INCOME SMOOTHING, REAL EARNINGS MANAGEMENT AND LONG-RUN STOCK RETURNS

Abbas Aflatooni, Zahra Nikbakht

Abstract

Using the Tucker-Zarowin (TZ) statistic of income smoothing, we find firms with higher income smoothing rankings exhibit lower long-run return and abnormal return. Also, we find similar results on firms that manage its earnings to meet zero earnings threshold. To test for the combined explanatory power of our independent variables ($\beta$, size, book to market ratio and smoothing (earnings managing to avoid losses) proxy), we estimate a multivariate regression. Multivariate analysis confirms our previous findings.
Introduction

According to Healy and Wahlen (1999), “Earnings management occurs when managers use 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.”

At the risk of repeating a cliché, accounting numbers have no meaning without being compared to some benchmark. Firms therefore have incentives to manage earnings to beat such benchmarks as zero earnings, expected changes in earnings between parallel periods, and analysts’ consensus forecasts (Ronen and Yaari, 2008, p. 135). Anecdotal evidence suggests that there are strong incentives to avoid reporting losses. Burgstahler and Dichev (1997a), and DeGeorge, Patel, and Zeckhauser (1999), offer psychological explanations, such as the notion that investors would like to observe positive earnings. Hayn (1995), Burgstahler and Dichev (1997b), Durtschi and Easton (2005), and Lee, Li, and Yue (2006), base the answer on the fact that the valuation models for losses and profits firms are different. Since Hayn (1995) and Burgstahler and Dichev (1997) found evidence of the discontinuity in frequency of firm-years around zero earnings, academics have had limited success in documenting further evidence of earnings management to avoid losses. Dechow, Richardson and Tuna (2003) fail to find evidence that firms reporting small profits manage accruals to cross the zero thresholds.

An earnings management strategy that has survived the test of time is smoothing (Buckmaster, 2001). Income smoothing has existed for decades, and there are generally two schools of thought as to what motivates managers to smooth. First, smoothing presents an arguably efficient vehicle for managers to reveal private information. Second, smoothing represents “garbling”, that is, smoothing is an exercise undertaken by managers in an attempt to fool analysts and others and to enhance managerial compensation (Li and Richie, 2009). The first school of thought is reflected in the works of Ronen and Sadan (1981), Demski (1998), Sankar and Subramanyam (2001), Srinidhi, Ronen and Maindiratta (2001), Kirschenheiter and Melumad (2002), and Goel and Anjan (2003), among others. For example, Ronen and Sadan (1981) employ a signaling model and contend that only firms with good prospects elect to smooth. Essentially, the first school holds that income smoothing may aid in the revelation of private information in much the same way that dividend smoothing can occasion information revelation (Miller and Rock, 1985).

The second school of thought is reflected in the works of Beidleman (1973), Lambert (1984), Healy (1985), Fudenberg and Tirole (1995), Arya, Glover and Sunders (1998), and Demski and Frimor (1999), among others. In addition, garbling has been evidenced by some recent and high profile cases of smoothing abuse. For example, the Federal Home Loan Mortgage Corporation was found by the government to have illicitly altered the volatility mark on its put swaptions in order to achieve a smoother earnings growth profile.

Noravesh and Sepasi (2005) examine the possible impact of culture on income smoothing in Iran. Explanatory variable capturing Hofsted (1991) cultural values are used as proxy for Individualism, Masculinity, Power Distance and Uncertainty Avoidance. It is shown that the relationship between Hofsted cultural values and income
smoothing is significant for firms listed in Tehran Stock Exchange (TSE).

Pourheydari and Aflatooni (2006) investigate the Iranian managers’ incentive to smooth income using discretionary accruals. They find that Iranian managers, smooth income by using discretionary accruals and income taxes and deviation in operating activities are managers’ derives to smooth income. They also find that firms’ size, debt ratio and earnings variability are not important derives to income smoothing in TSE.

Mashayekhi, Mehrani, Mehrani and Karami (2006) find that listed firms in TSE do earnings management when their operating performance is poor and they tend to choose income increasing accounting strategies. Mehrani and Arefmanesh (2008) provide some evidence that income have had a weaker performance leading to a higher motivation compared with non-income smoother in TSE.

Haghighat and Raigan (2009) show that the Iranian investors prefer smoothed income and on this regard, managers try to smooth income and on the base one classification of management incentives for income smoothing, managers smooth incomes either for purpose of garbling of information and either benefits or in order to transforming and reporting the insider information about future earnings.

For many years, studies of income smoothing and earnings management have suggested that one of its purposes is to increase the level of market return. For instance, Hepworth (1953) states that the owners will feel more confident toward a company that reports stable earnings. Gordon (1964) suggests that management should smooth (within the accounting rules) reported income, for stockholder satisfaction increase with the rate of growth and stability of its income. Ronen and Sadan (1981) report that most of the rationales offered for income smoothing focus on management’s desire to enhance the value of the firm’s stock. Moses (1987) states that the argument for smoothing implies a direct cause-and-effect relationship between earnings fluctuations and market risk. Booth, Kallunki and Martinkainen (1996) indicate that firms that do not smooth income have higher abnormal return from earnings surprise than firms that smooth income.

