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Are Accruals during Initial Public Offerings Opportunistic?

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Abstract. We find evidence that initial public offering (IPO) firms, on average, have high positive issue-year earnings and abnormal accruals, followed by poor long-run earnings and negative abnormal accruals. The IPO-year abnormal, and not expected, accruals explain the cross-sectional variation in post-issue earnings and stock returns. The results are robust with respect to alternative abnormal accruals and earnings performance measures. IPO firms adopt more income-increasing depreciation policies when they deviate from similar prior performance same industry non-issuers, and they provide significantly less for uncollectible accounts receivable than their matched non-issuers. The results taken together suggest opportunistic earnings management partially explains the new issues anomaly.

Accrual accounting provides managers with discretion in the reporting of earnings. This allows financial reports to reflect managerial information about underlying economic conditions more accurately than is possible with a strictly mechanical reporting rule. However, if in some circumstances managers wish to mislead investors, discretion provides greater scope for obscuring true underlying firm performance. The incentives to manage earnings may be especially strong when the firm is planning to sell shares to the market, as in an initial public offering (IPO).

IPOs are a major corporate event as evidenced by the size of the IPO market. Between 1980 and 1990, a total of 8,199 IPOs raised gross proceeds of $276,076m (unadjusted for real purchasing power), and in 1997 alone, 1,376 IPOs for $121,387m were issued. Furthermore, IPOs play an economic role in facilitating economic innovation that is disproportionate relative to their dollar volume. The empirical question of whether firms manage earnings in IPOs is therefore important both in itself and because of its bearing on capital markets in general.

Several aspects of IPOs provide incentives to firms to manage earnings opportunistically by reporting high IPO accruals. High reported earnings raise stock prices, and a high stock price is desirable when a firm is selling equity. There are generally high uncertainties about the newly public firm, high information asymmetries between the issuer and the investors, and few reliable independent sources of information about the firm. Thus, it may be difficult for investors to judge the appropriateness of IPO-firm accruals as indicators of future performance.

If firms seek to boost earnings before selling stock, initial financial statements of the newly public firm will contain unusually high positive accruals. These accruals will not reflect favorable long-run prospects as strongly as accruals of an ordinary non-IPO firm. In this scenario, high earnings cannot be sustained, so earnings in the post-IPO years decline. To test for opportunism, in this paper we examine the levels of IPO-year and post-IPO earnings and accruals, and the relation between IPO-year accruals (in excess of a normal benchmark) to the firms' long-term earnings in the years after the IPO. A finding that accruals are unusually high in the IPO year, that post-IPO earnings are low, and that high IPO-year accruals predict low subsequent earnings would be consistent with the hypothesis of opportunism.

Prior research on earnings behavior in IPOs has focused on whether accruals prior to the public issue are unusually high. Aharony, Lin, and Loeb (1993) and Friedlan (1994) reach opposite conclusions. The former study finds no evidence for high abnormal pre-IPO accruals whereas the latter does.

Our study differs from these studies in several significant ways: (1) We examine both issue-year and long-run post-issue accruals and earnings performance.[1] (2) We examine the cross-sectional relation of issue-year excess accruals to post-issue earnings. (3) The issue-year accruals we examine include both pre and post-IPO accruals.[2] This has the advantage of permitting considerably larger and more comprehensive sample (1,682 IPOs from 1980–1990 versus 100 to 200 in past studies). (4) We consider several alternative benchmarks for abnormal accruals. Since different methods are subject to different kinds of errors and biases, it is valuable to see how robust the findings are with respect to alternative measures of abnormal accruals. (5) We examine three alternative measures for post-issue earnings performance—the IPO firm's own return on sales, the industry-adjusted return on sales, and a matched-firm relative return on sales where the match is selected based on similar return on sales as the IPO-issue year. (6) We analyze individual accrual-related items such as depreciation and the provision for accounts receivable losses to understand better the mechanisms by which management may improve issue-year earnings.

Regarding (4) above, no model can perfectly identify the benchmark level of accruals expected as a response to the firm's economic conditions. Such a benchmark is needed to measure the discretionary component of accruals that is due to special incentives to manage earnings. There is much debate as to the success of the alternative proxies. As a check on the robustness of the results, we use three alternative benchmarks; two are based on our extensions of the Jones (1991) model for expected accruals and the third is derived from the Beneish (1994) model for the likelihood that the firm is an earnings manipulator. The general conclusions of our paper are robust with respect to these measures, and also to a variety of alternative test specifications.

