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Earnings management around UK open offers

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We examine the long run operating and stock price performance of UK open offer firms in the context of the earnings management hypothesis. We find that in the pre-offer period offer firms report significant improvements in their operating performance unrelated to cash flow performance. Results on return performance show that offer firms outperform various benchmarks in the pre-offer year but underperform up to four years after the offer. Regression results show that pre-offer discretionary current accruals predict the long-run post-offer return underperformance but do not predict the short-run reaction to SEO announcements. Our findings are more consistent with the earnings management hypothesis than with either the timing hypothesis or the managerial response hypothesis and suggest that investors do not take full account of the information available at the time of open offers.

Keywords: Earnings management; open offers; SEOs; return performance; operating performance

Recent studies of the operating performance of US firms making seasoned equity offerings (SEOs) suggest they outperform in the pre-offer period and underperform post-offer. Analysis of return performance shows that offer firms outperform the market before the issue, but underperform the market in the long run after the open offer. To explain these stylized facts, Teoh et al. (1998) and Rangan (1998) show that companies overstate their earnings before an SEO using accounting accruals; investors fail to recognize the earnings management in the short-run and overpay for the SEO. In the long-run, the market realizes its error following disappointing post-SEO earnings, and the resulting downward revisions in the market valuations of issuers account for the observed longer-run underperformance of SEOs.

We contribute to this literature not only by testing the robustness of US findings of earnings management using out-of-sample data but also by performing tests on the timing hypothesis. We examine the operating and return performance of SEOs issued via open-offers on the London Stock Exchange (LSE). In an open offer, shares are conditionally placed, typically with institutional investors, subject to clawback. The issue is then offered to shareholders in proportion to their existing shareholdings; any shares not taken up by existing shareholders are subsequently placed unconditionally with the placee institutions. To the extent that UK open offers involve both existing and new shareholders, they are similar to US firm-commitment offers and provide suitable data for out-of-sample testing of US findings. Compared with firm-commitment offers, however, open offers give more scope for existing shareholders to participate in the issue, although application entitlements of existing shareholders in open offers are not tradable instruments, unlike in a rights issue.

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Based on a sample of 181 open offers by UK non-financial firms, we find that issuing firms' earnings exceed both industry medians and performance-matched non-issuers' earnings in the year before and the year of the offer, but underperform after the offer. Accruals rather than cash flows cause this earnings pattern, and discretionary current accruals (DCA) drive the changes in earnings around the issue year. In addition, firms that aggressively manage their earnings in the pre-offer year have lower asset-scaled earnings than non-offer firms in the three years after the issue. The return performance of open-offer firms improves relative to the market in the year before the issue and deteriorates in the years following the issue. Offer firms that aggressively manage their earnings in the pre-offer year generate buy-and-hold abnormal returns (BHAR) that are 22% lower than their conservative counterparts over a period of four years after the offer. Regression results show a significant negative relation between pre-offer DCA and two-year post-offer returns, but no relation between pre-offer DCA and two-day offer announcement returns. These results are consistent with the findings on US SEOs of Teoh et al. and Rangan, supporting the earnings management hypothesis and suggesting a similar degree of investor irrationality to UK open offers. Separate analysis shows no support for either the timing or the managerial response hypotheses.

In the remainder of the paper we first review the literature on the operating and return performance of SEOs and describe the institutional setting for UK open offers. Section 2 sets out our testable hypotheses and outlines the sample and research design. Section 3 reports our empirical results on operating performance while Section 4 presents our results on return performance. Section 5 concludes the paper.

1. Literature review and institutional setting

1.1 Literature review

Loughran and Ritter (1995) examine SEOs by US firms and report that issuing firms underperform size-matched non-issuers by an average buy-and-hold return of 60% during the five years post-issue. Spiess and Affleck-Graves (1995) report similar results for US SEOs. Loughran and Ritter (1997) find that the operating performance of equity issuing firms improves pre-issue and declines post-issue. They show that measures such as profit margin, return on assets, operating income to total assets, and sales, follow an upward trend before the offer year, peak in the offer year, and decline monotonically in the four years after the offer for a sample of US SEOs over the period 1979–1989. They report evidence that temporary improvements in pre-issue operating performance and high pre-issue market-to-book ratios lead investors to believe that improvements in earnings are permanent.

Levis (1995) examines the long-run return performance of UK IPOs and of rights issues conducted within five years of the IPO, using data for 158 companies during 1980–1988. Levis reports cumulative average abnormal returns (CAARs) between 9% and 17%, depending on the benchmark, for the 12-month period before the rights issue announcement, while the corresponding CAARs for the 18 months after the issue range from –11% to –18%. For a sample of 154 UK rights issuers, Abhyankar and Willis (1999) report significant operating outperformance during the pre-issue period and underperformance in the post-issue period.

Researchers have offered various explanations for the pre-SEO outperformance and the post-SEO underperformance. Two non-mutually exclusive explanations are the timing or “windows of opportunity” hypothesis and the earnings management hypothesis. The timing hypothesis (Loughran and Ritter, 1995, 1997) states that firms time their equity offers to coincide with temporary stock overvaluations, caused by the market mistakenly interpreting transitory improvements

in financial performance as permanent. When earnings decline after the issue, investors downgrade their valuations, resulting in post-SEO return underperformance.

The earnings management hypothesis of Teoh et al. (1998) and Rangan (1998) states that managers of SEO firms manipulate earnings through income-increasing accounting accruals. Investors mistakenly view issuers' pre-SEO earnings increases as permanent and over-estimate their future prospects. After the SEO, accrual reversals lead to declining earnings, and disappointed investors' downward revaluations result in post-SEO stock price underperformance.

Teoh et al. (1998) test the earnings management hypothesis by examining the operating and return performance of 1265 SEOs over the period 1976–1989. They report an increase in earnings from three years before the issue to a peak in the issue year and a decline after the issue; the trend in cash flow is the opposite. Using a four-way decomposition of accruals, they conclude that DCA drive the observed pattern in earnings around the issue years. They find that issuing firms that aggressively manage their earnings pre-issue significantly underperform their conservative counterparts post-issue, and that aggressive and conservative quartiles underperform the market over the five post-issue years by -44% and -17% .¹ Regression analysis shows that pre-issue DCA predicts post-issue returns. Teoh et al. conclude that investors do not initially recognize issuers' earnings manipulation and remain optimistic about firms' future prospects. As investors realize that pre-issue earnings improvements are temporary, they revalue the issuers downwards in the years following the SEOs.

In a related study, Rangan (1998) uses quarterly data to examine the performance of 230 US SEOs issued during 1987–1990. Rangan argues that firms are likely to manage earnings upward in the quarters immediately before the SEO announcement, in the SEO announcement quarter itself, and up to two quarters following the offer to avoid reputational damage. Rangan's regression results are more consistent with the earnings management hypothesis than the timing hypothesis.

Shivakumar (2000) proposes the managerial response hypothesis as an alternative to the earnings management hypothesis. According to Shivakumar, in equilibrium, investors believe that all issuing firms manipulate earnings, and as issuers intending to refrain from earnings manipulation cannot credibly communicate this to investors, investors' beliefs are self-fulfilling: all issuers manage earnings, and investors rationally discount the earnings of issue-announcing firms. Shivakumar examines a sample of 1222 US SEOs over 1983–1992 and reports that offer firms have very high abnormal accruals in the pre-SEO period, in line with Teoh et al. (1998) and Rangan (1998). However, he finds a negative relation between pre-SEO accruals and two-day issue announcement returns and interprets this finding as consistent with investors rationally interpreting pre-issue earnings manipulation at the issue-announcement in line with the managerial response hypothesis.

We test the robustness of the findings of Teoh et al. and Rangan using out-of-sample, UK data. We also examine whether Shivakumar's managerial response hypothesis can explain our findings. To our knowledge, this is the first study of earnings management around SEOs that uses a sample of UK issues comparable to US SEOs.² Ching et al. (2002) report results in line with the earnings-management hypothesis for Hong Kong SEOs.

1.2 Institutional setting

An open offer is the second most popular method, after a rights issue, of raising seasoned equity on the LSE. Armitage (2002) documents that the first UK open offers took place in the late 1980s, and that they were as common as rights issues by 1996. An open offer requires existing shareholder approval at an Annual General Meeting (AGM) or at an Extraordinary General Meeting (EGM) especially called for this purpose. In the absence of prior approval, an open offer announcement

must point out that the offer is subject to shareholder approval at an AGM or EGM. If shareholders do not approve the open offer at the meeting, the amount raised is returned in full to subscribers. The offer must remain open for at least 15 business days from the date of posting the application forms to shareholders. According to LSE Listing Rules (1999),

An open offer is an invitation to existing holders of securities to subscribe to or purchase securities in proportion to their holdings, which is not made by means of a renounceable letter (or other negotiable document).

In an open offer, unlike in a rights issue, shareholders who do not subscribe to their entitled shares cannot sell their subscription rights in the market, and therefore do not receive any benefit from unexercised rights.

In an open offer the firm's merchant bank or stockbroker initially places the new shares conditionally with institutions subject to clawback by existing shareholders who choose to take up their offer entitlements. Following the conditional placing, the issuing firm invites applications from existing shareholders in proportion to their ownership stake at the time of the offer. After receiving renunciations and subscription applications from existing shareholders, the unsubscribed portion of the issue is unconditionally placed with the placee institutions. Armitage (2002) reports that over the period 1985–1996 the average clawback was less than 50%.

