firms.

Long-term performance and Market-to-book value (value versus glamour)

Fama and French (1992) and Lakonishok, Shleifer and Vishney (1994) show that value stocks outperform glamour stocks. Inversely, Desai and Jain (1997) show that value stocks underperform glamour stocks for stock splits. Results reported in table 12 panel D show that, for portfolio M1, 1-year $BHAR_{ref}$ is -2.3 percent (9.4 percent) for value (glamour) stocks. For portfolio M9, 1-year $BHAR_{ref}$ is -22 percent (-12 percent) for value (glamour) stocks. Our results are similar to Desai and Jain (1997). For stock splits, value stocks underperform glamour stocks.

Long-term performance by splitting factor

McNicholas and Dravid (1990) assert that splitting factor is a self-selection decision made by managers in order to signal their private information. Our results in table 12 panel E do not assume any clear relationship between the profitability of the earnings management portfolio and splitting factors. This result is consistent with Desai and Jain (1997) and also with our results in the regression analysis.

Long-term performance by time.

Table 12 panel F reports abnormal returns for two equal length sub periods, 1988-2000 and 2001-2012. Profitability of the earnings management portfolio M1-M9 is statistically and

economically significant in both periods with an evidence of increase towards the second half of our sample period.

Our sample period overlaps with Byun and Rozeff (2003) at 1988-1996. They report non-significant abnormal returns for 1991-1996. So, we report the profitability of portfolios M1, M9, and M1-M9 during the same period, 1991-1996. Results reported in table 12 panel F show that during 1991-1996 market under reacted to M1 portfolio splits and overreacted to M9 portfolio splits. On average the return differential between M1 and M9 portfolios is 6.2 percent significant at 5 percent level.

Long-term performance and prior literature

We argue that our long-term split returns could help reconciling the contradicting evidence reported in the extant literature. The zero abnormal returns reported by FFJR (1969) and Byun and Rozeff (2003) might have resulted because returns for less manipulative firms and for more manipulative firms are balancing out each other. Positive abnormal returns reported by Desai and Jain (1997) might have resulted from a dominance of the less manipulative splits in their sampling period, 1976-1991. We do not have data for earnings management to replicate FFJR (1969) or Desai and Jain (1997) who test splits during 1927-1950 and 1976-1991, respectively. Fortunately, we have data for 1991-1996 to replicate one of the tests of Byun and Rozeff (2003) who show that during such period post-split abnormal returns are not significantly different from zero. Results reported in panel G in table 12 are consistent with Byun and Rozeff (2003). For the entire sample of stock splits during 1991-1996, abnormal returns are not significantly different from zero. When considering dividing the splits based on pre-split earnings management aggressiveness, we acquire significantly different returns for highly

manipulative versus non-manipulative stock splits. Aggressive manipulative stocks in portfolio M9 have average 1_year $BHAR_{ref}$ of -9.6percent. On the other hand, all other splits on average have a 2.4 percent positive abnormal return during the same period

In summary, results in this section show that profitability of the earnings management portfolios of stock splits is robust to a variety of variables such as size, growth, dividends, splitting factors and time.

VII. CONCLUSION

The literature on the long-term stock returns following stock splits provides two competing conclusions. One strand shows positive abnormal returns and interprets it as an evidence of under reaction. Another strand finds no evidence of abnormal returns and interprets it as supporting evidence to market efficiency. These studies presume that high returns and earnings leading up to stock splits are always genuine, and that split stocks are at least fairly priced -if not underpriced- at the time of the stock splits. By doing so, prior literature neglects the importance of agency issues associated with stock splits.

We provide evidence that many stock splits are conducted by firms with inflated rather than genuinely high stock prices. At stock split announcements, investors do not distinguish between split announcements of inflated and other stocks, hence markets react positively to both. Stock splits preceded by evidence of accruals and real activities management significantly underperform stock splits without earnings management in long horizons. Using both regression and portfolio tests, we find that pre-split earnings management negatively predicts long-term post split returns.

Trading strategies that buy stocks with low pre-split earnings management and sell short stocks with high pre-split earnings management yield significantly positive long-term abnormal returns. Our regression tests show that the effect of pre-split earnings management on post-split long-term abnormal returns is not explained by the effect of past returns or other stock characteristics such as size, growth, leverage and splitting price and factor.

Our long term results complement the existing literature on the long-term returns following stock splits. These results show that earnings management is an omitted variable in studies of long-term abnormal returns following stock splits.

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Table 1
Stock splits 1980-2011

We report descriptive statistics for forward stock splits that took place during 1980-2011. In Panel A we report the number of stock splits per calendar year. Panel B categorizes stock splits by the listing exchange. Panel C categorizes stock split events by splitting factor. We also report the size and MTBV decile of stock split firms within each category in panels A, B and C. Panel D reports the number of stock split firms that belong to each quintile of firm size and MTBV.