Toeh, Welch, and Wong (1998a, b) and Rangan (1998) investigate the relationship between earnings management and seasoned equity offerings. Using methodology similar to Dechow, Sloan and Sweeney (1995 and 1996), discretionary accruals are used as a measure of earnings management. Toeh, Welch and Wong find a negative relation between pre-issue discretionary accruals and post-issue earnings and stock returns. Rangan finds that discretionary accruals are higher during the pre offering period and are reversed in the year following the offering. He also finds that an increase in discretionary accruals is associated with a predictable earnings decline.

Gibbons, Richardson and Waterhouse (1990) provide an intriguing discussion of corporate disclose behavior that helps explain an investor’s preference for firms with smoother incomes. They state that a corporation builds a financial reputation and that consistency and credibility in disclosures are central to that reputation. Moreover, a firm’s choice of accounting methods may enhance that reputation. Therefore, it follows that investors place greater value on companies with consistent (smooth) financial disclosure (earnings) than on companies with fluctuating financial statements. Chaney and Lowis (1995) develop a model that shows companies smooth income in order to signal firm value to investors. This concept of signaling was
also discussed by Dye in the development of his earnings management model. Dye (1988) states that, the demand for earnings management derives from current shareholders’ desire to influence prospective investors’ perceptions of the firm’s value.

Badrinath, Gay and Kale (1989) argue that institutional investors normally avoid companies that experience large variations in earnings or firms that are perceived as risky. Therefore, intuitional investors tend to prefer companies with smoother earnings streams. Bricker, Previts, Robinson and Young (1995) present evidence that analyst’s associate earnings quality “with the capability of a company’s managers to manage earnings so as to avoid negative earnings surprise”. Chaney and Lewis (1994) develop a model that shows companies smooth income in order to signal firm value to investors.

Bowman and Navissi (2003) examine the association between abnormal returns and earnings management in the context of price control regulations to test the construct validity of the earnings management model. Abnormal returns are used as a market-based measure, and discretionary accruals are employed to measure earnings management. Their results support the hypotheses that (1) price control regulations affect firms’ security prices negatively, (2) firms make income-decreasing discretionary accruals to increase the likelihood of price increase approval, and (3) firms that are affected most negatively by the regulations manage earnings more aggressively. They conclude that the earnings management model they use in their study is capable of predicting opportunistic discretionary accruals.

Michelson, Wagner and Wootton (2000) use risk-adjusted returns to test whether the stock market response to accounting performance measure is related to the smoothness of companies’ reported earnings. The results indicate that companies that report smoothed income have significantly higher cumulative average abnormal returns than firms that do not. Also, they find that when size is considered, market returns are stronger for small companies than for large companies and there is a significant relationship between the types of industry and income smoothing. Singer (2007) shows that earnings management is negatively associated with long-run stock returns.

Based upon the literature, companies with smoothed earnings are more attractive to investors than companies with widely fluctuation earnings. But we think that there is also a second story on firms that smooth their reported incomes. By smooth their incomes, firms send signals to market and overstate their economic performance and influence contractual outcomes that depend on reported accounting practices. In short period (around reporting time), it is possible that income smoother and/or earnings manager firms achieve their purpose (increases in their short-run returns and abnormal returns, and avoid from losses) but in long period, stockholders obtain additional information (from competitive information sources) about the true financial and economical position of those firms and then correct their decisions. In this situation we expect that the level of long-run stock return and abnormal stock return decline. Thus it is expected that there is a negative relationship between income smoothing (and earnings management) and long-run stock return. In other words, it is expected that the income smoother and earnings manager firms earn lower long-run return and abnormal return than other firms.

The method employed in this paper to determine if there is a statistical difference in mean (median) returns and abnormal returns between smoothing and non-smoothing (earnings manager and other) firms involves a comparison of the cross-sectional mean.
(median) returns and abnormal returns using the t-statistic (Wilcoxon Z-statistic) for the difference of means (medians) test. To test for the combined explanatory power of our independent variables $\beta$, size, book to market ratio and smoothing (earnings managing to avoid losses) proxy, we estimate a multivariate regression. This result confirms the previous findings of a significant negative relationship between long-run returns and abnormal returns and income smoothing (earnings management to avoid losses).

The remainder of the paper is organized as follows: the next section contains the research design of the study including hypotheses development and research models. Section 3 presents the empirical results and conclusions are presented in section 4.