We find that on average the IPO-year reported earnings performance and abnormal accruals are unusually high. However, the post-IPO earnings performance is significantly below the industry average or similar prior-performing non-issuing industry peers. Cross-sectionally, high IPO-year abnormal current accruals predict low future earnings performance. The return on sales of IPO firms classified to be in the "aggressive" quartile (the highest issue-year abnormal current accruals) underperform the most in the three years after the IPO fiscal year. The return on sales in the three post-IPO years relative to the IPO year

decline by a mean 16.50% and median 8.28% for the aggressive quartile. In contrast, the IPO firms in the "conservative" quartile (the lowest issue-year abnormal current accruals) do not underperform in the post-issue years. Importantly, the post-issue earnings performance is not predictable using either expected current accruals, abnormal long-term accruals, or expected long-term accruals.

In the analyses of individual accounting items, we find that IPO firms adopt more income-increasing depreciation policies when they deviate from similarly performing non-issuing industry peers, and provide significantly less for uncollectible accounts receivables than their matched non-issuers.

In addition to these findings regarding earnings performance, we also examine the relation of accruals to long-term stock returns performance. Recent literature on the new issues puzzle documents that investors misvalue IPO firms and do not adequately discount the high issue-year accruals of IPO firms. For example, Ritter (1991) and Loughran and Ritter (1995) find that the post-issue stock returns of IPO firms underperform their same size non-issuing industry peers for as long as three to five years after the offering. Teoh, Welch, and Wong (1998a) find that the extent of the post-IPO stock return underperformance is predicted by abnormal current accruals.

If investors do not adequately discount the strategic use of IPO-year accruals, they will be overly optimistic about the future earnings potential of the IPO firms. Consequently, in future years, as earnings are realized below earlier expectations, investors will revalue the firm downwards. We confirm in our sample the results of Teoh, Welch, and Wong (1998a) that the IPO-year abnormal accruals, and not expected accruals, predict greater post-issue stock return underperformance. We also show that this negative relation obtains under an alternative earnings management measure, the IPO-year Beneish M-score. Taken as a whole, the evidence suggests that investor overoptimism about IPOs comes from the failure to discount fully for earnings which have been inflated opportunistically by accruals.

The rest of the paper is organized as follows. Section 1 briefly describes the IPO process to suggest how incentives and opportunities for earnings management might arise and what the constraints on earnings management might be. Section 2 describes the sample selection procedure and estimation methods for the three earnings management proxies. Section 3 presents evidence on post-issue earnings underperformance and the relation of the time series earnings profile to the time series profiles of abnormal and expected accruals. The ability of the earnings management proxies to predict long-term post-issue net income performance is explored in Section 4. Post-issue stock returns' predictability by IPO accruals measures is examined in Section 5. Section 6 offers supplementary tests to locate the mechanism for accruals management, primarily in two accounting items, depreciation and allowance for accounts receivable losses. Section 7 concludes the paper.

1. The IPO Process

The IPO process typically begins with discussions between an entrepreneur and an underwriter about the desirability of taking the firm public. The underwriter, in conjunction with the issuing firm, prepares an offering prospectus. This document contains externally audited financial statements for up to the most recent three years, and information about the

firm, its business, future prospects, competitors and products. It also includes other relevant financial information such as ownership structure. The prospectus is used as a marketing document by the underwriter in road shows to solicit demand, usually from institutional investors.

There are some noteworthy features of the IPO process that offer opportunities and incentives to manage earnings. First, there is relatively little information available to investors from public sources about private firms so investors have to rely primarily on the financial statements reported in the prospectus. Rao (1993) reports that there is almost no news media coverage of firms in the years before going public. With few other sources of information to corroborate the financial statements, it is hard for investors to judge whether the accruals reflect the fundamental values of the firm appropriately. Second, underwriters commonly use the price-earnings multiple of a publicly-traded firm in the same industry as the prospective IPO to set the offer price.[3] Thus, the issuer and the underwriter may have an incentive to report favorable accounting information in the prospectus to increase the chance of having the issue fully subscribed. These incentives are further encouraged by current accounting regulation (Accounting Principles Board (APB) 20) allowing a company undertaking an IPO to change any and all accounting principles via retroactive restatement of the financial statements presented in the offering prospectus. The accounting rule gives an exceptional opportunity for the issuer to doctor the profile of accounting earnings in the pre-issue fiscal years.

Limits on the incentives for opportunistic earnings management do exist. One regulatory limit on discretion is the requirement that accounting reports presented in the offering prospectus be audited by an external accounting firm to verify compliance with generally accepted accounting principles (GAAP). Furthermore, investment bankers, auditors, and entrepreneurs are subject to lawsuits for misrepresentation of accounting reports, and an investment banker's reputation affects subsequent market share.

However, the constraints upon opportunistic earnings management are imperfect. GAAP accrual accounting system permits discretion in recognizing the timing and amounts of revenues and expenses. Sufficient flexibility may be permitted within GAAP to allow for substantial earnings management. Based on discussions with investment bankers, it appears that the underwriters' due diligence process generally does not include auditing the firm's financial statements. The underwriters, in general, rely on the auditor's opinion regarding the accuracy of the reported accounting numbers. Auditors, in turn, generally defer to management's judgement on discretionary accrual items that do not explicitly violate GAAP.