Panel A. stock splits per year 1980 - 2011

year	No.	Size decile	MTBV decile	year	No.	Size decile	MTBV decile
1980	438	5.3	7.5	1996	592	5.9	6.4
1981	505	5.4	6.5	1997	693	6.4	6.3
1982	232	5.2	7	1998	676	6.6	6.3
1983	721	5.5	6.3	1999	440	6.5	7
1984	319	5.7	5.8	2000	498	6.2	7.2
1985	468	5.9	6.2	2001	206	6.5	7.1
1986	654	6.4	6.1	2002	212	6.5	6.8
1987	527	6.3	6.3	2003	223	5.8	6.3
1988	214	6	5.8	2004	301	6.2	6.3
1989	300	6	6.4	2005	321	6.3	6.4
1990	198	6.2	6.7	2006	261	6.4	6
1991	254	5.7	6.9	2007	176	6.5	6.5
1992	423	6.4	6.4	2008	94	6.2	6.1
1993	477	6.3	6	2009	24	5.9	5.3
1994	357	6.2	6	2010	76	6.1	6.4
1995	458	5.9	6.5	2011	89	6.2	6.6

Panel B. Stock splits by listing exchange

Exchange	No.	(%)	Size Decile	MTBV decile
NYSE	3,975	(34.8%)	7.6	6.3
AMEX	994	(8.7%)	5.2	6.1
NASDAQ	6,458	(56.5%)	5.4	6.5

Panel C. stock splits by splitting factor.

Splitting factor	No.	(%)	Size Decile	MTBV decile
SF≤1.5 : 1	806	(7.1 %)	5.6	5.8
1.5:1 < SF < 2:1	4,087	(35.8%)	5.7	6.3
SF = 2:1	5,570	(48.7%)	6.4	6.7
SF > 2:1	964	(8.4%)	6.4	9.5

Panel D. Stock split firms size and MTBV quintiles.

	Low Quintile	2	3	4	High Quintile
Size	249	868	2,068	2,768	2,682
	(2.8%)	(10%)	(23.8%)	(32%)	(31.4%)
MTBV	264	760	1,513	2,422	3,322
	(3.1%)	(9.1%)	(18.2%)	(29.2%)	(40.4%)

Table 2
Descriptive statistics for manipulative portfolios of stock splits

Using double sorting based on abnormal cash flows and discretionary accruals we divide split firms into nine earnings management ranking portfolios M1-M9. M1 consists of the least suspicious firms with no evidence of accruals management or RAM prior to their stock splits. M9 consists of the most suspicious firms with an evidence of both accruals management and RAM. *Total assets* and *Total Assets_Decile* are pre-split total assets and the decile rank based on total assets, respectively. *MTBV* and *MTBV_Decile* are pre-split market to book value and rank based on market to book value, respectively. *Sales* is the net sales one year before the split year. *Splitting Factor* is the stock split splitting factor. *Leverage* is the ratio of long term debts to total assets. *Pre-Split Price* is the stock price ten days prior to the split effective date. *Pre-Split Returns* is the stock raw returns excluding dividends during the 12 month prior to the split month. $CAR\text{-}_{-1,+1}$ is the split announcement day cumulative abnormal returns calculated using the market model over the 3 days period t-1,t+1. *Post-Split Returns* is the stock raw returns in the 12 month period following the split month. $BHAR_{sp500}$ is the one year post split buy and hold abnormal returns where the expected returns is the return for the S&P500 index. All returns variables are presented in percentages. *ROA* is the returns on assets one year before the split year. *Acfo* is the pre-split abnormal cash flow estimated as the residuals from the Roychowdhury (2006) model $\mathbf{CFO_t / TA_{t-1}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1}(\mathbf{1/ TA_{t-1}}) + \boldsymbol{\beta_1}(\mathbf{S_t/ A_{t-1}}) + \boldsymbol{\beta_2}(\Delta \boldsymbol{S_t}/ \mathbf{A_{t-1}}) + \boldsymbol{\varepsilon_i}$. and *Dacc* is the pre-split discretionary accruals estimated as the residuals from the modified Jones (1991) model $\boldsymbol{T\_ACR_i} = \boldsymbol{\beta_1}\, \mathbf{1}/\boldsymbol{TA_i} + \boldsymbol{\beta_2}\,(\Delta \boldsymbol{SALE} - \Delta \boldsymbol{ACC\_REC}) + \boldsymbol{\beta_3 PPE_i} + \boldsymbol{\varepsilon_i}$. Reported values are means with 1% winsorizing.