Research design

Hypotheses development

As stated in section 1, in short period (around reporting time), income smoother and/or earnings manager firms may achieve their purpose (increases in its short-run returns and abnormal returns, and avoid from losses) but in long period, stockholders obtain additional information (from competitive information sources) about the true financial and economical position of those firms and then correct their decisions. In this situation we expect that the level of long-run stock return and abnormal stock return decline. Thus it is expected that there is a negative relationship between income smoothing (and earnings management) and long-run stock return. In other words, it is expected that the income smoother and earnings manager firms earn lower long-run return and abnormal return than other firms.

For our tests, suspect firm-years (SUSPECT) are firm-years reporting small annual profits and income smoother firms (IS) are firms with high negative correlation between the changes in their discretionary accruals and changes in their pre-discretionary income. Thus, the research hypotheses are presented as follows:

Hypothesis 1: Income smoother firms exhibit unusually low stock returns.

Hypothesis 2: Suspect firm-years exhibit unusually low stock returns.

Hypothesis 3: Income smoother firms exhibit unusually low abnormal stock returns.

Hypothesis 4: Suspect firm-years exhibit unusually low abnormal stock returns.

In the next section, we provide research models to test each of hypotheses.

Research design

In this study it is assumed that the information obtained on income smoothing and earnings management is transmitted regularly to the market and that stock prices are continually adjusting to such information. To obtain a clear indication of how the market evaluates the practice of smoothing, we carried out a long-term association analysis, similar to those developed for the American market by Michelson et al. (1995, 2000) and Iniguez and Poveda (2004). In this type of long-run study, the method chosen for calculating and testing returns and abnormal returns is of great importance, since the results on long time-horizons are very sensitive to methodology (e.g. see Michelson et al. 1995, 2000).

For the analysis of returns, the monthly return on each stock was taken and duly adjusted for dividends. For market returns, we used an equally weighted index for the returns on all the stocks that were trading.
on the Tehran stock market during the 2001-2006.

To obtain the cumulative returns and abnormal returns of each stock over one year, we have compounded the monthly returns on each stock and the monthly reference returns, and then calculated the compounded returns and compounded abnormal returns for, as follows:

\[
\begin{align*}
\text{CoR}_i &= \prod_{t=1}^{12} (1 + R_{it}) \quad (2) \\
\text{ACoR}_i &= \prod_{t=1}^{12} (1 + AR_{it}) \quad (3)
\end{align*}
\]

where \(\text{CoR}_i\) (ACoR\(_i\)) is compounded return (abnormal return) on stock \(i\) over 12 months (from five months after fiscal year-end) of each year, \(R_{it}\) is the return obtained from stock \(i\) in month \(t\) and \(\text{AR}_{it}\) is monthly abnormal stock return derived from Fama-French (1993) three factor model. Thus we start my tests by following regression:

\[
\text{CoR}_i = \alpha_i + b_1 \beta_1 + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1}
\]

Based on previous research (e.g. Fama and French, 1992) we expect that \(b_1 > 0\), \(b_2 < 0\) and \(b_3 > 0\). Now, to test the hypotheses (1) for income smoother firms, we present the following model:

\[
\text{CoR}_i = \alpha_i + b_1 \beta_1 + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1} + b_4 15
\]

and to test the hypotheses (1) for earnings manager firms, we estimate the following model:

\[
\text{CoR}_i = \alpha_i + b_1 \beta_1 + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1} + b_4 \text{SUSPECT}_i
\]

Also, to test the hypotheses (2) for income smoother and earnings manager firms, we estimate the following models, respectively:

\[
\text{ACoR}_i = \alpha_i + b_1 \beta_1 + b_2 \text{DSIZE}_{it-1} + b_3 \text{DBTM}_{it-1} + b_4 15
\]

\[
\text{ACoR}_i = \alpha_i + b_1 \beta_1 + b_2 \text{DSIZE}_{it-1} + b_3 \text{DBTM}_{it-1} + b_4 \text{SUSPECT}_i
\]

Where \(\text{CoR}_i\) (ACoR\(_i\)) is the compounded return (abnormal returns) of firm \(i\) during period \(t\), \(\beta_i\) is systematic risk of firm \(i\) during research period. SIZE\(_{it-1}\) is the size of firm \(i\) at the beginning of the year that is equal to the logarithm of the market value of equity at the beginning of the year and BTM\(_{it-1}\) or book-to-market ratio is the ratio of book value equity to market value equity at the beginning of the year. Since the dependent variables of regressions (7) and (8) are essentially deviations from ‘normal’ levels within an industry-year, all the control variables in the regressions are also expressed as deviations from the respective industry-year means. Thus, \(D\beta\) is the \(\beta\), expressed as deviation from the corresponding industry-year mean, \(DSIZE_{it-1}\) is the size of firm at the beginning of period \(t\), expressed as deviation from the corresponding industry-year mean and \(DBTM_{it-1}\) is the logarithm of book to market ratio at the beginning of period \(t\), expressed as deviation from the corresponding industry-year mean. As Said earlier, SUSPECT\(_i\) denotes firm-years reporting small annual profits and IS\(_i\) denotes firms with high negative correlation between the changes in their discretionary accruals and changes in their pre-discretionary income. In the next sections, to determination of income smoother and earnings manager firms, two measures are presented. In models (4-7), we expect that \(b_4\) is significantly negative.
Selection of income smoother firms