2. Hypothesis development and sample selection

Our six hypotheses, stated below in alternative form, follow Teoh et al. and Rangan. We first examine whether UK firms manipulate pre-issue earnings using discretionary accruals around open offers (pre- and immediately post-offer).

H1: Offer firms report positive abnormal earnings in the year immediately before, in the year of, and in the year following the offer.

H2: Offer firms increase abnormal discretionary accruals in the year immediately before, in the year of, and in the year following the offer.

The second stage of our analysis examines the post-issue performance of UK open-offer firms. Teoh et al. predict that following the SEO firms do not sustain their earnings management as the costs exceed the benefits, and as a result (abnormal) earnings decline. The reversal in the discretionary component of accruals in the post-offer period leads to a decline in reported (abnormal) earnings following the open offer.

H3: Offer firms report adverse abnormal earnings performance after the offer.

We next examine the relation between post-offer earnings performance and the degree of pre-issue earnings management. Following Teoh et al. we differentiate between issuers with aggressive and conservative pre-issue earnings management.

H4: More aggressive earnings management before the offer leads to worse post-offer (abnormal) earnings performance.

We also examine the return performance of offer firms as a whole and conditional on the degree of pre-issue earnings management. The earnings management hypothesis predicts that as abnormal earnings decline following open offers, the market corrects its valuation of issuing firms, resulting in negative abnormal returns to issuing firms.

H5: Offer firms experience negative abnormal returns after the offer.

Furthermore, if the extent of the post-issue earnings decline is linked to the degree of pre-issue earnings management, we expect the extent of return underperformance to be related to the degree of pre-issue earnings management.

H6: More aggressive earnings management leads to lower post-offer returns.

Finally, we try to discriminate whether the observed patterns of performance are more consistent with the earnings management hypothesis or the timing hypothesis, and we test the managerial response hypothesis by examining the short-run reaction to open offer announcements.

2.1 Sample selection

Our original sample includes all open offers of ordinary shares by UK-listed industrial firms from January 1991 to December 1995 resulting in 286 offers. The *FT Extel Record of Takeovers, Offers and New Issues*, published by *Extel Financial Limited*, is the main source of information about offer firms. Accounting and return data are from *Datastream*. From the original sample we exclude 28 offers of less than £1 million and 32 repeat offers. We require offer firms to have accounting data available to calculate accruals for the pre-offer and offer years, resulting in the exclusion of a further 45 firms. The selection criteria result in a final sample of 181 open offers. We report results on operating performance from two years before to two years after the offer to test for the presence of pre-offer earnings management and for post-offer performance reversals. We report results on returns from one year before to four years after the offer to examine pre-offer returns and long-horizon post-offer returns. The sample size varies over the sample period and across analyses depending on data availability. We winsorize the accounting variables at 1% and 99%.

Table 1 reports size characteristics of the offer firms and of a sample of matched non-offer firms. We match offer firms with non-offer firms from the same LSE industry group³ with the closest asset-scaled net earnings (ANE) in the pre-offer year.⁴ We find matching firms for 162 offer firms. Examining the size characteristics of offer and matched firms identifies variables that we need to control for in a subsequent regression analysis. Table 1, Panel A shows that mean and median total assets of the full sample of 181 offer firms are £65.82 million and £20.92 million with a standard deviation of £1067.9 million, suggesting significant size differences among the offer firms. The high sales growth of offer firms, with a mean and median of 51% and 36%, is consistent with Loughran and Ritter (1995) who report that US-seasoned equity issuers experience high sales growth in the pre-issue year. Comparing Panels B and C shows that offer firms have higher sales growth and are younger, on average, than matched firms. Other size characteristics show minor differences between offer and matched firms.

Table 1. Size characteristics of offer and non-offer matched firms

| | Total assets | Market value | Book value | Market-to-book | Sales growth | Age (years) |
|--|--------------|--------------|------------|----------------|--------------|-------------|
| Panel A: Size characteristics of 181 offer firms | | | | | | |
| Mean | 65.82 | 46.18 | 15.42 | 2.802 | 0.510 | 30.31 |
| Median | 20.92 | 15.84 | 10.57 | 1.947 | 0.360 | 26.09 |
| SD | 1067.90 | 99.36 | 43.43 | 4.390 | 1.340 | 18.92 |
| Panel B: Size characteristics of 162 offer firms for which matched firms are available | | | | | | |
| Mean | 67.51 | 47.66 | 17.11 | 2.724 | 0.493 | 31.47 |
| Median | 22.58 | 15.87 | 12.59 | 1.916 | 0.376 | 25.25 |
| SD | 1102.79 | 102.26 | 44.51 | 4.213 | 1.323 | 19.57 |
| Panel C: Size characteristics of 162 non-offer performance matched firms | | | | | | |
| Mean | 69.79 | 49.68 | 20.66 | 2.611 | 0.341 | 39.90 |
| Median | 20.89 | 16.52 | 14.19 | 1.643 | 0.266 | 31.84 |
| SD | 752.92 | 91.28 | 39.54 | 2.212 | 0.621 | 22.59 |

Note: The table reports size characteristics of offer and performance-matched non-offer firms. Panel A reports size characteristics for the full sample of 181 offer firms, Panel B for 162 offer firms for which matched firms are available, and Panel C for 162 matched firms. Total assets, market value and book value are in £m and are from the fiscal year before the open offer year (year -1). Book value of equity is the value of net tangible assets. Market-to-book is market value divided by book value of equity. Sales growth is sales in year -1 less sales in year -2 deflated by total assets in year -2 . Age is in years and is the difference between the offer firm's date of incorporation and the open offer announcement date. SD denotes standard deviation.

3. Results on operating performance

In this and the following section we denote year 0 as the offer announcement year. It is important to identify the offer year correctly, because at a later stage we use accounting information in the pre-offer year (year -1) to predict post-offer returns. The following example explains the designation of years. For a firm with a 31 December year-end, we assume that accounting information for the financial year 1992 is available by 30 June 1993. If this firm announces an open offer between 1 July 1993 and 30 June 1994, we use accounting information for 1992 as the data for the pre-offer year, year -1 . By implication, the accounting information for the offer announcement year, year 0, is typically not available at the time of the offer announcement.

3.1 Earnings and cash flow performance

We examine operating performance using three accounting variables, following Teoh et al. (1998) and Barber and Lyon (1996). These are (a) ANE, (b) return on sales (ROS), and (c) asset-scaled cash flow from operations (ACF).⁵ We examine two variants of ANE: (a) industry-median-adjusted ANE; and (b) the annual change in the offer firm's ANE less the corresponding change of its matched firm; and similarly for ROS and ACF. We examine the time-series behaviour of benchmark-adjusted ANE, ROS, and ACF to test hypotheses H1 and H3. Positive abnormal earnings and level or declining abnormal cash flows in years -1 and 0 indicate that offer firms manage earnings around open offers. Negative abnormal earnings in post-offer years, not matched by cash flow, corroborate this finding.

Table 2, Panel A shows that industry-median-adjusted ANE and matched-firm-adjusted changes in ANE increase from the pre-offer to the offer year and decline post-offer. In Panel B, the time series patterns of median and mean industry-median-adjusted ROS show that offer firms perform significantly better than their industry medians in years -1 and 0 but significantly worse in year

Table 2. Pre- and post-offer earnings and cash flow for four years around the offer year

| Fiscal Year | Industry median adjusted | | | Performance adjusted | | |
|------------------|--------------------------|--------------------|-----|----------------------|--------------------|-----|
| | Median | Mean | N | Median | Mean | N |
| Panel A: ANE (%) | | | | | | |
| -2 | -1.66 ^b | -2.83 ^b | 170 | -1.59 ^a | -3.06 ^a | 148 |
| -1 | 1.23 ^b | 2.88 ^b | 181 | -0.41 | -1.07 ^c | 155 |
| 0 | 2.72 ^a | 3.85 ^a | 181 | 1.57 ^a | 2.99 ^b | 157 |
| 1 | 1.21 ^c | -1.45 ^c | 179 | 0.33 | -1.75 ^c | 151 |
| 2 | -0.42 | -1.94 ^c | 174 | -0.94 | -3.28 ^a | 141 |
| Panel B: ROS (%) | | | | | | |
| -2 | -0.16 | -2.38 | 168 | -0.53 | -0.97 | 148 |
| -1 | 0.54 ^b | -1.43 ^b | 181 | 0.56 ^b | 1.81 ^b | 155 |
| 0 | 1.34 ^b | 1.90 ^a | 181 | 1.91 ^a | 2.42 ^a | 157 |
| 1 | -1.23 ^b | -1.38 ^b | 179 | -1.28 ^b | 1.00 ^c | 151 |
| 2 | -0.16 | 0.07 | 174 | -1.55 ^b | -1.20 ^c | 141 |
| Panel C: ACF (%) | | | | | | |
| -2 | -1.51 ^b | -3.07 ^b | 168 | -1.23 ^b | -2.62 ^b | 141 |
| -1 | -2.05 ^a | -3.26 ^b | 181 | -2.27 ^a | -2.93 ^b | 149 |
| 0 | -2.52 ^a | -3.55 ^b | 181 | -2.85 ^a | -3.22 ^b | 152 |
| 1 | 0.34 | 0.80 | 179 | 1.58 ^b | 1.27 ^b | 148 |
| 2 | 1.25 ^b | 2.02 ^b | 174 | 1.98 ^b | 2.10 ^b | 140 |

Note: The table reports the time-series patterns of two performance measures for three accounting variables: asset scaled net earnings (ANE) in Panel A, return on sales (ROS) in Panel B, and asset-scaled cash flow from operations (ACF) in Panel C. ANE is the ratio of net earnings and beginning period total assets, ROS is the ratio of net earnings and total sales from the same period, and ACF is the ratio of cash flow from operations (CFO) and beginning period total assets. We use two variants of ANE: (a) industry-median-adjusted ANE and (b) the annual change in the offer firm's ANE less the corresponding change of its matched firm; and similarly for ROS and ACF. *N* is the number of observations available in each year. The statistical significance of medians and means is tested using Wilcoxon's sign rank test and a conventional *t*-test. The superscripts a, b, and c indicate significance at 1, 5, and 10%, respectively, based on a two-tailed *t*-test, using Wilcoxon *p*-values for medians and student-*t* *p*-values for means.