	Manipulative groups M1-M9								
	M1 No. Dacc High Acfo	M2 Low. Dacc High Acfo	M3 High. Dacc High Acfo	M4 No. Dacc Med Acfo	M5 Low. Dacc Med. Acfo	M6 High. Dacc Med. Acfo	M7 No. Dacc Low Acfo	M8 Low. Dacc Low Acfo	M9 High. Dacc Low Acfo
No. Of Firms	421	692	646	649	554	518	577	460	638
Total Assets (Mill.)	2849	2429	1866	3603	2649	2514	4190	2435	2097
Total Assets_Decile	6.2	5.8	5.8	6.6	6	6	6.6	5.8	5.8
MTBV	5.9	6.5	7	3.9	4.9	5	3.7	4.6	5.4
MTBV_Decile	7.5	7.5	7.6	6.5	6.9	6.9	6	6.3	6.8
Sales (Mill.)	1795	1719	1057	2353	1783	1666	26112	1840	1385
Splitting Factor	2	1.9	1,9	1.9	1.9	1.9	1.9	1.9	1.9
Leverage	0.12	0.11	0.10	0.17	0.14	0.15	0.20	0.14	0.15
Pre-Split Price	60.5	56.6	59.6	53.5	49.9	53.2	49.5	49.8	53.3
Pre-Split Returns	90	106	120	67	90	97	70	104	120
$CAR_{-1,+1}$	1.9	2.6	2.8	1.8	2.8	2.6	2.3	2.8	3.3
Post-Split Returns	16	10	3	12	11	6	7	5	-4
$BHAR_{sp500}$	11.9	3	7.5	3.3	3	4.4	1.1	2	-7.1
ROA	9.9	9.4	9.3	7.1	7.6	8.1	4.6	5.10	5.1
Dacc	0.00	-0.27	0.34	0.00	-0.24	0.27	0.00	-0.24	0.31
Acfo	0.35	0.41	0.46	0.08	0.09	0.09	-0.08	-0.18	-0.26

Table 3
Pearson correlations

We report pair wise correlation coefficients among variables of interest. P-values are between parentheses, *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

	T. Assets_ Decile	*MTBV_ Decile*	*Sales*	*Splitting Factor*	*Leverage*	*Pre-Split Price*	*Pre-Split Return*	*$CAR_{-1,+1}$*	*$BHAR_{sp500}$*	*ROA*	*Acfo*
MTBV_ Decile	-0.14*** (0.000)										
Sales	0.29*** (0.000)	-0.01 (0.773)									
Splitting Factor	0.05*** (0.000)	-0.03*** (0.002)	0.07*** (0.000)								
Leverage	0.16*** (0.000)	-0.16*** (0.000)	0.03** (0.013)	0.02* (0.053)							
Pre-Split Price	0.40*** (0.000)	0.18*** (0.000)	0.24*** (0.000)	0.56*** (0.000)	-0.05*** (0.000)						
Pre-Split Returns	-0.20*** (0.000)	0.18*** (0.000)	-0.03*** (0.004)	0.01 (0.210)	-0.03** (0.017)	0.09*** (0.000)					
$CAR_{-1,+1}$	-0.06*** (0.000)	-0.05*** (0.000)	-0.03** (0.013)	-0.02** (0.024)	-0.02** (0.039)	-0.04*** (0.000)	0.01 (0.787)				
$BHAR_{sp500}$	0.04*** (0.001)	0.16*** (0.000)	0.01 (0.646)	-0.01 (0.484)	-0.01 (0.668)	-0.01 (0.336)	-0.03*** (0.006)	-0.01 (0.463)			
ROA	0.01 (0.602)	0.18*** (0.000)	0.01 (0.282)	-0.02 (0.137)	-0.08*** (0.000)	-0.02 (0.135)	-0.06*** (0.000)	-0.01 (0.491)	0.03*** (0.009)		
Acfo	-0.02 (0.219)	0.06*** (0.000)	-0.01 (0.559)	0.01 (0.398)	-0.03** (0.025)	-0.01 (0.464)	-0.11*** (0.000)	-0.01 (0.653)	0.04*** (0.008)	0.15*** (0.000)	
Dacc	-0.02 (0.129)	0.02* (0.079)	-0.02* (0.055)	0.01 (0.851)	-0.03** (0.020)	0.07*** (0.000)	0.03** (0.014)	0.01 (0.723)	-0.03*** (0.003)	-0.02 (0.114)	0.07*** (0.000)

Table 4

Stock Splits Announcement Returns Based on Earnings Management Portfolios

We report Cumulative Abnormal Returns (CAR) for the entire group of stock splits as well as for nine earnings management portfolios. Earnings management portfolios are ranked based on the possible manipulation capacity. M1 is the least manipulative portfolio consisting of firms with the lowest evidence of pre-split accruals management and RAM. M9 on the other extreme is the most manipulative portfolio with an evidence of both accruals management and RAM. Since *All* does not dictate that we have pre-split earnings management data available it consists of all stock split announcements during 1980-2012 and not just stocks belonging to one of the portfolios M1:M9. CAR is calculated as $\sum_{t-k}^{T+k}(R_{it} - E(R_{it})$ for three different announcement periods, t-1:t+1, t-3:t+3 and t-5:t+5. Where $E(R_{it})$ is the stock expected returns estimated using the market model. P-values are between parentheses. *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