Income smoothing is commonly understood to mean management’s use of discretionary accounting and management principles to reduce earnings variability. Following Myers and Skinner (2002) and Leuz, Nanda and Wysocki (2003), Tucker and Zarowin (2006) estimate income smoothing as the negative correlation between the change in a firm’s discretionary accruals proxy (ΔDAP) and the change in its pre-discretionary income (ΔPDI). This measure assumes that there is an innate, unmanaged income series and that management employs discretionary accruals to smooth this raw series. More income smoothing is evidenced by a greater degree of negative correlation between ΔDAP and ΔPDI. To estimate discretionary accruals, TZ use the cross-sectional version of the Jones (1991) model as modified by Kothari, Leone and Wasley (2005), namely:

\[ \text{Accrual}_{it} = a(1/\text{Asset}_{it}) + b\Delta \text{Sales}_{it} + cPPE_{it} + d\text{ROA}_{it} + \varepsilon_{it} \]

Where Assets is total assets, Accruals stands for total accruals estimated as net income minus operating cash flow, ΔSales is change in sales, PPE is property, plant and equipment, and ROA is return on assets using net income over lagged total assets. Accruals, ΔSales and PPE are each deflated by the beginning-of-year total assets (Assets). Return on assets (ROA) is added as an additional control variable, because previous research finds that the Jones model is misspecified for well-performing or poorly performing firms (Dechow et al. 1995; Kothari et al. 2005).

To employ a large number of observations, we estimate the regression on all firms in the same industry (two-digit SIC) each year. The non-discretionary accruals (NDAP) are the fitted values of Regression (1) and the discretionary accruals (DAP) are the deviations of actual accruals from NDAP. The pre-discretionary income (PDI) is calculated as net income minus discretionary accruals (PDI=NI-DAP).

The TZ income-smoothing measure is the correlation between the change in discretionary accruals and the change in pre-discretionary income: \[\text{Corr}(\Delta \text{DAP}, \Delta \text{PDI})\], using the current year’s and past five years’ observations. We use annual data because there is much evidence that firms smooth period earnings and that fourth-quarter reporting is distinctively different from that of other quarters (Jacob and Jorgensen, 2003; Das and Shroff, 2002). Firms with more negative correlations are higher smoothing firms while firms with less negative (or positive) correlations are lower smoothing firms. In this study, income smoother (IS) firms have TZ correlation that is lower than the respective industry-year mean.

Selection of suspect firm-years

Fig. 1 groups firm-years into intervals based on net income scaled by total stock market prices at the beginning of the year. The histogram of scaled earnings is constructed with widths of 0.05 for the range -1 to +1². The histogram in Fig. 1 is similar to that documented by prior literature, with the prominent upward shift in the frequency of firm-years going from the left of zero to the right. Researchers have argued that it is likely that firm-years in the interval just right of zero manage their earnings to report income marginally above zero. Since earnings are scaled by stock market prices,
the discontinuity at zero can be explained by Durtschi and Easton (2005), who argue that scaling by market capitalization generates the discontinuity.

**Figure 1: The distribution of earnings scaled by the stock price at the beginning of period**

![Graph showing the distribution of earnings scaled by the stock price at the beginning of period.](image)

Number of firm-years by earnings interval: 2458 firm-years over the period 2001–2006 are classified into earnings intervals over the range -1 to +1, where earnings is defined as net income scaled by the stock price at the beginning of period. Each interval is of width 0.05, with category 21 including firm-years with earnings greater than or equal to zero and less than 0.05. The figure is truncated at the two ends and includes 2092 firm-years.

To increase the power of our tests, we concentrate on firm-years in the interval to the immediate right of zero, the suspect firm-years (SUSPECT). Suspect firm-years have net income scaled by stock market prices that is greater than or equal to zero but less than 0.05 (interval 21 in the figure). There are 278 suspect firm-years, including 213 unique firms. Focusing on only firm-years in the small interval (interval 21) to the right of zero restricts the power of our tests. Firms whose ‘un-manipulated’ earnings are substantially above zero possibly have an incentive to manage earnings downward to report profits that are only slightly above zero, in order to create reserves for the future. In that case, the interval just right of zero possibly includes firm-years with downward earnings management. This lowers the proportion of firms in the suspect interval that manage earnings upward to meet the zero target and hence, lowers the power of our tests. However, we do not include other intervals in the suspect category, as these intervals are likely to contain a higher proportion of firm-years that did not manipulate earnings at all.