We focus on accruals in the first fiscal year when the firm is public, which includes some pre-issue months, and we do not analyze accruals in the pre-issue fiscal year.[4] The key advantage is that we are able to obtain a large sample of IPOs with readily available data on Compustat. In addition, IPO firms have many incentives to continue to boost earnings in the period immediately *after* the IPO, as described below.

The expectation of a high after-market price increases the likelihood that the offering will be fully subscribed, and hence increases the likelihood that the underwriter will be willing to accept the offer price. The underwriter guarantees the issue proceeds in a firm commitment offering, and stands to lose if the issue is undersubscribed because the offer price is set

too high. In addition, the investment banker practices what is commonly referred to as "price stabilization," which is permitted under Rule 10b-7 by the Securities and Exchange Commission (SEC). The investment banker steps in to buy the stock of the firm to prop up the offer price in the aftermarket.[5] Thus, the firm may be under pressure from the investment banker to continue to manipulate earnings after the IPO to help support the stock price.

Commonly, there is a lock-up period of about 180 days or longer after the issue date during which the original IPO entrepreneurs commit not to sell their shares. Thus, the entrepreneurs have an incentive to maintain high earnings until after the lock-up period. The high post-IPO earnings help maintain a high market price for the secondary offerings by the entrepreneurs.[6]

A further incentive to maintain high earnings after the issue concerns the verbal earnings projections that are commonly hinted at to investors during road shows when the marketing of the new issue begins.[7] After trading begins, the security analysts initiating coverage of the firm will generally disseminate the earnings projections widely. To support the initial offer price, analysts at the underwriting investment banking firms are under pressure to make the most favorable earnings projections possible. In turn, the issuing firm is under pressure to meet those projections in the aftermarket to safeguard its reputation for reliability, to maintain the goodwill of investors, investment bankers, and analysts who made the initial earnings projections, and to avoid lawsuits by disgruntled shareholders.[8]

Finally, it is common for IPO firms to provide stock rights and stock options to encourage management to remain after the firm goes public. These management compensation instruments carry restrictions on when the stock can be sold and when the options can be exercised, which is usually not for several months or years after the IPO date. Thus, managers compensated through these plans have an additional incentive to manage earnings in order to maintain stock prices until the restrictions on selling expire.

2. Sample Selection and Data

Our sample consists of 1,682 IPO firms going public between 1980 and 1990.[9] For inclusion in the sample, IPOs must satisfy the following criteria: (1) offer price $>$ \$1, (2) gross proceeds $>$ \$1m, (3) only common stock offerings, and (4) an investment banker handled the offering. The actual sample size varies in different tests according to financial data availability on Compustat (full coverage and research files are included).

Table 1 presents descriptive statistics for our sample. The sample covers a wide range of industries; a total of 63 two-digit SIC codes are represented. IPO firms are concentrated in the computer and high-technology industries (SIC codes 35, 36, 38, and 73), making up 41.7% of the total sample. There is also some clustering in time; relatively heavy volume years are in 1983, 1986, and 1987. The general offering and firm characteristics are comparable to Ritter's (1991) sample of IPOs. IPO firms are generally small in size, underpriced, newly incorporated, have high sales revenue and growth, and earn negative excess returns in the first three years after issue.

Table 1. Characteristics of sample of firms conducting initial public offerings during fiscal years 1980 to 1990.

Panel A: Offering and Firm Characteristics

	TA $m	MV $m	SALES $m	CS %	AGE Years	OP $	UNDERP %	CAR3 %
Mean	186.51	105.74	105.72	29.01	9.21	10.32	6.94	−30.18
Median	•20.97	•29.65	•21.10	22.04	5.00	•9.00	1.30	−64.09

Panel B: Time Distribution of Sample

Year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
80	•53	•3.2	••53	••3.2
81	149	•8.9	•202	•12.0
82	•63	•3.7	•265	•15.8
83	258	15.3	•523	•31.1
84	144	•8.6	•667	•39.7
85	136	•8.1	•803	•47.7
86	349	20.7	1152	•68.5
87	302	18.0	1454	•86.4
88	117	•7.0	1571	•93.4
89	•96	•5.7	1667	•99.1
90	•15	•0.9	1682	100.0