Portfolio	No.	CAR $_{-1,+1}$	CAR $_{-3,+3}$	CAR $_{-5,+5}$
M1	421	1.9***	2.1***	1.4***
No. Dacc., High Acfo.		(0.000)	(0.000)	(0.000)
M2	692	2.6***	2.6***	2.7***
Low Dacc., High Acfo.		(0.000)	(0.000)	(0.000)
M3	646	2.8***	2.7***	2.8***
High Dacc., High Acfo.		(0.000)	(0.000)	(0.000)
M4	649	1.8***	2.2***	1.9***
No. Dacc., Med Acfo.		(0.000)	(0.000)	(0.000)
M5	554	2.8***	2.7***	2.9***
Low Dacc., Med Acfo.		(0.000)	(0.000)	(0.000)
M6	518	2.6***	3.1***	3.4***
High Dacc., Med Acfo.		(0.000)	(0.000)	(0.000)
M7	577	2.3***	2.4***	2.2***
No. Dacc., Low Acfo.		(0.000)	(0.000)	(0.000)
M8	460	2.8***	2.9***	3.0***
Low Dacc., Low Acfo.		(0.000)	(0.000)	(0.000)
M9	638	3.3***	2.9***	2.6***
High Dacc., Low Acfo.		(0.000)	(0.000)	(0.000)
M1-M9		-1.4**	-0.8**	-1.2**
		(0.020)	(0.036)	(0.028)
All	9749	2.6***	3.0***	2.9***
		(0.000)	(0.000)	(0.000)

Table 5

Regression of stock split announcement returns

This table reports coefficient estimates of the OLS regression of tock split announcement returns on earnings management variables and various control variables. Dependent variables are stock split announcement cumulative abnormal returns (CARs). For specifications 1 and 2 dependent variable is $CAR_{-1,+1}$. For specifications 3 and 4 dependent variable is $CAR_{-3,+3}$. For specifications 5 and 6 dependent variable is $CAR_{-5,+5}$. *Pre-Split_Returns* is the stock raw returns during the 12 month prior to the split month. *Size* is decile rank based on total assets. *MTBV* is the rank based on market to book value. S*plit_price* is the price in the day just following the split effective day. *Leverage* is the ratio of long term debts to total assets. *Splitting Factor* is the stock split splitting factor. *Acfo* is the pre-split abnormal cash flow estimated as the residuals from the Roychowdhury (2006) model. *Dacc* is the pre-split discretionary accruals estimated as the residuals from the modified Jones (1991) model. *Portfolio M1-M9* is a dummy variable which takes the value "0" if the firm belongs to portfolio M9 and "1" if it belongs to portfolio M1. Coefficients are estimated using industry fixed effects. P-values are between parentheses. *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

	Dependent variable					
	$CAR_{-1,+1}$		$CAR_{-3,+3}$		$CAR_{-5,+5}$	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.06***	0.08***	0.07***	0.09***	0.07***	0.12***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pre-Split_Returns	0.01**	0.00	0.01***	0.01***	0.01***	0.00
	(0.018)	(0.151)	(0.000)	(0.002)	(0.001)	(0.405)
Size	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTBV	-0.01*	-0.01**	-0.00**	-0.01**	-0.00***	-0.01***
	(0.065)	(0.031)	(0.038)	(0.022)	(0.006)	(0.001)
Split_price	0.01***	0.00**	0.00***	0.00	0.00***	0.00***
	(0.000)	(0.011)	(0.001)	(0.114)	(0.000)	(0.000)
Leverage	0.01	0.01	0.01	-0.02	0.01	-0.02
	(0.779)	(0.841)	(0.519)	(0.401)	(0.733)	(0.450)
Splitting Factor	0.01***	0.01	0.01***	0.01	0.01***	0.01
	(0.000)	(0.366)	(0.000)	(0.303)	(0.002)	(0.682)
Acfo	0.00		-0.00		0.00	
	(0.100)		(0.509)		(0.768)	
Dacc	-0.01		-0.01		-0.01	
	(0.102)		(0.105)		(0.175)	
Portfolio M1-M9		-0.01		-0.01		-0.01
		(0.355)		(0.302)		(0.226)
No. of Observation	3727	767	3727	767	3727	767
Adjusted R2	0.05	0.06	0.06	0.07	0.05	0.06

Table 6

Manipulation ranked portfolios Post-split buy and hold abnormal returns

This table reports the average buy and hold abnormal returns for the nine manipulation-ranked portfolios M1:M9, where M1 portfolio consists of split stocks with the least pre-split earnings management and M9 portfolio consists of split stocks with the greatest pre-split earnings management. We also report the return differential between portfolio M1 and M9, *M1-M9*. For each stock, buy and hold abnormal return is measured as $BHAR_i = \prod_{t=1}^{250}[1 + R_{i,t}) - \prod_{t=1}^{250}[1 + E(R_{i,t})]$, where, $R_{i,t}$ is the total rate of return of stock i on day t and $E(R_{i,t})$ is the expected return for each security i on day t. $BHAR_{ref}$ is the 1-year buy and hold abnormal returns where expected return is the return for size and book-to-market reference portfolio. $BHAR_{sp500}$ is the 1-year buy and hold abnormal returns where expected return is the return for S&P500 composite index. $BHAR_{ind}$ is the 1-year buy and hold abnormal returns where expected return is the return for firm specific Fama-French 48 industry. Estimates are reported in percentages. P-values are reported in Parenthesis. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