1. The time series profiles of median and mean matched-firm-adjusted change in ROS also show that offer firms outperform their matched firms in years -1 and 0, and underperform post-offer. In Panel C, median and mean industry-median-adjusted ACF and matched-firm-adjusted change in ACF show a declining pattern from year -2 to year 0 followed by an improvement in years 1 and 2.

These results show that offer firms' abnormal earnings improve pre-offer, peak in the offer year, and deteriorate post-offer. Based on these findings we reject the null hypotheses in favour of hypotheses H1 and H3. Cash flows show the opposite pattern: firms offer new equity following and coincident with deteriorating cash flows, while reporting improving earnings. Accruals rather than cash flows drive the results.

3.2 Accruals performance

We use the modified Jones (1991) model (Dechow et al., 1995) to decompose total accruals (earnings less cash from operations) into: DCA; discretionary long-term accruals (DLTA); non-discretionary current accruals (NDCA); and non-discretionary long-term accruals (NDLTA). DCA and DLTA proxy for earnings management while we assume NDCA and NDLTA are outside

managers' control. The appendix explains the estimation method. To test hypothesis H2, we examine the time series behaviour of benchmark-adjusted DCA and DLTA. To control for the potential bias in the Jones model for high-performance firms, we examine DCA of offer firms less DCA of performance-matched non-offer firms.⁶

Table 3 reports the time series of the accruals components for five years around the offer year, with accruals levels in Panel A and accruals changes in Panel B (both in percent). Figure 1 graphs the median levels of these components. Median DCA increases in year -1 peaks in year 0, and declines post-issue. Table 3, Panel B shows that there are no significant changes in median DLTA, consistent with the findings of Teoh et al. (1998) that firms do not use DLTA to manipulate earnings in the short run. Median NDCA increases from year -1 to year 0 and decreases in year 1. The peak in median NDCA in the offer year is consistent with its linear relation with asset-scaled growth in sales, as predicted by the modified Jones model. It is also consistent with offer firms timing their equity offers when sales growth peaks. A subsequent regression analysis sheds more light on this issue. Both median and mean NDLTA are significantly negative in all years reflecting a large depreciation component.

The final columns of Table 3 report results for performance-matched DCA and shows that this measure starts to increase in year -1 , peaks in year 0 before declining post-issue. Based on the results that DCA is abnormally positive in years -1 and 0, we reject the null hypothesis in favour of H2. Although we conjecture that both current and long-term accruals proxy for earnings management, our results show that DCA alone is responsible for the hump-shaped profile in earnings. This suggests that offer firms use DCA to boost reported earnings. As we examine whether pre-offer DCA can predict long-run post-issue returns in Section 4.3, we note here that both mean and median DCA and performance-matched DCA in year -1 are significantly positive at 5% or better.

3.3 *Conservative versus aggressive pre-offer earnings management*

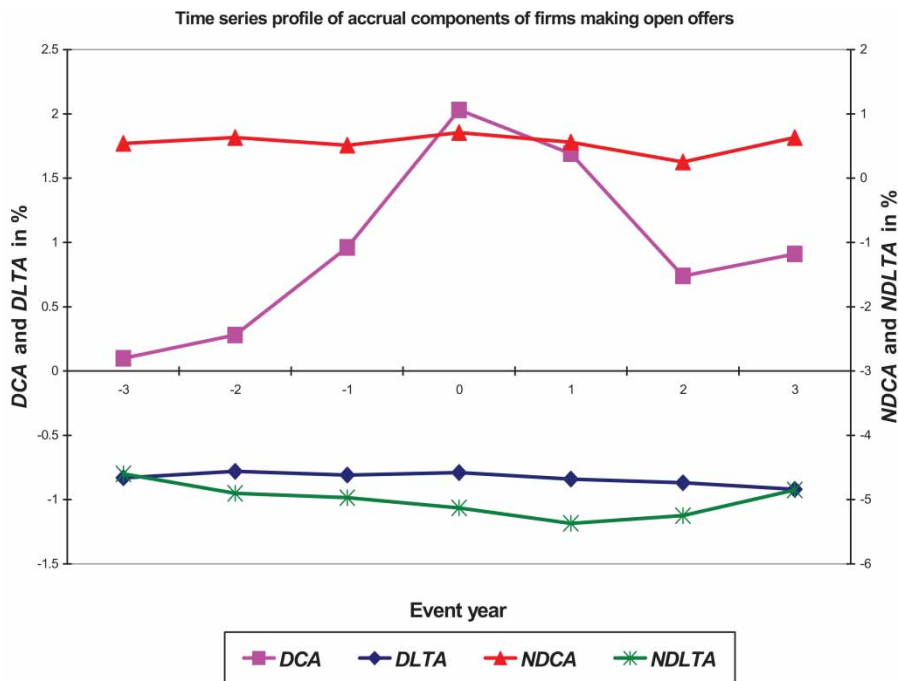
To test hypothesis H4 (and H6), we divide the open offers sample into quartiles using DCA in year -1 . To do so, we require year -1 DCA data, which are unavailable for eight firms. To test hypothesis H4, we examine pre- and post-offer operating and cash-flow performance. We denote the lowest and highest DCA quartiles in year -1 as conservative and aggressive earnings management firms. Panel A of Table 4 reports the medians and means of pre- and post-offer annual changes in ANE and ACF of conservative and aggressive offer firms. The results for the ANE-based measure show that aggressive and conservative firms perform better than their matched counterparts during the pre-offer and offer years, with the aggressive quartile performing significantly better than the conservative quartile in these years. Post-offer, the performance of both the aggressive and conservative quartiles deteriorates. Median values show that this deterioration is more significant and dramatic for aggressive firms during year 1. The results also show that conservative firms recover by the end of the second year after the offer but aggressive firms continue to underperform their matched non-offer firms. This suggests that pre-offer information can predict post-offer operating performance.

The ACF-based measure shows that aggressive and conservative firms experience cash-flow problems during the year before the offer and during the offer year. This is consistent with firms offering equity when they are experiencing a decline in cash flows. The cash-flow problems for both types of offer firms are resolved immediately after the offer year.

Table 3. Pre- and post-offer asset-scaled accruals for four years around the offer year

| Fiscal Year | DCA (Median/Mean/ <i>N</i>) | | | DLTA (Median/Mean/ <i>N</i>) | | | NDCA (Median/Mean/ <i>N</i>) | | | NDLTA (Median/Mean/ <i>N</i>) | | | Performance-matched DCA (Median/Mean/ <i>N</i>) | | |
|---------------------------------|---------------------------------|--------------------|-----|----------------------------------|--------------------|-----|----------------------------------|--------------------|-----|-----------------------------------|--------------------|-----|---|--------------------|-----|
| Panel A: Accruals (levels) (%) | | | | | | | | | | | | | | | |
| -2 | 0.28 | 0.71 | 155 | -0.78 ^b | -1.11 ^a | 153 | 0.63 ^c | 1.64 ^a | 155 | -4.90 ^a | -6.28 ^a | 153 | 1.08 | 1.32 | 138 |
| -1 | 0.96 ^b | 1.91 ^b | 168 | -0.81 ^b | -1.32 ^a | 166 | 0.51 ^c | 1.25 ^a | 168 | -4.97 ^a | -6.82 ^a | 166 | 1.60 ^b | 2.13 ^a | 145 |
| 0 | 2.03 ^a | 3.28 ^a | 181 | -0.79 ^b | -1.25 ^a | 173 | 0.71 ^b | 1.75 ^a | 181 | -5.13 ^a | -7.33 ^a | 173 | 2.21 ^b | 3.29 ^a | 150 |
| 1 | 1.69 ^b | 2.17 ^b | 176 | -0.84 ^b | -1.27 ^a | 168 | 0.56 ^c | 1.37 ^a | 175 | -5.37 ^a | -6.20 ^a | 168 | 1.16 ^c | 1.81 ^c | 144 |
| 2 | 0.74 ^c | 0.93 ^c | 169 | -0.87 ^b | -1.39 ^a | 160 | 0.25 | 0.94 ^b | 169 | -5.25 ^a | -6.93 ^a | 160 | 0.35 | 0.77 | 137 |
| Panel B: Accruals (changes) (%) | | | | | | | | | | | | | | | |
| -2 | 0.89 | 0.2 | 147 | -0.04 | -0.12 | 145 | 0.16 | 0.38 | 147 | 0.36 | -0.38 | 145 | 0.43 | 0.54 | 130 |
| -1 | 0.72 ^b | 1.26 ^a | 155 | -0.11 | -0.18 | 152 | -0.1 | -0.44 | 155 | -0.1 | -0.64 ^c | 152 | 0.54 ^b | 0.95 ^b | 137 |
| 0 | 1.20 ^b | 1.46 ^a | 168 | 0.03 | 0.09 | 166 | 0.21 ^c | 0.59 ^c | 168 | -0.16 | -0.42 | 166 | 0.85 ^b | 1.95 ^a | 144 |
| 1 | -0.46 | -1.02 | 173 | -0.07 | -0.03 | 167 | -0.32 | -0.68 ^c | 173 | -0.22 | 0.74 ^c | 167 | -1.12 ^b | -1.65 ^b | 143 |
| 2 | -1.22 ^b | -1.35 ^b | 168 | 0.04 | -0.11 | 160 | -0.29 | -0.5 | 168 | 0.19 | -0.46 | 160 | -0.86 ^c | -1.16 ^b | 137 |