**Empirical results**

We use the 2009 version of Tadbirpardaz (the Iranian database of Tehran stock exchange) annual data files and choose 2001-2006 as the sample period for the primary test. The period begins with 2001 because 2001 is the first year in which firms are required to report cash flow statements, and we use six observations of $\Delta DAP$ and $\Delta PDI$ to calculate the income-smoothing measure. Firms in the financial and regulated industries are excluded due to their unique nature of accounting.
**Estimation of Discretionary Accruals**

For this estimation, we use the data from 2001–2006 and estimate Regression (1) on each of the 81 industry-year cross-sections, I require at least 10 observations for each industry-year grouping. Table 1 presents the mean, standard deviation, median, minimum, and maximum of the coefficient estimates and R². The coefficients on $PPE_t$ and the coefficient on $\Delta Sales_t$ are lower than that in Subramanyam (1996) and Tucker and Zarowin (2006) due to our additional control for earnings performance. The coefficient on $ROA_t$ has a mean of 0.44, confirming that accruals are associated with firm performance. We calculate a firm’s asset-deflated nondiscretionary and discretionary accruals as the fitted values and residuals, respectively.

**Table 1: Cross-sectional estimation of discretionary accruals**

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>662.75</td>
<td>0.03</td>
<td>-0.18</td>
<td>0.44</td>
<td>0.26</td>
</tr>
<tr>
<td>Median</td>
<td>249.71</td>
<td>0.04</td>
<td>-0.17</td>
<td>0.40</td>
<td>0.23</td>
</tr>
<tr>
<td>Minimum</td>
<td>-457.39</td>
<td>-0.02</td>
<td>-0.21</td>
<td>0.32</td>
<td>0.17</td>
</tr>
<tr>
<td>Maximum</td>
<td>2133.14</td>
<td>0.07</td>
<td>-0.15</td>
<td>0.57</td>
<td>0.37</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>1015.55</td>
<td>0.04</td>
<td>0.03</td>
<td>0.12</td>
<td>0.09</td>
</tr>
</tbody>
</table>

The table presents the summary statistics of the estimated coefficients and R² of 81 industry-year regressions from 2001-2006, where industries are classified by the first two digits of the SIC code.

The Jones Model, modified by Kothari et al. (2005):

\[
Accruals_{it} = a(1/Assets_{it}) + b\Delta Sales_{it} + cPPE_{it} + dROA_{it} + \varepsilon_{it}
\]

**Variable Definitions:**

- \( Accruals_{it} \) = the total accruals in period \( t \) obtained by subtracting operating cash flows from net income, deflated by the beginning-of-year total assets;
- \( Assets_{i,t-1} \) = the total assets at the beginning of period \( t \);
- \( \Delta Sales_{t} \) = the change in sales from periods \( t-1 \) to \( t \);
- \( PPE_{t} \) = the gross property, plant and equipment at the end of period \( t \); and
- \( ROA_{t} \) = the ratio of net income over the beginning-of-year total assets for period \( t \).

**Income-Smoothing Measure and Data Cleaning**

\( PD_{it} \) is calculated as net income minus \( DAP_{it} \), both deflated by the beginning-of-year total assets. A firm-year observation is deleted if its \( \Delta DAP_{it} \) or \( \Delta PD_{it} \) is missing in the current year or any of the past five years. The income-smoothing measure is calculated for the remaining firm-year observations. At first, we have 2458 observations. For the primary test, we delete the firm-year observations that have missing data for past, current, and future three years’ earnings, operating cash flows, and accruals as well as those for current and future three years’ returns (123 observations are deleted). To minimize the effect of outliers, we delete the observations that are in the top or bottom 2 percent of the distributions of the above variables (93 observations are deleted). Even with this effort, extreme outliers are still observed. We further delete the observations whose earnings, operating cash flows, or total accruals in the past, current, or any of the future three years are
greater than 20 times or less than -20 times the market equity value, or whose future three years’ compound returns are greater than 20 or less than -20 (49 observations are deleted). These procedures result in 2193 observations for the primary test.

**Descriptive statistics**

Descriptive statistics of 2193 firm-years observations are presented in table 2. The mean and median of are 0.13 and 0.03, respectively. The mean (median) of $\beta$, $D\beta$, SIZE and book-to-market ratio are 0.32 (0.25), 5.24 (5.18) and -0.45 (-0.41), respectively. You see other statistics in table 2.

Table 2 provides total descriptive statistics, however it is beneficial to present them in another ways. Based on IS and SUSPECT, Table 3 provides the means (medians) of variables for income smoother firms and rest of the sample and table 4 provides the means (medians) of variables for suspect firm-years and rest of the sample. Also, using of ordinary t-test and Wilcoxon z-test, the means and medians of income smoother firms (suspect firm-years) and rest of the sample are compared.

In table 3, the mean (median) of CoR for income smoother firms and rest of the sample are 0.09 (0.00) and 0.16 (0.04), respectively. The differences between means (medians) of CoR are -0.07 (-0.02) and significant at the 5% level (t-stat=-2.34, z-stat=-2.52). Thus, the mean (median) of CoR for income smoother firms is significantly lower than that of rest of the sample. The results in table 3 also indicate that the means (medians) of SIZE, BTM ratio, DSIZE and corr($\Delta DAC_t, \Delta DPI_t$) for income smoother firms are significantly lower than those of rest of the sample.