	1year post split abnormal returns		
Portfolio	$BHAR_{ref}$	$BHAR_{sp500}$	$BHAR_{ind}$
M1 No. Dacc., High Acfo.	5.5%* (0.051)	11.9%*** (0.000)	5.5%* (0.070)
M2 Low Dacc., High Acfo.	6.9%*** (0.000)	3.00% (0.161)	-2.6% (0.247)
M3 High Dacc., High Acfo.	4.3%* (0.097)	7.5%** (0.013)	5.9%* (0.056)
M4 No. Dacc., Med Acfo.	-1.7% (0.261)	3.3%* (0.056)	1.2% (0.533)
M5 Low Dacc., Med Acfo.	-3.8%* (0.056)	3.0% (0.169)	2.1% (0.370)
M6 High Dacc., Med Acfo.	-3% (0.286)	4.4% (0.139)	2.2% (0.518)
M7 No. Dacc., Low Acfo.	-4.5%*** (0.006)	1.1% (0.593)	-2.8% (0.220)
M8 Low Dacc., Low Acfo.	-6.5%** (0.018)	2.00% (0.452)	-1.6% (0.636)
M9 High Dacc., Low Acfo.	-16%*** (0.000)	-7.1%*** (0.003)	-5.8%** (0.017)
Portfolio M1-M9	22%*** (0.000)	19.1%*** (0.000)	11.2%*** (0.003)

Table 7

Cross section predictive regression of post split long-term stock returns

This table reports coefficient estimates from predictive regressions of post-split long-term returns on pre-split earnings management and control variables. We use three different dependent variables to represent post-split long-term returns. $BHAR_{ref}$ is the 1-year buy and hold abnormal returns where expected return is the return for size and book-to-market reference portfolio. $BHAR_{sp500}$ is the 1-year buy and hold abnormal returns where expected return is the return for S&P500 composite index. $BHAR_{ind}$ is the 1-year buy and hold abnormal returns where expected return is the return for firm specific Fama-French 48 industry. *Pre-split return* is the stock raw returns excluding dividends during the 12 month prior to the split month. *Size* is decile rank based on total assets. *MTBV* is the rank based on market to book value. *Split price* is the price in the day just following the split effective day. *Leverage* is the ratio of long term debts to total assets. *Splitting Factor* is the stock split splitting factor. *Portfolio M1-M9* is a dummy variable which takes the value "0" if the firm belongs to portfolio M9 and "1" if it belongs to portfolio M1. Coefficients are estimated using industry fixed effects. P-values are between parentheses. *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

	dependent variables					
	$BHAR_{ref}$		$BHAR_{sp500}$		$BHAR_{ind}$	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.17***	-0.48***	-0.07***	-0.58***	-0.17***	-0.64***
	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)
Pre-split return		-0.05***		-0.04***		-0.03*
		(0.000)		(0.002)		(0.053)
Size		0.01		0.01		0.04**
		(0.775)		(0.319)		(0.023)
MTBV		0.05***		0.07*		0.04***
		(0.000)		(.068)		(0.005)
Split price		-0.00		-0.00		-0.00
		(0.108)		(0.255)		(0.984)
Leverage		0.23**		0.43***		-0.05
		(0.026)		(0.001)		(0.770)
Splitting Factor		0.04		0.03		0.03
		(0.274)		(0.388)		(0.527)
Portfolio M1-M9	0.22***	0.11***	0.219***	0.12***	0.20***	0.11*
	(0.000)	(0.002)	(0.000)	(0.008)	(0.000)	(0.051)
NO.	962	837	1059	906	1046	894
Adjusted R^2	4.3	11.0	2.7	8.0	1.2	3.3

Table 8

Returns for calendar month earnings management-ranked portfolios

This table reports the average monthly returns for calendar month portfolios formed based on pre-split earnings management. Earnings management portfolios are ranked based on the possible manipulation capacity. M1 is the least manipulative portfolio consisting of firms with the lowest evidence of pre-split accruals management and RAM. M9 on the other extreme is the most manipulative portfolio with an evidence of both accruals management and RAM. We also report returns for the zero-investment portfolio of buying portfolio M1 and selling portfolio M9. We report four different post split holding periods, 12 month, 24 month, 36 month and 12 months starts 6 months after the split month. We report both equally weighted and value weighted portfolios. Estimates are reported in % per month. P-values are reported in Parenthesis. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