Panel C: Industry Distribution of IPO Sample

Industry Name	SIC codes	Frequency	Percent
Oil and Gas	13	••43	••2.6
Food Products	20	••29	••1.7
Chemical products	28	••94	••5.6
Electronic Equipment	36	•161	••9.6
Scientific Instruments	38	•141	••8.4
Communications	48	••49	••2.9
Durable Goods	50	••61	••3.6
Eating and Drinking Establishments	58	••45	••2.7
Health	80	••57	••3.4
Paper & Paper Products	24–27	••50	••3.0
Manufacturing	30–34	••72	••4.3
Transportation	37, 39, 40–42, 44, 45	••91	••5.4
Retail	53, 54, 56, 57, 59	•112	••6.7
Financial Service	61, 62, 64, 65	••49	••2.9
Entertainment Services	70, 78, 79	••37	••2.2
Computer Equipment & Services	35, 73	•399	•23.7
All Others	[a]	•192	•11.4
Total		1682	100.0

[a] SIC codes 1, 7, 10, 12, 14, 15, 16, 17, 22, 23, 29, 47, 51, 52, 55, 60, 63, 67, 72, 75, 76, 82, 83, 87, and 99. Total assets (TA), market value (MV) of equity, and sales are measured at the end of the fiscal year of issue. Sales growth (CS) measures the change in sales between the first fiscal year and the year prior to issue scaled by beginning total assets. Age is the number of years between incorporation and IPO date. OP is offer price and UNDERP is initial return of the IPO stock. 3-year cumulative abnormal return (CAR3) is a 3-year continuously compounded IPO stock return starting 3 months after the fiscal year end of issue minus the corresponding compounded market return.

2.1. Proxies for Earnings Management

Recent studies on earnings management have relied primarily on accruals-based measures to estimate the degree of manipulation.[10] We report results based on three proxies for earnings management, and further robustness checks are also performed using alternative measures. Two of the proxies are obtained from accruals measured relative to some expected benchmarks based on firm and industry characteristics. The third proxy uses a score for the likelihood that the firm is a manipulator from a model using firm financial ratios as indicators.

As a summary measure reflecting the firm's accounting choices, accruals are likely to capture evidence of earnings manipulation. However, as Kaplan (1985) points out, accruals likely also vary with the firm's economic conditions. Thus, a model is needed to extract from total accruals the normal (or *expected*) accruals components which are dictated by exogenous economic conditions. We term the remaining accruals component *abnormal* accruals, which we use as a proxy for the amount of earnings management. In addition, we distinguish between current and long-term accruals to capture differential susceptibility to manipulation between these items; see Kreutzfeldt and Wallace (1986), and Guenther (1994).

Total accruals are measured as net income (172) minus cash flows from operations (308); Compustat items in parentheses.[11] Current accruals are measured as the change in the following non-cash working capital items: Δ[accounts receivables (2) + inventory (3) + other current assets (68)] $-$ Δ[accounts payable (70) + taxes payable (71) + other current liabilities (72)]. Long-term accruals are total accruals minus current accruals.

2.1.1. Cross-Sectional Term-Adjusted Jones Accruals

We use the cross-sectional modified Jones (1991) model first to separate total accruals into expected and abnormal components.[12] In some parts of the paper, we distinguish accruals by their terms (i.e., current and long-term). In these cases, we measure expected and abnormal current and long-term accruals using a term-adjustment extension to the Jones model as described below. Following Jones, all accrual variables are scaled by lagged total assets.

The Jones model assumes that two firm characteristics, gross property, plant, and equipment (PPE) and the change in revenues (Δ Sales), largely determine the amount of accruals a firm reports in response to firm economic conditions. Therefore, total accruals are regressed on PPE and Δ Sales to estimate expected and abnormal accruals. Gross PPE adjusts for expected depreciation expense, and the change in revenues adjusts for expected changes in working capital accounts. To the extent that PPE and Δ Sales adequately reflect changes in firm economic conditions before managerial manipulation, the estimated expected accruals will reflect accrual responses to changes in the firm's economic conditions. However, sales revenues are not completely exogenous, and credit sales, in particular, may be manipulated by managers extending generous credit to induce sales. Hence, we calculate expected total accruals from the fitted equation using the Dechow, Sloan, and Sweeney's (1995) modification of excluding increases in trade receivables from the change in revenues. The remaining

residual accruals are considered subject to managerial control, and are termed abnormal total accruals.

In our term-adjusted extension to the Jones model, we first estimate expected current accruals by cross-sectionally regressing current (not total) accruals on only the change in sales revenues. The expected current accruals is calculated using the estimated coefficients in the fitted equation after subtracting the change in trade receivables from the change in sales revenues. The residual of current accruals is the abnormal current accruals. For long-term accruals, the expected component is calculated as expected total accruals minus expected current accruals. Long-term accruals minus expected long-term accruals is then abnormal long-term accruals. To summarize, abnormal current and long-term accruals proxy for the degree of earnings management, whereas expected accruals proxy for the normal accruals taken in response to changes in economic conditions.