Note: The table reports discretionary and non-discretionary current and long-term accruals (levels in Panel A and changes in Panel B) of offer firms for two years before to two years after the offer year (the appendix explains the estimation of the accruals components). All accrual measures are deflated by beginning of year total assets. Performance-matched DCA subtracts DCA of a matched non-offer firm to control for the bias in the modified Jones model for high performance firms. Statistical significance of medians and means is tested using Wilcoxon's sign rank test and a conventional *t*-test. Superscripts a, b, and c indicate significance at 1, 5, and 10%, respectively, based on a two-tailed *t*-test, using Wilcoxon *p*-values for medians and student-*t**p*-values for means.



The figure shows the time-series profiles of four accruals components of open offer firms. Each series shows the median value of the accruals component (deflated by opening total assets) as reported in Table 3, Panel A. Event year 0 is the open offer year.

Figure 1. The profile of accrual components of offer firms

Panel B of Table 4 reports a summary measure of post-offer performance,

$$\sum_{t=1}^3 \left(\frac{NE_{i,t}}{TA_{i,t-1}} - \frac{NE_{i,-1}}{TA_{i,-2}} \right) - \left(\frac{NE_{m,t}}{TA_{m,t-1}} - \frac{NE_{m,-1}}{TA_{m,-2}} \right) \quad (1)$$

where NE and TA are net earnings and total assets of issuer i or matched firm m in fiscal year t . Equation (1) measures the cumulative increase in ANE in years 1–3 over a base-case ANE in year -1 less the equivalent cumulative increase for a matched firm. Table 4 shows that aggressive firms underperform their matched firms by a significant median of 9.15% by this measure. The corresponding median performance of conservative firms is an insignificant 1.62%. These results suggest that pre-offer information contained in DCA can predict post-offer earnings (under-) performance, rejecting the null in favour of H4.

As an alternative to the above analysis, we report in the text Spearman rank order correlations between pre-offer discretionary current or long-term accruals and post-offer net earnings changes. The correlations between DCA in year -1 and post-offer industry-median-adjusted net earnings changes from years 0 to 3 range from -23% to -17% , with all correlations significant at 1%. The corresponding correlations for DLTA vary from -8% to -1% with only the correlation in year 1 being (marginally) significant. In addition, the correlations between DCA and changes in offer firms' net earnings adjusted for equivalent changes in matched non-offer firms earnings range from -12% to -7% , with all significant at 5%. The equivalent correlations for DLTA are

Table 4. Growth in matched-firm adjusted net earnings and cash flow from operations of aggressive and conservative offer firms

| Panel A: Year-on-year matched-firm adjusted change in ANE and ACF (%) | | | | |
|---|---|--------------------|---|--------------------|
| Event period | Change in ANE (Median/Mean/Observations) | | Change in ACF (Median/Mean/Observations) | |
| | Aggressive | Conservative | Aggressive | Conservative |
| (-2, -1) | 1.10 ^b | 0.52 ^c | -2.58 ^c | -1.35 ^c |
| | 3.02 ^a | 1.26 ^c | -3.76 ^c | -4.89 ^b |
| | 33 | 32 | 33 | 31 |
| (-1, 0) | 1.91 ^b | 1.48 ^c | -2.79 ^b | -2.85 ^b |
| | 3.39 ^a | 2.92 ^b | -3.68 ^b | -5.65 ^a |
| | 37 | 35 | 36 | 35 |
| (0, 1) | -2.84 ^b | -1.09 ^c | 1.23 ^c | 2.92 ^b |
| | -3.96 ^a | -2.37 ^a | 5.38 ^a | 4.74 ^b |
| | 37 | 37 | 37 | 37 |
| (1, 2) | -1.69 ^b | 0.54 | 1.87 ^c | 1.25 ^c |
| | -2.89 ^b | 1.85 ^b | 4.29 ^b | 3.49 ^b |
| | 33 | 33 | 33 | 33 |
| (2, 3) | -1.16 ^c | 1.85 ^b | 1.21 | 0.69 |
| | -2.67 ^a | 3.82 ^b | 2.69 ^c | 1.49 ^c |
| | 32 | 32 | 32 | 32 |

Panel B: Cumulative abnormal performance of offer firms over the three post-offer years (%)

| | Aggressive | Conservative | Difference |
|--------|---------------------|-------------------|------------|
| Median | -9.15 ^a | 1.62 | -10.77 |
| Mean | -11.24 ^a | 3.58 ^c | -14.82 |

Note: The table reports the earnings and cash flow performance of the two extreme quartiles of offer firms: “aggressive” with the highest and “conservative” with the lowest DCA in year -1. Panel A reports the matched-firm-adjusted annual change in ANE and ACF, computed as,

$$\left(\frac{NE_{i,t}}{TA_{i,t-1}} - \frac{NE_{i,t-1}}{TA_{i,t-2}} \right) - \left(\frac{NE_{m,t}}{TA_{m,t-1}} - \frac{NE_{m,t-1}}{TA_{m,t-2}} \right) \quad \text{and} \quad \left(\frac{CFO_{i,t}}{TA_{i,t-1}} - \frac{CFO_{i,t-1}}{TA_{i,t-2}} \right) - \left(\frac{CFO_{m,t}}{TA_{m,t-1}} - \frac{CFO_{m,t-1}}{TA_{m,t-2}} \right),$$

where *i* and *m* represent the offer and non-offer matched firm, *t* the fiscal year, NE net earnings, CFO cash flow from operations, and TA total assets. Panel B reports the cumulative abnormal net earnings performance of offer firms from year 1 to year 3 relative to year -1 less the equivalent measure for matched firms

$$\sum_{t=1}^3 \left(\frac{NE_{i,t}}{TA_{i,t-1}} - \frac{NE_{i,-1}}{TA_{i,-2}} \right) - \left(\frac{NE_{m,t}}{TA_{m,t-1}} - \frac{NE_{m,-1}}{TA_{m,-2}} \right)$$

The statistical significance of medians and means is tested using Wilcoxon’s sign rank test and a conventional *t*-test. The superscripts a, b, and c indicate significance at 1, 5, and 10% based on a two-tailed *t*-test, using Wilcoxon *p*-values for medians and student-*t* *p*-values for means.

insignificant in all years. These results confirm that DCA and not DLTA explains the post-offer net earnings underperformance of offer firms.

Finally, we report the relation between earnings management and the open offer discount, calculated using the offer price and the mid-day price on the day before the offer announcement date, as compiled by Extel Financial. Slovin, et al. (2000) report that rights issue discounts are a negative signal of firm value. Aggressive earnings management may therefore be more likely with larger

discounts in order to dampen the adverse signaling effect. Our full sample of offer firms offers a discount of 13% on average, with aggressive firms offering an average discount of 12% (significant at 5%) on top of that of conservative firms, indicating that firms offering higher discounts manage earnings more aggressively in the pre-offer period. We control for the discount in our subsequent analysis of the relation between earnings management and post-issue return performance.

4. Results on return performance

This section reports the return performance of offer firms and of conservative and aggressive earnings management quartiles and tests hypotheses H5 and H6. We examine return performance starting from month 0, which is the open offer month or six months after the previous fiscal year-end, whichever is later.

4.1 Long-run return performance of offer firms

Table 5 reports event and calendar time returns of offer firms. In event time we report buy-and-hold raw returns, buy-and-hold market-adjusted returns and associated wealth relatives, and cumulative average Fama–French three factor adjusted returns from 12 months before to 48 months after the offer.⁷ The buy-and-hold market-adjusted return is

$$\text{BHAR} = \frac{1}{N} \sum_{i=1}^N \left[\prod_{t=m_s}^{m_e} (1 + R_{it}) - \prod_{t=m_s}^{m_e} (1 + R_{mt}) \right], \quad (2)$$

the wealth relative is

$$\text{WR} = \frac{1 + \text{average buy-and-hold raw returns to open offering firms}}{1 + \text{average buy-and-hold returns on market portfolio}}, \quad (3)$$

and the cumulative average Fama–French three factor adjusted return is

$$\text{FFAR} = \frac{1}{N} \sum_{i=1}^N \sum_{t=m_s}^{m_e} \text{AR}_{it}, \quad \text{AR}_{it} = R_{it} - \left[\hat{\beta}_i (R_{mt} - R_{ft}) + \hat{\gamma}_i \text{SMB}_t + \hat{\delta}_i \text{HML}_t \right], \quad (4)$$

where N is the number of firms with returns in the first month of a year, and m_s and m_e are the start and end months. If a sample firm de-lists, we assign a zero abnormal return for the remaining months of the year. Returns on the FT All Share Index proxy for market returns. We estimate the Fama–French three factor model for each firm using data from months -36 to -12 with a minimum of 12 observations; the one-month Treasury Bill rate proxies for the risk-free rate, and construction of the SMB and HML factors follows Fama and French (1996) using UK data. We test the significance of BHAR using a skewness-adjusted t -test, and of FFAR using a crude dependence-adjusted t -test.⁸ There are 176 firms with available returns in month 0.