	Equally weighted				Value weighted			
Portfolio	+1 , +12	+1 , +24	+1 , +36	+6 , +18	+1 , +12	+1 , +24	+1 , +36	+6 , +18
M1	1.9***	1.3***	1.3**	1.1***	1.7***	1.1***	1.1***	1.1**
No. Dacc., High Acfo.	(0.000)	(0.000)	(0.013)	(0.006)	(0.000)	(0.005)	(0.003)	(0.014)
M2	1.1**	1.0**	1.0**	0.9**	0.8*	0.9**	0.8**	1.1**
Low Dacc., High Acfo.	(0.014)	(0.012)	(0.011)	(0.043)	(0.075)	(0.025)	(0.031)	(0.019)
M3	1.3**	1.2**	1.2***	1.4***	1.0*	0.8*	0.9*	1.2**
High Dacc., High Acfo.	(0.012)	(0.013)	(0.010)	(0.010)	(0.055)	(0.088)	(0.053)	(0.030)
M4	1.5***	1.2***	1.1***	1.1***	1.3***	0.9***	0.7**	0.7**
No. Dacc., Med Acfo.	(0.002)	(0.000)	(0.000)	(0.001)	(0.006)	(0.004)	(0.011)	(0.042)
M5	1.2***	1.0***	1.1***	0.8**	1.0**	1***	0.8***	1.0**
Low Dacc., Med Acfo.	(0.002)	(0.006)	(0.002)	(0.028)	(0.013)	(0.004)	(0.009)	(0.012)
M6	1.1**	0.7*	0.8*	0.7	0.6	0.4	0.4	0.5
High Dacc., Med Acfo.	(0.011)	(0.072)	(0.053)	(0.073)	(0.167)	(0.255)	(0.301)	(0.214)
M7	1.0***	1.1***	0.9***	1.0***	0.6*	0.7**	0.5*	0.7***
No. Dacc., Low Acfo.	(0.006)	(0.001)	(0.002)	(0.004)	(0.056)	(0.012)	(0.071)	(0.009)
M8	1.1**	0.8*	1.0**	0.5	1.8***	1.2***	1.2***	0.7
Low Dacc., Low Acfo.	(0.027)	(0.051)	(0.020)	(0.264)	(0.000)	(0.002)	(0.001)	(0.123)
M9	0.9**	0.5	0.7	0.2	0.8*	0.5	0.3	0.1
High Dacc., Low Acfo.	(0.050)	(0.232)	(0.136)	(0.601)	(0.078)	(0.219)	(0.365)	(0.799)
M1-M9	0.9***	0.8***	0.6**	0.9**	0.9**	0.6**	0.8***	0.9**
	(0.008)	(0.002)	(0.013)	(0.011)	(0.019)	(0.025)	(0.004)	(0.011)

Table 9

Four-factors alphas for calendar month earnings management-ranked portfolios

This table reports four factors model alphas estimated as the intercepts from the four factors model consisting of Fama-French (1993) three-factors and Carhart (1997) momentum factor. We estimate models for nine earnings management ranked portfolios M1-M9. Earnings management portfolios are ranked based on the possible manipulation capacity. M1 is the least manipulative portfolio consisting of firms with the lowest evidence of pre-split accruals management and RAM. M9 on the other extreme is the most manipulative portfolio with an evidence of both accruals management and RAM. We also report alphas for the zero-investment portfolio of buying portfolio M1 and selling portfolio M9.We report four different post split holding periods, 12 month, 24 month, 36 month and 12 months starts 6 months after the split month. We report both equally weighted and value weighted portfolios. Estimates are reported in % per month. P-values are reported in Parenthesis. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Portfolio	Equally weighted				Value weighted			
	+1 , +12	+1 , +24	+1 , +36	+6 , +18	+1 , +12	+1 , +24	+1 , +36	+6 , +18
M1	1.4***	0.9***	0.8***	0.7***	1.1***	0.7***	0.6***	0.7**
No. Dacc., High Acfo.	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.006)	(0.003)	(0.017)
M2	0.4*	0.4**	0.5***	0.2	0.2	0.4	0.4*	0.5*
Low Dacc., High Acfo.	(0.062)	(0.012)	(0.004)	(0.206)	(0.394)	(0.109)	(0.059)	(0.093)
M3	0.8**	0.7***	0.8***	0.9***	0.5	0.3	0.4	0.7*
High Dacc., High Acfo.	(0.011)	(0.006)	(0.001)	(0.008)	(0.175)	(0.319)	(0.162)	(0.092)
M4	1.1***	0.7***	0.7***	0.7***	0.8**	0.4**	0.3**	0.3
No. Dacc., Med Acfo.	(0.004)	(0.000)	(0.000)	(0.000)	(0.038)	(0.012)	(0.021)	(0.179)
M5	0.5**	0.4**	0.6***	0.2	0.2	0.4*	0.2*	0.3
Low Dacc., Med Acfo.	(0.032)	(0.012)	(0.000)	(0.353)	(0.349)	(0.054)	(0.084)	(0.191)
M6	0.5**	0.1	0.3**	0.2	-0.0	-0.0	-0.0	0.0
High Dacc., Med Acfo.	(0.044)	(0.359)	(0.051)	(0.316)	(0.919)	(0.785)	(0.710)	(0.997)
M7	0.5**	0.6***	0.5***	0.7***	0.1	0.2	0.0	0.3*
No. Dacc., Low Acfo.	(0.02)	(0.000)	(0.000)	(0.001)	(0.643)	(0.232)	(0.746)	(0.071)
M8	0.5	0.4*	0.6***	0.1	1.0***	0.5**	0.6**	0.0
Low Dacc., Low Acfo.	(0.104)	(0.096)	(0.004)	(0.691)	(0.008)	(0.044)	(0.016)	(0.807)
M9	0.3	0.0	0.3	-0.1	0.2	-0.1	-0.1	-0.2
High Dacc., Low Acfo.	(0.123)	(0.72)	(0.191)	(0.677)	(0.365)	(0.971)	(0.652)	(0.389)
M1-M9	1.0***	0.8***	0.5**	0.9**	0.9**	0.7**	0.7***	1.0**
	(0.002)	(0.001)	(0.029)	(0.014)	(0.023)	(0.020)	(0.008)	(0.015)