We estimate the Jones and term-adjusted Jones regressions cross-sectionally for a sample of all firms in the same 2-digit SIC code as the IPO firm, but excluding IPOs in our test sample. The cross-sectional regression is re-estimated for each fiscal year under consideration. At least 10 observations must be available before the regression is performed. The cross-sectional approach was introduced by DeFond and Jiambalvo (1994), and we use the approach because a time series approach is infeasible for IPOs. The cross-sectional approach has an additional advantage in that it incorporates changes in accruals resulting from changes in economic conditions for the industry as a whole. An IPO is generally associated with major changes in investment opportunities for the firm and industry, and these economic changes can influence IPO firm accruals independent of any manipulation. Since the cross-sectional regression is re-estimated each year, specific year changes in economic conditions affecting expected accruals are filtered out. As mentioned previously, IPOs cluster in time and industry, which might lead to patterns of accruals resulting from random industry factors at a given time and unrelated to accrual manipulation during the IPO process. In addition, the common practice by underwriters of comparing market prices and accounting variables of similar firms when pricing equity (see DeAngelo (1990)) further underscores the importance of extracting industry-wide economic conditions from abnormal accruals.

2.1.2. Matched-Pair Proxy

The appropriate benchmark for expected accruals has been a controversial subject of debate recently in the accounting literature.[13] Dechow, Sloan, and Sweeney (1995) report from a simulation study that the model exhibits the most power among currently available models in detecting earnings management. However, they point out that the model rejects too often for extreme performing firms. Since it is likely that IPO firms have unusual earnings performance at the time of the IPO, we use a second proxy for earnings management to attempt to control directly for this purported key weakness of the model.

In this alternative matched-pair design, each IPO firm is matched to a non-issuing firm from the same industry with comparable earnings performance as the IPO firm during the issue year. The matched firm is selected from non-issuing firms in the same four-digit SIC code as the IPO firm if it has the closest return on sales to the IPO firm during the IPO year.

The return on sales of the matched firm can be no smaller than 80% of the IPO firm's issue year return on sales. If no matches are found within the four-digit SIC codes, we consider three-digit, then two-digit, and finally one-digit codes. The majority (72%) of IPO firms is matched successfully on at least the three-digit SIC codes.

The term-adjusted Jones model abnormal current and long-term accruals are calculated for both the IPO firm and its match. The matched-pair abnormal accruals is calculated as the IPO abnormal accruals minus the matched firm abnormal accruals. The key advantage of the matched-pair approach is that systematic errors in the Jones model abnormal accruals for similar performing firms are eliminated. The disadvantage is that the approach may be too conservative in measuring earnings management if high performing non-issuers have alternative incentives to engage in earnings manipulation. For example, Beneish (1994) reports that high growing firms have strong incentives to manipulate financial statements to allay the perception of growth deceleration.

Our procedure is able to obtain close matches for most of the IPO firms. The mean sales growth *rate* is 116% for the IPO sample and 115% for the matched sample; the median growth rates are 40% for the IPO firms versus 33% for the matched firms. The test statistics for the difference in mean and medians of the two distributions are not statistically significant.

2.1.3. Beneish M-score

The third proxy for earnings management uses the Beneish (1994) model to estimate a score for the likelihood that the firm is a manipulator. The Beneish model is estimated from a sample of known GAAP violators investigated by the SEC for financial fraud.[14] The eight variables and their loadings to compute the M-score are:

$$\begin{aligned} M \;=\; & -4.840 + .920\ \text{Days sales in receivable} + .528\ \text{Gross margin} \\ & + .404\ \text{Asset quality} + .892\ \text{Sales growth} + .115\ \text{Depreciation} \\ & - .172\ \text{SGA} + 4.679\ \text{Accruals} - .327\ \text{Leverage index.} \end{aligned} \tag{1}$$

The variables are defined in the note below.[15]

Higher values for the Beneish M-score imply a greater likelihood that the firm is a manipulator. The M-score includes accrual measures, and so is not independent of the other two measures of earnings management. It has the advantage of being more comprehensive by incorporating other earnings quality measures that are useful to investors for predicting future earnings. One potential disadvantage is that the model is specifically estimated from GAAP violators whereas our IPO sample are generally not violators. By including other factors, the score may also not strictly reflect the degree of opportunistic manipulation under managerial control.

3. Post-Issue Earnings Underperformance

In this section, we examine whether IPO firms' earnings underperform post-issue. Table 2 and Figure 1 report on the time series pattern from the issue year (year 0) to six years

Table 2. Time series profile of return on sales (in %) from fiscal year of IPO to six years after.