**Variable Definitions:**

$\text{CoR}_i$ = is compounded return on stock $i$ over 12 months (from five months after fiscal year-end) of period $t$.

$\text{ACoR}_i$ = is compounded abnormal return on stock $i$ over 12 months (from five months after fiscal year-end) of period $t$.

$\beta$ = the systematic risk of stock during 2001-2006 and is equal to covariance between monthly stock return and monthly market return divided to variance of monthly market return during period $t$;
SIZE_{t-1} = the size of firm at the beginning of Period t that is equal to logarithm of total market value of stock at the beginning of period t;

BTM_{t-1} = the logarithm of book to market ratio at the beginning of period t that is equal to logarithm of book value divided to market value of stock at the beginning of period t;

$D\beta$ = the , expressed as deviation from the corresponding industry-year mean;

DSIZE_{t-1} = the size of firm at the beginning of period t, expressed as deviation from the corresponding industry-year mean;

DBTM_{t-1} = the logarithm of book to market ratio at the beginning of period t, expressed as deviation from the corresponding industry-year mean;

DAC_{t} = the discretionary accruals for period t, deflated by the beginning-of-year total assets;

Corr(\Delta DAC_{t}, \Delta PDI_{t}) = the Pearson correlation between the change in discretionary accruals and the change in pre-managed income; and

NI/MV_{t-1} = the net income for period t, deflated by the stock price at the beginning of period t.

In table 4, the mean (median) of CoR for suspect firm-years and rest of the sample are -0.10 (-0.08) and 0.11 (0.00), respectively. The differences between means (medians) of CoR are -0.21 (-0.08) and significant at the 1% level (t-stat=-6.26, z-stat=-6.94). The mean (median) of CoR for suspect firm-years is significantly lower than that of rest of the sample. These results provide the second primary evidences that confirming hypotheses (2). The mean (median) of ACoR for suspect firm-years and rest of the sample are -0.21 (-0.19) and 0.01 (-0.08), respectively.

### Table 3: Comparison of income smoother firms with the rest of the sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>Income smoother firms</th>
<th>Rest of the sample</th>
<th>Difference in</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>CoR_{t}</td>
<td>0.09</td>
<td>0.00</td>
<td>0.16</td>
</tr>
<tr>
<td>ACoR_{t}</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>$\beta$</td>
<td>0.28</td>
<td>0.18</td>
<td>0.26</td>
</tr>
<tr>
<td>SIZE_{t-1}</td>
<td>5.16</td>
<td>5.12</td>
<td>5.32</td>
</tr>
<tr>
<td>BTM_{t-1}</td>
<td>-0.45</td>
<td>-0.40</td>
<td>-0.50</td>
</tr>
<tr>
<td>$D\beta$</td>
<td>-0.03</td>
<td>-0.11</td>
<td>-0.07</td>
</tr>
<tr>
<td>DSIZE_{t-1}</td>
<td>-0.30</td>
<td>-0.12</td>
<td>-0.17</td>
</tr>
</tbody>
</table>
The differences between means (medians) of ACoR are -0.22 (-0.12) and significant at the 1% level (t-stat=-6.52, z-stat=-7.51). Thus, the mean (median) of ACoR for suspect firm-years is significantly lower than that of rest of the sample. These results provide the second primary evidences that confirm the hypothesis (2).

There are some conflicts between the sign of differences in mean (median) of other variables in table 3 and 4. This is because of different definition of income smoother firms and suspect firm-years that manage earnings to avoid losses.

Table 4: Comparison of suspect firm-years with the rest of the sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>Suspect firm-years</th>
<th>Rest of the sample</th>
<th>Difference in</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>CoR&lt;sub&gt;t&lt;/sub&gt;</td>
<td>-0.10</td>
<td>-0.08</td>
<td>0.11</td>
</tr>
<tr>
<td>ACoR&lt;sub&gt;t&lt;/sub&gt;</td>
<td>-0.21</td>
<td>-0.19</td>
<td>0.01</td>
</tr>
<tr>
<td>β</td>
<td>0.21</td>
<td>0.14</td>
<td>0.30</td>
</tr>
<tr>
<td>SIZE&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>5.42</td>
<td>5.36</td>
<td>5.17</td>
</tr>
<tr>
<td>BTM&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-0.62</td>
<td>-0.51</td>
<td>-0.45</td>
</tr>
<tr>
<td>DB&lt;sub&gt;t&lt;/sub&gt;</td>
<td>-0.09</td>
<td>-0.11</td>
<td>0.00</td>
</tr>
<tr>
<td>DSIZE&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.12</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>DBTM&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.00</td>
<td>0.04</td>
<td>0.09</td>
</tr>
<tr>
<td>DAC&lt;sub&gt;t&lt;/sub&gt;</td>
<td>0.02</td>
<td>0.02</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Table 5 presents correlations between various variables. The correlations that are significant at the 10% level or better are marked in bold. The CoR is positively (and significantly) correlated to $\beta$ and BTM ratio. Also, $\text{AR}^a_t$ and $\text{AR}^b_t$ are positively correlated to DBTM. There are no significant correlations between CoR and discretionary accruals. Not that, the correlation between CoR and $\text{Corr}(\Delta\text{DAC}_t, \Delta\text{PDI}_t)$ and between ACoR and $\text{Corr}(\Delta\text{DAC}_t, \Delta\text{PDI}_t)$ is significantly positive.