To address concerns about cross-sectional dependence in long-run returns in event-time, we examine calendar time portfolio returns over 12, 24, 36, and 48 months after the offer. The sample period begins in January 1991 and ends in November 1996, 1997, 1998, and 1999 depending on the time horizon. For each calendar month t , we calculate equal-weighted returns on a portfolio of offer firms for which month t belongs to their relevant time horizon. We require at least 10 firms in each portfolio. Using the monthly portfolio excess returns in an augmented Fama–French

Table 5. Long-run return performance of all offer firms (in percent)

| Panel A: Buy-and-hold abnormal returns and wealth relatives | | | | | | |
|---|-----------|--------------------|--------------------|--|---------------------|--|
| Start month | End month | Raw return | | Market adjusted abnormal return (BHAR) | | Wealth relative (based on compound BHAR) |
| | | Annual | Compound | Annual | Compound | |
| -12 | -1 | 27.06 ^a | | 14.12 ^a | | |
| 0 | 11 | 6.94 ^c | 6.94 ^c | -6.55 ^c | -6.55 ^c | 0.94 |
| 12 | 23 | 4.79 | 11.41 ^b | -10.24 ^a | -15.97 ^a | 0.82 |
| 24 | 35 | 11.45 ^a | 20.88 ^a | -4.76 ^c | -18.72 ^b | 0.76 |
| 36 | 47 | 10.91 ^a | 31.64 ^a | -4.42 ^c | -21.65 ^b | 0.70 |

| Panel B: Fama–French adjusted abnormal returns | | | | |
|--|-----------|------------------------------|---------------------|--|
| Start month | End month | FF adjusted abnormal returns | | |
| | | Annual | Cumulative | |
| -12 | -1 | 8.06 ^b | | |
| 0 | 11 | -8.92 ^b | -8.92 ^b | |
| 12 | 23 | -10.80 ^a | -19.72 ^a | |
| 24 | 35 | -5.42 | -25.14 ^a | |
| 36 | 47 | -1.91 | -27.05 ^a | |

| Panel C: Four-factor model coefficients in calendar time | | | | | | |
|--|---------------------------|---------------------|--------------------|--------------------|--------------------|--------|
| Post-issue event period | Number of calendar months | α | $R_m - R_f$ | SMB | HML | PR1YR |
| 12 months | 65 | -0.184 ^c | 1.143 ^a | 0.456 ^c | 0.283 | 0.291 |
| 24 months | 77 | -0.253 ^b | 1.276 ^a | 0.661 ^b | 0.548 ^c | -0.295 |
| 36 months | 89 | -0.225 ^b | 1.188 ^a | 0.480 | 0.315 | -0.185 |
| 48 months | 98 | -0.206 ^a | 1.157 ^a | 0.481 | 0.272 | -0.255 |

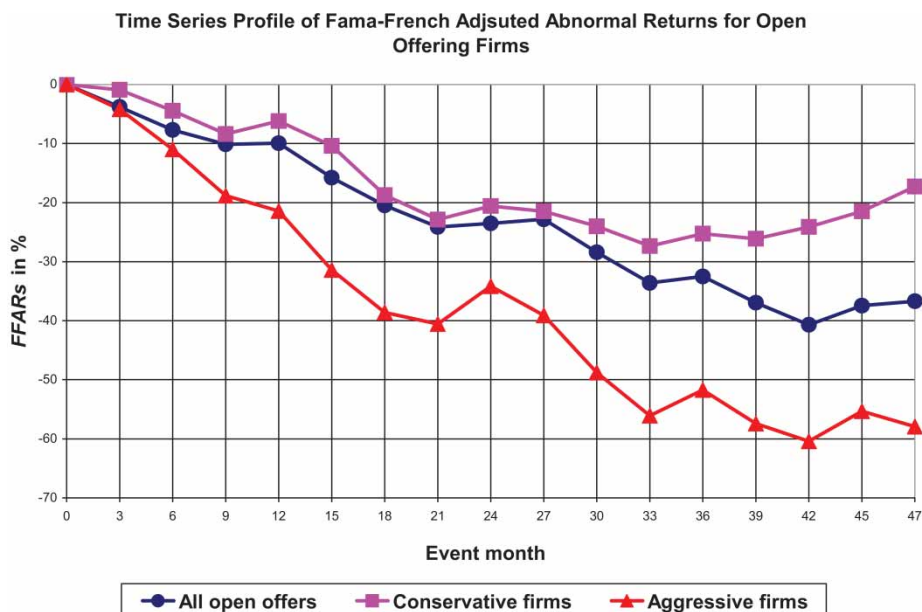
Note: The table reports three abnormal return measures in Panels A, B, and C with Panel A also reporting raw returns and wealth relatives (see Section 4). 176 offer firms have return data in year 0, the number dropping post-offer due to de-listings. The table reports both annual and cumulative/compound returns in Panel A and B in percent. Panel C reports the coefficients of a calendar time regression of offer firms' portfolio excess returns on UK estimates of the Fama–French three factors and Carhart's momentum factor. The average monthly abnormal return (α) is in percent. Superscripts a, b, and c indicate significance at 1, 5, and 10%, respectively.

four-factor model regression

$$R_{Pt} - R_{ft} = \alpha_P + \beta_P(R_{mt} - R_{ft}) + \gamma_P \text{SMB}_t + \delta_P \text{HML}_t + \lambda_P \text{PR1YR}_t + u_{Pt} \quad (5)$$

where PR1YR is Carhart's (1997) momentum factor using UK data, the intercept gives an estimate of abnormal performance.

The results show that offer firms outperform the market during the pre-offer year by a BHAR of 14.12%. BHAR is negative immediately after the offer, reaches -15.97% by the end of the second post-offer year, and is significantly negative throughout the post-offer period. Wealth relatives show that £1 invested in a portfolio of offer firms in the offer month is worth only 70p 47 months after the offer.⁹ FFARs show that offer firms significantly outperform Fama–French three factor returns by 8.06% in the twelve months before the offer and significantly underperform Fama–French three factor returns by 27.05% compounded over 47 months post-offer. Figure 2 graphs the time series profile of post-offer FFARs for all offer firms and separately for conservative and



The graph shows the time series of Fama–French adjusted abnormal returns (FFARs) for all offer firms, and for conservative and aggressive earnings management firms, at three month intervals. Firms in the extreme quartiles of DCA in year -1 , are classified as conservative and aggressive earnings management firms. Month 0 is either the month of the offer or six months after the previous fiscal year end, whichever is later. Monthly FFARs are computed by subtracting the Fama–French expected return (FFER) from each offer firm’s monthly discrete return. Cross-firm average monthly FFARs are calculated from month 0 to month 47. The returns in the graph are the logs of the cumulative sum of the monthly portfolio excess returns, normalized so that month 0 returns are zero.

Figure 2. The profile of Fama–French adjusted abnormal returns for offer firms

aggressive firms. The four-factor model alphas in Table 5, Panel C, show negative performance in the first 12 calendar months becoming more significantly negative in the 24–48 calendar months after the offer. Taken as a whole, these results show that offer firms significantly outperform the market during the pre-offer year and significantly underperform during the four post-offer years, in line with existing studies of UK and US SEOs. In addition, offer firms experience most of the underperformance during the first and particularly the second year post-offer, with their annual abnormal performance being insignificant thereafter. These results are consistent with offer firms managing earnings upward pre-offer and persuading the market that their performance is improving. When earnings decline due to accruals reversing post-offer, investors correct their perceptions by revising firm values down, resulting in offer firms underperforming post-offer. Therefore, we reject the null hypothesis in favour of H5. However, this evidence does not rule out the timing argument (Loughran and Ritter, 1995) that firms offer equity following an overvaluation. We test the timing argument in Section 4.4 below.¹⁰

4.2 Long-run return performance of conservative and aggressive quartiles

Table 6 reports event and calendar time returns for conservative and aggressive quartiles and shows that during the 12-month pre-offer period both conservative and aggressive firms outperform the