Panel A: Return on Sales							
Year	0	1	2	3	4	5	6••••
Median	4.62***	2.78*	2.09	1.57	1.29	1.29	1.84
Mean	−6.72***	−8.47***	−7.30***	−5.66***	−6.43***	−5.12***	−3.71***
% Positive	0.76***	0.65***	0.61***	0.61***	0.59	0.59	0.62
Observations	1514	•1421	1279	1105	943	690	429•••

Panel B: Industry-Adjusted Return on Sales							
Year	0	1	2	3	4	5	6••••
Median	1.99***	0.41***	0.06***	−0.18***	−0.57***	−0.32***	0.08***
Mean	−9.70***	−10.91***	−9.49***	−7.56***	−7.86***	−6.49***	−5.09***
% Positive	0.65***	0.52*	0.50	0.49	0.47**	0.48	0.51
Observations	1514	•1419	1279	1105	942	690	429•••

Panel C: Performance-Matched Return on Sales							
Year	0	1	2	3	4	5	6••••
Median	0.00	−0.46***	−0.42***	−0.65***	−1.02***	−0.94***	0.89***
Mean	−0.10**	−1.84***	−3.12***	−2.08***	−3.99***	−2.17***	−3.76***
% Positive	0.50	0.45***	0.46***	0.45***	0.44***	0.43***	0.41***
Observations	1514	•1313	1095	897	712	489	288•••

Note:
This table presents three measures of net income performance from the fiscal year of the offering to six years after. Panel A reports on return of sales, and Panel B the IPO firm's return on sales minus the industry median return on sales. In Panel C, IPO firms are first matched to non-IPO firms from the same industry and have the closest to at least 80% of offering-year return on sales of the IPO firm. The performance measure is calculated as the difference between return on sales of IPO firm and matched firm.
The means are trimmed at +/− 5%. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively, two-tailed, based on T distribution for means, Wilcoxon for median, and normal approximation to the binomial with continuity correction for the sign tests.

thereafter of three measures of earnings performance.[16] Panel A reports on the IPO return on sales, and Panel B on the industry-adjusted return on sales (i.e., IPO return on sales minus the industry median return on sales). Adjusting for changing industry conditions may be important because Ritter (1991) reported significant declines in operating performance for some industries in the 1980s. In Panel C, the performance measure is relative to the matched firm selected as described in section 2.1.2., and is calculated as the IPO firm's return on sales minus the matched firm's return on sales. In all panels, the statistical means are obtained after trimming the data at the fifth and 95th percentiles to reduce the effect of a few large values on the mean statistic. Qualitative results using winsorizing are similar.

Table 2 indicates that the median return on sales peaks in the issue year for all three measures. Some skewness is indicated in the sample by the significant negative mean measures, so we rely on the medians for statistical inference. Year 0 return on sales is significantly positive in Panels A and B, and exceeds performance in all other post-issue

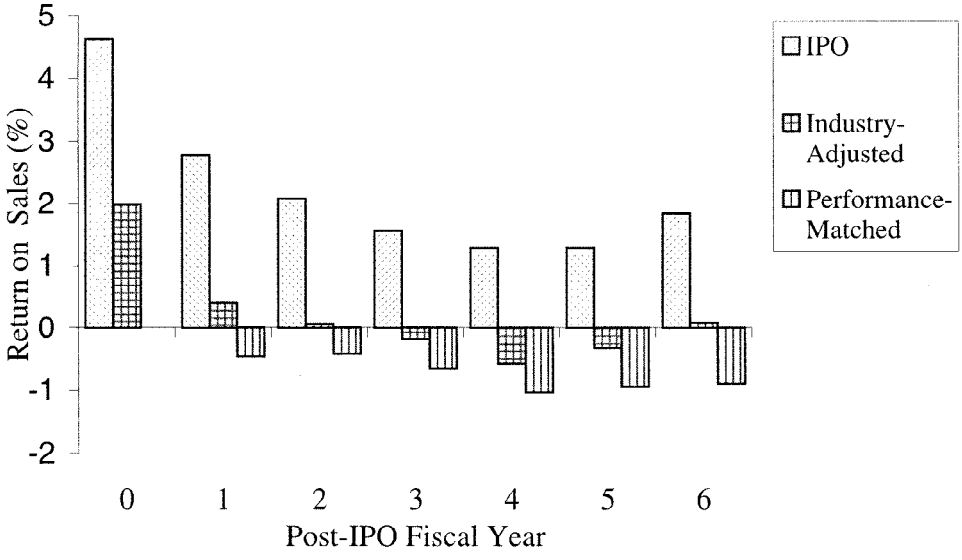

Figure 1. Time series profile of median return on sales.

years. Since firms are matched by performance in year 0, the median matched-return on sales in Panel C is zero for year 0. For post-issue performance relative to year 0, IPO return on sales in year 1 drops 40% in panel A and the industry-adjusted return on sales drops 79% in panel B. The slide continues each year for the next four to five years. By year 4, the median IPO return on sales is only 28% of year 0 value. The median industry-adjusted return on sales becomes significantly negative by year 3 and continues to be significantly negative for years 4 and 5. Panel C indicates that IPO firms perform significantly worse than their matched firms in all post-issue years. The medians and means are all significantly negative, and a significant majority of the IPO firms earns less than the matched firms. Further evidence reported in Table 4 shows that IPO firms significantly underperform their prior-performance matched non-issuers by a margin of as much as 16.50% (mean) and 8.28% (median) over the entire three immediate post-IPO years relative to year 0.