Table 10

Post-split abnormal returns and restatement announcements

We compare the long-term abnormal returns and restatement announcements of SPLITs group and NON_SPLITs group. in Panel A we report three different measures of post-split long-term returns. $BHAR_{ref}$ is the 1-year buy and hold abnormal returns where expected return is the return for size and book-to-market reference portfolio. $BHAR_{sp500}$ is the 1-year buy and hold abnormal returns where expected return is the return for S&P500 composite index. $BHAR_{ind}$ is the 1-year buy and hold abnormal returns where expected return is the return for firm specific Fama-French 48 industry. In Panel B we report the number of restatement announcements of SPLITs and NON_SPLITs in the post-split period. In order to assure comparability we align the day (t=0) of the NON_SPLIT control firms with the pair wise matched treatment (SPLIT) case. P-values are between parentheses. *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

Panel A. Long-term post split abnormal returns

	Treatment (SPLITs)	Control (NON_SPLITs)	Difference
$BHAR_{ref}$	-15.6***	-9.6***	-5.9*
	(0.000)	(0.001)	(0.088)
$BHAR_{sp500}$	-17.7***	-9.8***	-7.9**
	(0.000)	(0.001)	(0.024)
$BHAR_{ind}$	-13.7***	-9.6***	-4.0
	(0.000)	(0.001)	(0.226)

Panel B. post-split number of restatement announcement

0-2 years	43	32	11
3-5 years	57	16	41
> 5 years	90	54	36
All	190	102	88
% of restating firms	32%	19%	13%***
			(0.000)

Table 11

Post-split long-term stock returns and the effect of stock splits

This table reports coefficient estimates from predictive regressions of post-split long-term returns for a treatment group (SPLITs) and control group (NON_SPLITs). We use three different dependent variables to represent post-split long-term returns. $BHAR_{ref}$ is the 1-year buy and hold abnormal returns where expected return is the return for size and book-to-market reference portfolio. $BHAR_{sp500}$ is the 1-year buy and hold abnormal returns where expected return is the return for S&P500 composite index. $BHAR_{ind}$ is the 1-year buy and hold abnormal returns where expected return is the return for firm specific Fama-French 48 industry. *Splitter* is a dummy variable which equals "1" if the firm belongs to the treatment group (SPLITs) and equals "0" if it belongs to the control group (NON_SPLITSPLITs). SPLITs are firms that conduct stock splits preceded by positive discretionary accruals and negative abnormal cash flows. NON_SPLITs are matched firms with positive discretionary accruals and negative abnormal cash flows, but did not conduct a stock split. *Pre-split return* is the stock raw returns excluding dividends during the 12 month prior to the split month. *Size* is decile rank based on total assets. *MTBV* is the rank based on market to book value. *Leverage* is the ratio of long term debts to total assets. *Acfo* is the pre-split abnormal cash flow estimated as the residuals from the Roychowdhury (2006) model. *Dacc* is the pre-split discretionary accruals estimated as the residuals from the modified Jones (1991) model. Coefficients are estimated using industry fixed effects. P-values are between parentheses. *, **, and *** indicates significance at 10%, 5% and 1% levels, respectively.