Table 6. Long-run returns of extreme earnings management quartiles classified by pre-offer DCA

| Panel A: Buy-and-hold abnormal returns | | | | | | | | | |
|--|---------------------------|---------------------|---------------------|---------------------|---------------------|---|--------|---------------------|---------------------|
| Start month | End month | Raw returns | | | | Market adjusted abnormal returns (BHAR) | | | |
| | | Conservative | | Aggressive | | Conservative | | Aggressive | |
| | | Annual | Comp | Annual | Comp | Annual | Comp | Annual | Comp |
| -12 | -1 | 24.51 ^a | | 26.47 ^a | | 13.34 ^b | | 14.25 ^b | |
| 0 | 11 | 8.53 | 8.53 | 2.23 | 2.23 | -3.03 | -3.03 | -9.12 ^c | -9.12 ^c |
| 12 | 23 | 7.99 | 15.98 ^c | 3.59 | 5.50 | -6.31 | -9.87 | -10.18 ^a | -20.37 ^b |
| 24 | 35 | 13.43 ^a | 28.22 ^b | 7.73 | 11.20 | 1.38 | -8.95 | -8.87 ^b | -27.64 ^a |
| 36 | 47 | 11.70 ^b | 38.63 ^a | 5.47 | 15.18 ^c | -3.78 | -11.21 | -5.68 | -32.74 ^a |
| Wealth relatives (based on compound BHAR) | | | | | | | | | |
| Start month | End month | Conservative | | | | Aggressive | | | |
| -12 | -1 | | | | | | | | |
| 0 | 11 | | | | | 0.97 | | | 0.89 |
| 12 | 23 | | | | | 0.90 | | | 0.75 |
| 24 | 35 | | | | | 0.92 | | | 0.66 |
| 36 | 47 | | | | | 0.87 | | | 0.59 |
| Panel B: Fama-French adjusted abnormal returns | | | | | | | | | |
| Start month | End month | Conservative | | Aggressive | | | | | |
| | | Annual | Cumulative | Annual | Cumulative | | | | |
| -12 | -1 | | 7.89 ^b | | 10.09 ^a | | | | |
| 0 | 11 | -8.03 | -8.03 | -14.45 ^a | -14.45 ^a | | | | |
| 12 | 23 | -11.05 | -17.08 ^c | -13.26 ^a | -27.70 ^a | | | | |
| 24 | 35 | -2.40 | -18.98 ^c | -7.46 ^c | -35.16 ^a | | | | |
| 36 | 47 | 4.48 | -14.01 | -3.95 | -39.12 ^a | | | | |
| Panel C: Four-factor model coefficients in calendar time | | | | | | | | | |
| Post-issue event period | Number of calendar months | α | $R_m - R_f$ | SMB | HML | PRIYR | | | |
| Conservative | | | | | | | | | |
| 12 months | 55 | -0.074 | 0.896 ^a | 0.569 ^c | 0.298 | 0.334 | | | |
| 24 months | 67 | -0.146 | 0.924 ^a | 0.556 | 0.351 | 0.445 | | | |
| 36 months | 79 | -0.138 | 1.133 ^a | 0.275 | 0.277 | 0.355 | | | |
| 48 months | 91 | -0.147 | 1.144 ^a | 0.499 | 0.168 ^c | 0.398 | | | |
| Aggressive | | | | | | | | | |
| 12 months | 55 | -0.196 ^c | 1.316 ^a | 0.345 | 0.189 | 0.208 | | | |
| 24 months | 67 | -0.321 ^a | 1.361 ^a | 0.277 ^c | 0.236 ^c | 0.143 | | | |
| 36 months | 79 | -0.292 ^a | 1.157 ^a | 0.325 | 0.259 ^c | 0.186 | | | |
| 48 months | 91 | -0.265 ^a | 1.142 ^a | 0.301 | 0.287 ^c | 0.244 | | | |

Note: The table reports the return performance of the two extreme quartiles of offer firms: “aggressive” with the highest and “conservative” with the lowest DCA in year -1. Each quartile has 42 firms in month 0, this number dropping in the post-offer months due to de-listings. The table reports both annual and cumulative/compound (Comp) returns in Panels A and B in percent. Panel C reports the coefficients of a calendar time regression of offer firms’ portfolio excess returns on UK estimates of the Fama-French three factors and Carhart’s momentum factor. The average monthly abnormal return (α) is in percent. Superscripts a, b, and c indicate significance at 1, 5, and 10%, respectively.

market. Over the 48 post-offer months, BHAR for aggressive firms is a significant -32.74% , while conservative firms show no significant underperformance. Wealth relatives show that over the 47 months after the offer, investors incur wealth losses of 13p and 41p per £1 invested at the time of the offer in conservative and aggressive firms. FFARs show that both aggressive and conservative portfolios significantly outperform the Fama–French three-factor model benchmark in the pre-offer year but underperform post-offer.¹¹ Four-factor model alphas also show that while the conservative subsample does not underperform, the aggressive subsample significantly underperforms the market from 24 months to 48 months post-offer. These results show that firms managing earnings aggressively using DCA in the pre-offer year subsequently underperform both the market as a whole and offer firms that manage their earnings conservatively.¹² Based on these findings we reject the null hypothesis in favour of H6.

4.3 Regression results

To examine whether pre-offer accruals predict post-offer returns we estimate the regression

$$\begin{aligned} \text{MACR2Y}_i = & a_1 + a_2\text{DCA}_{-1i} + a_3\text{DLTA}_{-1i} + a_4\text{NDCA}_{-1i} + a_5\text{NDLTA}_{-1i} \\ & + a_6\Delta\text{CAPEX}_i + a_7\text{SLGR}_i + a_8 \ln \text{MV}_i + a_9 \ln \text{BM}_i + a_{10}\text{PRMV}_i \\ & + a_{11}\text{DISC}_i + (\text{industry and year dummies}) + e_i \end{aligned} \quad (6)$$

where subscript -1 indicates the pre-offer year. The dependent variable in equation (6), MACR2Y, is the two-year post-issue market-adjusted log return starting from the offer date or six months after the previous fiscal year-end, whichever is later.¹³ We expect DCA_{-1} to have a negative sign. ΔCAPEX , calculated as

$$\Delta\text{CAPEX} = \frac{(\text{CAPEX}_t + \text{CAPEX}_{t+1}) - (\text{CAPEX}_{t-1} + \text{CAPEX}_{t-2})}{2\text{TA}_{t-1}} \quad (7)$$

where ΔCAPEX and TA are net capital expenditure and total assets, controls for the use of issue proceeds.¹⁴ Following results in Table 1, we control for sales growth before the offer (SLGR). Market value ($\ln \text{MV}$) and book-to-market value ($\ln \text{BM}$) control for size and financial distress of offer firms. PRMV, which is offer proceeds divided by pre-offer market value, and DISC, which is the size of the offer discount, control for characteristics of the offer. Industry dummies control for variability in post-offer performance across industries and year dummies control for business cycle effects and contemporaneous cross-sectional correlation across offer firms' returns.¹⁵ Some offer firms do not have sufficient data available to compute all the variables, resulting in a reduced sample of 132 offer firms in the regression.

Table 7, Panel A reports descriptive statistics for the variables, and Panel B reports regression coefficients, standard errors, and p -values.¹⁶ All the accrual components have negative coefficients as expected. However, the only significantly negative accrual component is pre-offer DCA_{-1} , which has a coefficient of -1.062 , significant at 5%. The insignificance of NDCA_{-1} confirms the earlier time-series and cross-sectional evidence that, of the accruals components, only pre-offer DCA predicts post-offer operating and return underperformance. Multiplying the standard deviation of DCA_{-1} (0.145) by its coefficient (-1.062) shows that a one-standard deviation increase in DCA_{-1} explains a decline in two-year post-offer returns of issuing firms of more than 15 percentage points.^{17, 18} Thus, the result is of considerable economic significance.

Table 7. Descriptive statistics and estimates of a regression of two-year post-offer returns on pre-offer accruals and control variables for offer firms

| Panel A: Descriptive statistics $N = 132$ | | | | | | | | | | | |
|---|--------|-------------------|--------------------|--------------------|---------------------|--------|-------|-------|-------|-------|-------|
| | MACR2Y | DCA ₋₁ | DLTA ₋₁ | NDCA ₋₁ | NDLTA ₋₁ | ΔCAPEX | ln MV | ln BM | SLGR | PRMV | DISC |
| Mean | -0.170 | 0.019 | -0.010 | 0.014 | -0.089 | 1.388 | 2.875 | 0.379 | 0.538 | 0.984 | 0.109 |
| Median | -0.116 | 0.013 | -0.004 | 0.005 | -0.069 | 0.251 | 2.799 | 0.373 | 0.359 | 0.448 | 0.097 |
| SD | 0.657 | 0.145 | 0.101 | 0.087 | 0.126 | 2.806 | 1.180 | 0.302 | 0.858 | 1.392 | 0.072 |

| Panel B: Regression estimates and standard errors (dependent variable: MACR2Y) | | | | |
|--|----------------------------|----------------|------------|--|
| Independent variable | Coefficient | Standard error | p -value | |
| Constant | -4.029 | 2.722 | 0.142 | |
| DCA ₋₁ | -1.062 | 0.456 | 0.022 | |
| DLTA ₋₁ | -0.746 | 0.814 | 0.362 | |
| NDCA ₋₁ | -0.693 | 0.818 | 0.399 | |
| NDLTA ₋₁ | -0.863 | 0.640 | 0.180 | |
| ΔCAPEX | 0.061 | 0.024 | 0.012 | |
| ln MV | 0.050 | 0.055 | 0.364 | |
| ln BM | 0.255 | 0.219 | 0.248 | |
| SLGR | 0.087 | 0.073 | 0.236 | |
| PRMV | -0.077 | 0.049 | 0.124 | |
| DISC | -0.793 | 0.548 | 0.151 | |
| Industry dummies | Insignificant—not reported | | | |
| Year dummies | Insignificant—not reported | | | |
| N | 132 | | | |
| R^2 | 28.66% | | | |
| R -bar-squared | 9.27% | | | |

Note: The table reports descriptive statistics (Panel A) for the variables in the regression, and the coefficients and standard errors of the regression (Panel B). MACR2Y is the two-year post-offer market-adjusted log return, beginning either at the offer month or six months after the previous fiscal year-end, whichever is later. Market-adjusted log return is monthly raw return less the monthly return on a value-weighted market index continuously compounded over the two post-issue years. The appendix explains the computation of discretionary current accruals (DCA), discretionary long-term accruals (DLTA), non-discretionary current accruals (NDCA), and non-discretionary long-term accruals (NDLTA); subscript -1 denotes the fiscal year preceding the issue year. ΔCAPEX, which controls for the use of issue proceeds, is the difference between the total capital expenditure in the two years after the offer and total capital expenditure in the two years before the offer, deflated by twice the total assets in financial year -1 . Therefore, at the time of the offer, investors do not have access to the figures used to estimate ΔCAPEX, whereas they do have access to the figures used to estimate accruals. The log of market value (ln MV) and of book-to-market value (ln BM) both at the end of year -1 , sales growth the ratio of the change in sales in year -1 to total assets in year -2 (SLGR), and industry and year dummies control for cross-sectional correlation in cumulative returns. Offer proceeds divided by pre-offer market value (PRMV) and the percentage discount (DISC) using the offer price and the mid-day price on the day before the offer announcement day (from Extel Financial) control for offer characteristics.