It is possible that the return on sales may decline in post-issue years because higher sales are generated from new investments. However, we show that the post-issue underperformance is not special to the use of return on sales as the performance measure. A similar pattern of a post-IPO decline is also observed when return on assets is the performance measure. In contrast to return on sales, return on assets may be expected to be lower in the IPO year than in subsequent years, absent manipulation considerations. Total assets incorporate the increase in assets from IPO proceeds immediately, whereas margins are likely lower on temporary investments where initial proceeds are parked.[17] Furthermore, the post-IPO decline in performance is also observed when a constant denominator, total assets in year 0, is used as the performance deflator for all years from 0 through 6. In sum,

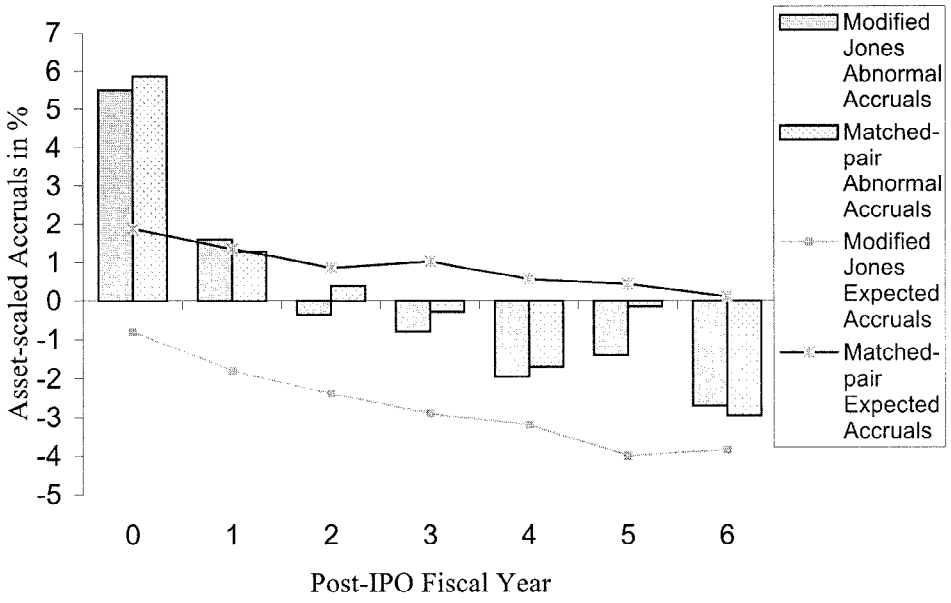

Figure 2. Time series profile of abnormal accruals and expected accruals.

IPO firms report superior earnings performance in the issue year which are not sustained. Their earnings significantly underperform in the post-issue periods.

3.1. Time Series Pattern of Accruals

We examine next whether the time series pattern of earnings in Table 2 may be derived from a similar time series pattern for abnormal accruals. Figure 2 and Table 3 present the time series profiles of abnormal and expected accruals from the issue year to six years after. Abnormal and expected total accruals are presented in Panel A and Matched-pair abnormal and expected accruals in Panel B.

Abnormal accruals in both panels peak in year 0 and then decline steadily, turning from significantly positive in year 0 of about 5.5% to negative in year 2 for Panel A and in year 3 for Panel B. In both panels, a similar pattern of steady decline from the issue year is also observed for expected accruals but the magnitudes of the declines are much less dramatic than for abnormal accruals. This evidence is consistent with a scenario where the managers of IPO firms opportunistically advance accruals so as to improve reported earnings during the issue period. Subsequently, when the high level of issue-year abnormal accruals cannot be sustained in the post-issue years, reported net incomes decline.

Further alternative methods for measuring abnormal accruals are considered. They are: matching by sales growth rates instead of return on sales for the matched-pair proxies;

Table 3. Time series profile of asset-scaled abnormal and expected accruals, in percent, from fiscal year of IPO to six years after.