	dependent variables					
	$BHAR_{ref}$		$BHAR_{sp500}$		$BHAR_{ind}$	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.10***	0.13**	-0.10***	-0.05	-0.10***	-0.06
	(0.000)	(0.027)	(0.000)	(0.453)	(0.000)	(0.291)
Splitter	-0.06*	-0.10***	-0.08**	-0.12***	-0.04	-0.09***
	(0.088)	(0.006)	(0.024)	(0.001)	(0.226)	(0.007)
Pre-split return		-0.00		-0.00		-0.00*
		(0.317)		(0.120)		(0.090)
Size		-0.01		0.02*		0.03**
		(0.763)		(0.061)		(0.034)
MTBV		-0.07***		-0.02*		-0.02
		(0.000)		(0.081)		(0.153)
Leverage		0.13		0.13		0.08
		(0.150)		(0.150)		(0.331)
Acfo		0.07***		0.09***		0.05*
		(0.009)		(0.003)		(0.056)
Dacc		0.01		0.02		0.01
		(0.676)		(0.348)		(0.588)
NO.	1349	973	1349	973	1349	973
Adjusted R^2	1.0	4.9	1.0	4.0	0.1	2.4

Table 12
Robustness tests

This table reports cumulative abnormal returns ($CAR_{-5,+5}$) and 1-year buy and hold abnormal returns ($BHAR_{ref}$). We report returns for portfolio M1, M9 and M1-M9. Panel A reports returns for dividend paying stocks and non-dividend paying stocks. Panel B reports returns for firms that increase dividends simultaneously with splits versus firms that do not. Panel C reports returns for large versus small stocks. Large (small) stocks are firms with above (below) median total assets at the split year. Panel D reports returns for glamour versus value stocks. We define glamour (value) stocks as firms with above (below) median market to book value. Panel E reports returns for firms that use 2:1 stock splitting factor versus all other split firms. Panel F reports returns for splits that took place during 1988-2000 versus firms that conduct splits during 2001-2012. Estimates are reported in percentages. P-values are reported in Parenthesis. *, **, and *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

	Announcement returns ($CAR_{-5,+5}$)			1 year $BHAR_{ref}$		
	M1	M9	M1-M9	M1	M9	M1-M9
Panel A. Announcement returns and long-term buy and hold post-split returns by dividends paying						
Dividends payer	1.6***	2.9***	-1.3	8***	-9***	17.5***
	(0.005)	(0.000)	(0.289)	(0.010)	(0.000)	(0.000)
Non-dividend payer	1.5***	3.2***	-1.7	2.6	-21***	24***
	(0.005)	(0.001)	(0.263)	(0.593)	(0.000)	(0.000)
Panel B. Announcement returns and long -term buy and hold post-split returns by dividends change						
Dividend increase	1.6***	3.1***	-1.6	4.8*	-15***	20***
	(0.006)	(0.000)	(0.122)	(0.100)	(0.000)	(0.000)
Non-dividend increase	0.1	2.7	-1.8	14.8	-25***	40***
	(0.601)	(0.149)	(0.541)	(0.117)	(0.000)	(0.000)
Panel C. Announcement returns and long -term buy and hold post-split returns by size						
Small firms	2.6**	3.7***	-1.1	5.4	-19***	24.5***
	(0.012)	(0.000)	(0.506)	(0.311)	(0.000)	(0.000)
Large firms	0.1	2.4***	-1.7	5.6*	-14***	20***
	(0.208)	(0.005)	(0.118)	(0.081)	(0.000)	(0.000)
Panel D. Announcement returns and long -term buy and hold post-split returns by MTBV						
value stocks	3.5***	2.4**	1.1	-2.3	-22***	20***
	(0.001)	(0.014)	(0.503)	(0.540)	(0.000)	(0.000)
glamour stocks	0.1	3.9***	-3.7**	9.4**	-12***	21***
	(0.304)	(0.000)	(0.024)	(0.016)	(0.000)	(0.000)

Panel E. Announcement returns and long -term buy and hold post-split returns by splitting factor						
Split factor=2:1	1.0	3.7***	-2.7**	5.3	-18%***	23.5***
	(0.162)	(0.000)	(0.035)	(0.153)	(0.000)	(0.000)
Split factors≠2:1	2.2***	2.3**	-0.000	5.7	-15***	21***
	(0.009)	(0.025)	(0.971)	(0.186)	(0.000)	(0.000)
Panel F. Announcement returns and long –term buy and hold post-split returns by time						
1988-2000	1.2*	2.5***	1.3	1.6	-14***	16***
	(0.065)	(0.000)	(0.216)	(0.713)	(0.000)	(0.000)
2001-2012	1.9**	3.9***	2.0	9.5	-19***	29***
	(0.038)	(0.003)	(0.234)	(0.004)	(0.000)	(0.000)
1991-1996	1.8**	1.4*	0.3	-3.4	-9.6***	6.2**
	(0.029)	(0.100)	(0.762)	(0.484)	(0.003)	(0.023)
Panel G. buy and hold abnormal returns 1991-1996						
	All splits		All other splits	Portfolio M9		Difference
$BHAR_{ref}$	0.4		2.4**	-9.6***		11.4***
	(0.752)		(0.023)	(0.003)		(0.003)