4.4 Tests of the timing hypothesis

To test the implications of the timing hypothesis, we split the sample into equal groups based on 12-month pre-offer BHAR to give low- (below median BHAR) and high- (above median BHAR) performers. We report the initial analysis of these groups only in the text. Mean BHAR and FFAR in the 12-month pre-offer period are 50.92% and 30.66% for high performers and -22.55% and -11.88% for low-performers indicating that some firms issue equity despite underperforming pre-issue. Assuming that underperformance reflects undervaluation, this evidence is inconsistent with the timing hypothesis. Mean BHAR and FFAR during the 11-month period after the offer for the low-performers are -17.40% and -13.27%. The 12-month pre-offer returns and 11-month post-offer returns are not significantly different for low-performers. We find similar results when we divide the sample based on the sign of issuers' 12-month pre-offer BHAR or FFAR.

To further strengthen these results, we run four separate regressions using equation (6) on low- and high-performers based on both below/above median and negative/positive pre-offer BHAR classifications. Table 8 shows that DCA_{-1} is negative and significant in all the regressions. This suggests that the post-offer performance of offer firms is due to inflated pre-offer accruals and not due to timing alone.

4.5 Short-run returns and the managerial response hypothesis

Shivakumar (2000) finds that earlier US results on the relation between pre-offer abnormal accruals and long-run post-offer returns are not robust to alternative research designs, while the same accruals predict the two-day negative price reaction to the offer announcement. He concludes that investors infer earnings management as a rational response of issuers to anticipated, rational market behaviour at offer announcements. This is the managerial response hypothesis.

Unlike Shivakumar, we find the relation between pre-offer abnormal accruals and long-run post-offer returns in the UK is robust to alternative research designs. To see whether the managerial response hypothesis can explain our findings, we examine the relation between pre-issue accruals and short-run open-offer announcement returns in this subsection. Following Shivakumar, we focus on the two-day market reaction computed as the cumulative market-adjusted returns on days -1 and 0 relative to the issue announcement for the sample of 132 announcements from the previous subsection. The FTSE All Share Index proxies the market return.

Previous studies of the short-run reaction to UK SEOs include Burton et al. (1999), Slovin et al. (2000), Armitage (2002), and Barnes and Walker (2006). For a sample of 108 SEOs between 1989 and 1991, Burton et al. report a significant mean two-day market-model-adjusted return of -7.76% for rights issuers and a corresponding insignificant return of -0.64% for non-rights issuers, where the latter includes placings and other issue methods in addition to open offers. Slovin et al. do not examine open offers but report significant two-day market-model-adjusted returns of -3.09% and 3.31% for samples of 220 rights issues and 76 placings during 1986 to 1994. Armitage includes dummy variables in a market model regression to estimate significant two-day abnormal returns of -2.24% and 1.99% for samples of 702 rights issues and 306 open offers during 1985 to 1996. Barnes and Walker report a significant announcement day mean market-adjusted return of -0.72% for 600 rights offers and a corresponding insignificant return of 0.53% for 268 placings between 1989 and 1998. Finally, although they focus on the long-term performance following UK SEOs, Ngatuni et al. (2007) report significant announcement month average abnormal returns of -3.65% for 132 open offers made during the period 1991-1995.¹⁹

Table 8. OLS regressions of two year post-offer returns on pre-offer accruals and control variables for offer firms with below- and above-median 12-month pre-offer BHARs and with negative and positive 12-month pre-offer BHARs

| Dependent variable: MACR2Y | Offer firms with below-median pre-offer BHAR | | | Offer firms with above-median pre-offer BHAR | | | Offer firms with negative pre-offer BHAR | | | Offer firms with positive pre-offer BHAR | | |
|-------------------------------|---|-------------------|-----------------|---|-------------------|-----------------|---|-------------------|-----------------|---|-------------------|-----------------|
| | Coefficient | Standard error | <i>p</i> -value | Coefficient | Standard error | <i>p</i> -value | Coefficient | Standard error | <i>p</i> -value | Coefficient | Standard error | <i>p</i> -value |
| Constant | -7.319 | 4.536 | 0.115 | -4.367 | 3.806 | 0.259 | -4.018 | 8.238 | 0.631 | -1.441 | 3.317 | 0.666 |
| DCA ₋₁ | -1.591 | 0.791 | 0.052 | -1.565 | 0.630 | 0.018 | -2.087 | 0.831 | 0.021 | -1.323 | 0.590 | 0.029 |
| DLTA ₋₁ | -0.932 | 1.383 | 0.504 | -2.171 | 1.358 | 0.118 | -0.468 | 1.372 | 0.737 | -1.370 | 1.111 | 0.223 |
| NDCA ₋₁ | -1.530 | 1.448 | 0.298 | -0.493 | 1.243 | 0.694 | -1.563 | 1.501 | 0.311 | -0.234 | 1.075 | 0.829 |
| NDLTA ₋₁ | -1.130 | 1.025 | 0.277 | -1.481 | 1.124 | 0.196 | -0.804 | 1.077 | 0.465 | -0.800 | 0.850 | 0.351 |
| ΔCAPEX | 0.067 | 0.035 | 0.067 | 0.165 | 0.050 | 0.002 | 0.139 | 0.058 | 0.027 | 0.130 | 0.048 | 0.009 |
| ln MV | 0.031 | 0.081 | 0.707 | 0.033 | 0.103 | 0.751 | 0.052 | 0.073 | 0.483 | 0.023 | 0.086 | 0.791 |
| ln BM | 0.435 | 0.397 | 0.280 | 0.089 | 0.443 | 0.841 | 0.387 | 0.523 | 0.468 | 0.466 | 0.337 | 0.172 |
| SLGR | 0.013 | 0.115 | 0.911 | 0.151 | 0.106 | 0.162 | 0.156 | 0.126 | 0.231 | 0.124 | 0.091 | 0.178 |
| PRMV | -0.142 | 0.094 | 0.138 | -0.079 | 0.079 | 0.321 | -0.168 | 0.098 | 0.104 | -0.057 | 0.062 | 0.361 |
| DISC | -0.160 | 0.904 | 0.860 | -0.681 | 0.787 | 0.392 | -0.457 | 1.072 | 0.675 | -1.015 | 0.701 | 0.153 |
| Year dummies | Insignificant—not reported | | | Insignificant—not reported | | | Insignificant—not reported | | | Insignificant—not reported | | |
| Industry dummies | Insignificant—not reported | | | Insignificant—not reported | | | Insignificant—not reported | | | Insignificant—not reported | | |
| <i>N</i> | 66 | | | 66 | | | 52 | | | 80 | | |
| \bar{R}^2 (%) | 10.87% | | | 11.44% | | | 12.59% | | | 12.42% | | |
| <i>F</i> -statistic | 0.022 | | | 0.033 | | | 0.010 | | | 0.013 | | |

Note: The table reports coefficients, standard errors, and *p*-values. MACR2Y is the two-year post-offer market-adjusted log return, beginning either at the offer month or six months after the previous fiscal year-end, whichever is later. Market-adjusted log return is monthly raw return less the monthly return on a value-weighted market index continuously compounded over the two post-issue years. The appendix explains the computation of discretionary current accruals (DCA), discretionary long-term accruals (DLTA), non-discretionary current accruals (NDCA), and non-discretionary long-term accruals (NDLTA); subscript -1 denotes the fiscal year preceding the issue year. ΔCAPEX controls for the use of issue proceeds and is the difference between total capital expenditure in the two years after the offer and total capital expenditure in the two years before the offer, deflated by twice the total assets in financial year -1 . The log of market value (ln MV) and the log of book-to-market value (ln BM) both at the end of year -1 , sales growth equal to the ratio of the change in year -1 sales to total assets in year -2 (SLGR), and industry and year dummies control for cross-sectional correlation in cumulative returns. PRMV is offer proceeds divided by pre-offer market value and DISC is the percentage discount calculated using the offer price and the mid-day price on the day before the announcement date of the offer (as compiled by Extel Financial).

In our sample, we find an insignificant mean two-day market-adjusted abnormal return of -1.1% . We regress each open offer firm's two-day price reaction on DCA_{-1} , the control variables $\ln MV$, $\ln BM$, $PRMV$, and $DISC$, and industry and year dummies used in the previous analysis of long-run returns. This regression gives no significant coefficients so we do not formally tabulate the results. The result that DCA_{-1} is insignificant contradicts the managerial response hypothesis.