### Table 5: Pearson correlation coefficients

<table>
<thead>
<tr>
<th>Variables</th>
<th>Suspect firm-years</th>
<th>Rest of the sample</th>
<th>Difference in Means (t-stat)</th>
<th>Medians (z-stat)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>$\text{Corr}(\Delta\text{DAC}_t, \Delta\text{PDI}_t)$</td>
<td>-0.74</td>
<td>-1.00</td>
<td>-0.70</td>
<td>-0.99</td>
</tr>
<tr>
<td>$\text{NI}<em>t/\text{MV}</em>{t-1}$</td>
<td>0.05</td>
<td>0.03</td>
<td>0.08</td>
<td>0.13</td>
</tr>
</tbody>
</table>

*Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

The sample period spans 2001–2006. Suspect firm-years are firm-years with reported income before extraordinary items between 0% and 5% of total assets. The numbers in parentheses are t-statistics from t-tests for the differences in means, and z-statistics from Wilcoxon tests for the differences in medians. All descriptive statistics are reported for the full sample of 2193 firm-years.

### Regression results

Table 6 reports the results of regressions over a period of six years from 2001 to 2006. The regressions are estimated for every industry every year. Two-digit SIC codes are used to define industries. Industry-years with fewer than 10 firms are eliminated from the sample.

There are 81 separate industry-years over 2001–2006. The table reports the mean coefficient across all industry-years and t-statistics calculated using the standard error of the mean across industry-years.

In regression (4), $b_1$ is positive and significant at the 1% level ($b_1 = 0.10, t = 3.91$), $b_2$ is negative and significant at the 10% level ($b_2 = -0.03, t = -1.71$) and $b_3$ is positive and significant at the 1% level ($b_3 = 0.13, t = 3.69$). Thus, the $\beta$ and BTM ratio are significantly...
related to return but SIZE is not significantly related to CoR.

In regression (5), \( b_1 \) is positive and significant at the 1% level (\( b_1 = 0.07, t=2.69 \)), \( b_2 \) is negative but is not significant (\( b_2 = -0.02, t=-0.90 \)) and \( b_3 \) is positive and significant at the 1% level (\( b_3 = 0.14, t=3.69 \)). Thus, the \( \beta \) and BTM ratio are significantly related to return but SIZE is not significantly related to return. As we expect, \( b_4 \) is negative and significant (\( b_4 = -0.09, t=-2.84 \)). Results indicate that the income smoother firms have CoR that is lower on average by 9% of stock market value to the rest of the sample and the hypothesis (1) is not rejected at the 1% level.

In regression (6), \( b_1 \) is positive and significant at the 1% level (\( b_1 = 0.08, t=2.83 \)), \( b_2 \) is negative but not significant (\( b_2 = -0.01, t=-0.65 \)) and \( b_3 \) is positive and significant at the 1% level (\( b_3 = 0.14, t=3.70 \)). Thus, the \( \beta \) and BTM ratio are positively (and significantly) related to return but SIZE is negatively (but not significantly) related to return. The coefficient of SUSPECT is negative and significant (\( b_4 = -0.10, t=-3.62 \)). Results show that the suspect firm-years have CoR that is lower on average by 10% of stock market value to the rest of the sample and the hypothesis (2) is not rejected at the 1% level.

### Table 6: The results of regressions (4-6)

<table>
<thead>
<tr>
<th></th>
<th>Regressions (4)</th>
<th>Regressions (5)</th>
<th>Regressions (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.33***</td>
<td>0.35***</td>
<td>0.30***</td>
</tr>
<tr>
<td></td>
<td>(3.29)</td>
<td>(3.03)</td>
<td>(2.64)</td>
</tr>
<tr>
<td>( \beta )</td>
<td>0.10***</td>
<td>0.07***</td>
<td>0.08***</td>
</tr>
<tr>
<td></td>
<td>(3.91)</td>
<td>(2.69)</td>
<td>(2.83)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.03*</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(-1.71)</td>
<td>(-0.90)</td>
<td>(-0.65)</td>
</tr>
<tr>
<td>BTM</td>
<td>0.13***</td>
<td>0.14***</td>
<td>0.14***</td>
</tr>
<tr>
<td></td>
<td>(3.69)</td>
<td>(3.69)</td>
<td>(3.70)</td>
</tr>
<tr>
<td>IS</td>
<td>-0.09***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUSPECT</td>
<td></td>
<td></td>
<td>-0.10***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-3.62)</td>
</tr>
</tbody>
</table>

*Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

This table reports the results of regressions, over a period of six years from 2001 to 2006. The total sample includes 2193 observations. The regressions being estimated are of the form:

Regression (4)

\[ CoR_{it} = a_1 + b_1 \beta_i + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1} \]

Regression (5)

\[ CoR_{it} = a_1 + b_1 \beta_i + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1} + b_4 \text{IS}_{it} \]

Regression (6)

\[ CoR_{it} = a_1 + b_1 \beta_i + b_2 \text{SIZE}_{it-1} + b_3 \text{BTM}_{it-1} + b_4 \text{SUSPECT}_{it} \]

T-statistics are calculated using standard errors corrected for auto-correlation using the Newey–West procedure. They are reported in parentheses.

### Table 7: The results of regression (7) and (8)

<table>
<thead>
<tr>
<th></th>
<th>Regressions (7)</th>
<th>Regressions (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.06**</td>
<td>0.04***</td>
</tr>
<tr>
<td></td>
<td>(2.48)</td>
<td>(2.39)</td>
</tr>
<tr>
<td>( \beta )</td>
<td>0.07***</td>
<td>0.06***</td>
</tr>
<tr>
<td></td>
<td>(2.72)</td>
<td>(2.70)</td>
</tr>
<tr>
<td>DSIZE</td>
<td>-0.03*</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(-1.71)</td>
<td>(-1.34)</td>
</tr>
<tr>
<td>DBTM</td>
<td>0.06*</td>
<td>0.07*</td>
</tr>
<tr>
<td></td>
<td>(1.85)</td>
<td>(1.95)</td>
</tr>
<tr>
<td>IS</td>
<td>-0.08***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.70)</td>
<td></td>
</tr>
<tr>
<td>SUSPECT</td>
<td></td>
<td>-0.06***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-3.25)</td>
</tr>
</tbody>
</table>

*Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

This table reports the results of regressions, over a period of six years from 2001 to 2006. The total sample includes 2193 observations. The table reports the mean coefficient across all industry-years and t-statistics calculated using the standard error of the mean across industry-years. The regression being estimated is of the form:

Regression (7)

\[ ACoR_{it} = a_1 + b_1 D_{it} \beta_i + b_2 D\text{SIZE}_{it-1} + b_3 D\text{BTM}_{it-1} + b_4 D_{it} \text{IS}_{it} \]

Regression (8)

\[ ACoR_{it} = a_1 + b_1 D_{it} \beta_i + b_2 D\text{SIZE}_{it-1} + b_3 D\text{BTM}_{it-1} + b_4 D_{it} \text{SUSPECT}_{it} \]

T-statistics are calculated using standard errors corrected for auto-correlation using the Newey–West procedure. They are reported in parentheses.
Table 7 reports the results of regressions over a period of six years from 2001 to 2006. In first column, b1 is positive and significant at the 1% level (b_1=0.07, t=2.72), b_2 is negative and significant at the 10% level (b_2=-0.03, t=-1.71) and b_3 is positive and significant at the 10% level (b_3=0.06, t=1.85). Thus, the Dβ, DSIZE and DBTM ratio are significantly related to ACoR. The coefficient of IS is negative and significant (b_4=-0.08, t=-2.70). Results show that the income smoother firms have ACoR that is lower on average by 8% of stock market value to the rest of the sample and the hypothesis (3) is not rejected at the 1% level. In second column, b_1 is positive and significant at the 1% level (b_1=0.06, t=2.70), b_2 is negative but not significant (b_2=-0.03, t=-1.34) and b_3 is positive and significant at the 10% level (b_3=0.07, t=1.95). Thus, the Dβ and DBTM is positively related to AR, but SIZE is not significantly related to ACoR. The coefficient of SUSPECT is negative and significant (b_4=-0.06, t=-3.25). Results indicate that the suspect firm-years have ACoR that is lower on average by 6% of stock market value to the rest of the sample and the hypothesis (4) is not rejected at the 1% level.

Conclusions

We test whether the stock market response to accounting performance measure is related to the smoothness and management of companies’ reported income. We hypothesize that the market long-run response is negative for firms that smooth income and manage earnings to avoid losses. We find that companies that report smoothed (or managed) incomes (to avoid losses) have significantly lower long-run returns and abnormal returns than firms that do not. However, smoothing firms (suspect firm-years) typically are smaller (larger) in size that other firms (firm-years). Additionally, as corroborating evidence, there results are confirmed by multivariate regressions. Overall, our results indicate that there is a significant negative relationship between long-run returns and abnormal returns and income smoothing behavior. Also, there is a significant relationship between long-run returns and abnormal returns and managing earnings to avoid losses.

References