5. Summary and conclusions

Recent research shows that seasoned equity issuers experience significant improvements in their operating and return performance pre-offer and significant deterioration post-offer. US studies show that pre-SEO earnings management explains pre-SEO overperformance and predicts post-SEO underperformance. We test the earnings management hypothesis by examining the operating and return performance of UK open offer firms, and confirm the robustness of US findings.

Time-series patterns of ANE and return on sales in the two pre-offer years show that UK open offer firms outperform both industry-medians and non-offer performance-matched firms (from the same industry). These operating performance measures peak in the offer year before declining post-offer. While earnings improve, cash flow performance declines, indicating that accruals drive the earnings pattern. Decomposing total accruals into discretionary and non-discretionary, current and long-term accruals and examining their time series patterns shows that only DCA mirror the earnings pattern. Further analysis shows that offer firms that manage earnings aggressively pre-offer not only significantly underperform their matched firms but also their conservative counterparts in the three years after the offer. Return performance shows that offer firms experience a pre-offer price run-up and a price deterioration up to four years after the offer. Aggressive earnings management firms experience better market-adjusted performance than conservative firms in the pre-offer year but significantly underperform the market and their conservative counterparts in the four years post-issue. Regression results confirm a significant negative relation between pre-offer DCA and long-run post-offer returns. In contrast, we find no relation between pre-offer discretionary accruals and the two-day price reaction to offer announcements. While the earnings management hypothesis and the timing hypothesis are not mutually exclusive, our results are more consistent with the former.

Our findings suggest that UK issuers of open offers successfully manipulate investors by temporarily inflating earnings pre-offer. Naive investors appear to under-utilize the information available at the time of the offer announcement and mistakenly expect pre-issue earnings increases of offer firms to be permanent. When earnings decline post-offer due to accruals reversals, disappointed investors revise their expectations about firm values downwards. Our results confirm the robustness of earlier studies using comparable US data.

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Notes

1. Teoh et al. define aggressive and conservative offer firms as the SEO firm quartiles with the largest and smallest discretionary current accruals in year -1 .
2. In a related paper (Iqbal et al., 2006), we examine the earnings and return performance of a sample of 424 UK rights issues. As rights issues are primarily sold to existing shareholders, they are less comparable to SEOs used in US studies.
3. Details of the 44 industry groups are available on request.
4. Asset-scaled net earnings (ANE) is net earnings (Datastream item 625) divided by opening total assets (Datastream item 392). We require ANE of the matched firm in the pre-offer year to be at least 80% of that of the offer firm, with no upper limit.
5. ROS is net earnings divided by total sales (Datastream item 104) from the same period. ACF is cash flow from operations (CFO) divided by opening total assets. CFO uses Datastream's definition pre-1992 and reported CFO post-1992; Datastream's definition in terms of Datastream item codes is $445 + 448 - 417 + 1012$ (where 445 is changes in stock and W.I.P., 448 is changes in debtors, 417 is changes in creditors and 1012 is other changes).
6. The bias arises from the potential for the Jones model to measure discretionary accruals with error by attributing extreme earnings performance to discretionary accruals (Dechow et al., 1995).
7. The 12-, 24-, 36-, and 48-month post-issue periods include the offer month 0.
8. See Lyon et al. (1999, p. 173–4) and Brown and Warner (1980, p. 251–2).
9. Untabulated calculations show that £1 invested in offer firms 12 months before the offer month is worth £1.13 by the offer month.
10. Subsequent to completing this research, a referee made us aware of a study by Ngatuni et al. (2007) that examines the long-term performance of UK SEOs and includes a subsample of open offers from the same period as we examine. Ngatuni et al. impose a survivorship bias on their results by requiring that their sample firms, but not their matched firms, survive over their five-year post-offering period. Calculating average size- and book-to-market-matched buy-and-hold abnormal returns, they report insignificant post issue 1- and 3-year figures of -6.7% and 15.6% and significant 5-year figures of 70.16% for 132 open offer firms. To validate our own results, we applied the matching procedures of Ngatuni et al. to our own sample, but without imposing any survivorship bias. Matching on either size, size and book-to-market, or size and industry, we found mean BHARs were significantly negative at horizons between 2 and 4 years and were quantitatively similar to those in Table 5.
11. The compound FFAR is significantly negative for aggressive firms throughout the 48-month post-issue period, while it is (weakly) significantly negative for conservative firms at the end of 24 and 36 months post-offer.
12. An analysis of BHARs and FFARs over the -12 to 47 month period for issuing firms in the second and third earnings management quartiles (not tabulated) confirms the pattern of results reported here, with the degree of post-issue underperformance increasing monotonically in magnitude and significance with the degree of earnings management.
13. We use two-year post-issue returns in the regression following our finding in Table 5 that there is no significant underperformance on an annual basis after the second post-offer year.
14. CAPEX, in terms of Datastream items, is $435 + 438 - 423$ for the period up to and including 1991 and is $1026 + 1029 + 1037$ post-1991. Datastream item 435 is total new fixed assets, 438 is intangible purchases, 423 is sale of fixed assets, 1026 is net payments for fixed assets, 1029 is net payments: intangibles, and 1037 is net payments: subsidiaries etc.
15. The industry dummies used in the regression (in terms of LSPD codes) are: oil, gas, and mineral (125, 162, 165); building related (210, 222, 225); chemicals, pharmaceuticals, and healthcare (232, 234, 236, 370, 360); electronic (252, 253); engineering and vehicles (261, 262, 265, 268, 270); paper & packaging, publishing & printing (282, 284, 436); clothing (291, 293, 295, 297); food producers, brewers, pubs & restaurants (333, 470); distributors (412, 413, 414); hotel, leisure, and entertainment (424, 426, 428); media, and broadcasting (432, 434); retailers (440, 452, 454); computer software (487); transport (490); and other (240, 342, 346, 481, 482, 485).
16. Diagnostic tests show there is no heteroskedasticity, and multicollinearity is unlikely to be a problem.
17. The only other variable that is significant in Panel B is Δ CAPEX, its positive coefficient indicating that increases in post-issue capital expenditure reduce the extent of post-issue return underperformance.
18. We also examine the effect of replacing DCA_{-1} in regression (6) with performance-matched DCA_{-1} . Examining whether DCA_{-1} of offer firms in excess of DCA_{-1} of performance-matched non-offer firms predicts long-run returns addresses the evidence of Xie (2001) for the US that the mispricing of discretionary accruals is a general phenomenon, not restricted to IPOs or SEOs. This substitution leaves the signs and significance of all the coefficients unchanged, with the coefficient on "excess" DCA_{-1} being -0.77 (p -value = 0.037). This means we can predict long-run post-offer

returns using earnings management by offer firms conditional on the level of corporate earnings management that exists in general.

19. The study of Ngatuni et al. (2007) has a survivorship bias (see note 10). However, this is unlikely to have a significant effect on returns in the announcement month.

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Appendix

We apply the cross-sectional modified Jones (1991) model of Dechow et al. (1995) to estimate discretionary and non-discretionary accruals. In the regressions below, we require each industry–year to have data for at least six firms to apply the modified Jones model. The final control sample includes 1628 non-offer firms. We first regress current accruals on

the change in sales for each industry–year combination, including all non-issuing firms in the same three-digit industrial code as the issuer. We use Datastream’s definition of current accruals (445 + 448 – 417 + 1012 in terms of Datastream items). Deflating by opening total assets to minimize heteroskedasticity gives the regression

$$\frac{CA_{jt}}{TA_{jt-1}} = a_0 \left(\frac{1}{TA_{jt-1}} \right) + a_1 \left(\frac{\Delta SALES_{jt}}{TA_{jt-1}} \right) + \varepsilon_{jt} \quad (A.1)$$

NDCA of issuer i are

$$NDCA_{it} = \hat{a}_0 \left(\frac{1}{TA_{it-1}} \right) + \hat{a}_1 \left(\frac{\Delta SALES_{it} - \Delta TR_{it}}{TA_{it-1}} \right) \quad (A.2)$$

where ΔTR_{it} is issuer i ’s change in trade debtors in year t . The remaining component of current accruals is DCA

$$DCA_{it} = \frac{CA_{it}}{TA_{it-1}} - NDCA_{it} \quad (A.3)$$

We estimate total accruals (TAC) similarly for each industry–year combination as

$$\frac{TAC_{jt}}{TA_{jt-1}} = b_0 \left(\frac{1}{TA_{jt-1}} \right) + b_1 \left(\frac{\Delta SALES_{jt}}{TA_{jt-1}} \right) + b_2 \left(\frac{PPE_{jt}}{TA_{jt-1}} \right) + \varepsilon_{jt} \quad (A.4)$$

where $TAC_{j,t-1}$ is total accruals in year $t-1$ (calculated as net earnings less cash flow from operations), and PPE_{jt} is gross property, plant and equipment in year t for firm j . Estimated NDTAC and DTAC are

$$NDTAC_{it} = \hat{b}_0 \left(\frac{1}{TA_{it-1}} \right) + \hat{b}_1 \left(\frac{\Delta SALES_{it} - \Delta TR_{it}}{TA_{it-1}} \right) + \hat{b}_2 \left(\frac{PPE_{it}}{TA_{it-1}} \right) \quad (A.5)$$

and

$$DTAC_{it} = \frac{TAC_{it}}{TA_{it-1}} - NDTAC_{it} \quad (A.6)$$

Long-term accruals equal total accruals less current accruals. Therefore, NDLTA is NDTAC less NDCA and DLTA is long-term accruals less NDLTA.