Panel A: Non-Matched Accruals

Year	0	1	2	3	4	5	6••••
				Abnormal Accruals			
Median	5.50***	1.60***	−0.35*	−0.80**	−1.95***	−1.40***	−2.70***
Mean	9.94***	2.09***	−0.89***	−0.87**	−3.40***	−2.69***	−3.07***
% Positive	0.62***	0.55***	0.48**	0.47**	0.40***	0.43***	0.39***
Observations	1506	1408	1282	1147	998	841	585•••••
				Expected Accruals			
Median	−0.80	−1.80***	−2.50***	−2.90***	−3.20***	−4.00***	−3.85***
Mean	1.13***	−1.67***	−2.86***	−3.90***	−3.66***	−4.59***	−4.33***
% Positive	0.46***	0.35***	0.28***	0.25***	0.24***	0.16***	0.15***
Observations	1506	1408	1282	1147	997	841	584•••••

Panel B: Matched-Pair Accruals

Year	0	1	2	3	4	5	6••••
				Matched-pair Abnormal Accruals			
Median	5.87***	1.28***	0.38	−0.28	−1.69***	−0.15	−2.94***
Mean	10.73***	2.90***	0.18	0.47	−1.91***	−1.22**	−3.95***
% Positive	0.62***	0.54***	0.51	0.49	0.44***	0.49	0.40***
Observations	1480	1283	1083	904	732	579	365•••••
				Matched-pair Expected Accruals			
Median	1.87***	1.35***	0.86***	1.02***	0.55***	0.43	0.11
Mean	4.39***	2.57***	1.25***	0.85***	0.91***	0.57*	0.84**
% Positive	0.61***	0.61***	0.57***	0.58***	0.55***	0.53*	0.52
Observations	1480	1283	1083	904	732	579	365•••••

Note:
In Panel A, expected accruals are estimated each year from a cross-sectional regression of total accruals on the change in sales and level of property, plant, and equipment using all non-issuing firms in the same 2-digit SIC code as the IPO firm. Expected accruals are the predicted accruals after subtracting change in accounts receivables from change in sales. Abnormal accruals are total accruals minus expected accruals.
In Panel B, each IPO firm is matched with an industry non-issuing peer with the closest to at least 80% of the offering-year return on sales of the IPO firm. The matching procedure begins from the same 4-digit SIC codes, and when no match is found, firms with the same 3-digit, then 2-digit, and finally 1-digit SIC codes are used. Matched abnormal accruals is the abnormal accruals of the IPO firm minus the abnormal accruals of the matched firm.
The means are trimmed at +/− 5%. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively, two-tailed, based on T distribution for means, Wilcoxon for median, and normal approximation to the binomial with continuity correction for the sign tests.

calculating abnormal accruals from regressions estimated using only industry peers with the highest growth rates instead of all peers; and deflating accruals by only pre-issue year total assets throughout the six post-issue years instead of lagged year assets (so the post-issue decline in abnormal accruals is not a result of growth in the deflator). The results are all robust to these alternative specifications.

3.2. Post-Issue Earnings by Abnormal Accruals Quartiles

Next, we examine whether post-issue earnings performance of IPO firms differs systematically according to the magnitude of the IPO-year abnormal accruals. We rank IPO firms by their IPO-year abnormal accruals and report the earnings performance in Table 4 for the extreme two quartiles, aggressive for largest abnormal accruals and conservative for smallest abnormal accruals. For expositional simplicity, we report only performance-matched return on sales; similar results are obtained for the industry-adjusted return on sales. The performance measure in Panel A is the difference in return on sales between IPO firms and their matches. In Panel B, the cumulative excess return on sales for years 1 to 3 relative to year 0 is computed as the difference in the sum of the changes in return on sales in years 1, 2, and 3 relative to base year 0 between IPO firms and their matches.

Panel A in Table 4 shows that only IPO firms in the aggressive quartile consistently underperform their matched non-issuers in each of the six post-issue years. Both median and mean measures are all statistically significantly negative in each of the six years and a significant majority of the IPO firms underperforms the matched firms. Panel B reports that the median (mean) cumulative earnings underperformance for the aggressive quartile firms in the first three years after issue is a statistically significant -8.28% (-16.50%) of sales. Furthermore, a significant majority (65%) of the aggressive IPO firms has cumulative earnings less than their non-issuing matches.

In contrast, no significant underperformance is observed for the conservative quartile. The performance-matched returns on sales are generally insignificantly different between the IPO firms and their matches. Panel B reports a median zero cumulative excess return on sales for conservative accruers, and conservative accruers outperform aggressive accruers by about four-fold based on mean statistics. Finally, about as many conservative IPOs earn higher return on sales than their matches as the number earning lower return on sales than their matches.

In sum, the evidence indicates that reported earnings of aggressive accruers are high in the issue year because of high abnormal accruals. The high issue year earnings are not sustained subsequently when the accruals are undone. This evidence is consistent with opportunistic earnings management by the aggressive accruers.

For further evidence that abnormal accruals drive the earnings profile of IPO firms, we examine the time profile of the non-accrual component of net income, the cash flows from operations. The IPO firm's cash flows from operations/sales are compared with its matched non-issuer in Table 5. Panel A of Table 5 suggests poor liquidity as a reason for going public. The IPO firm's liquidity remains low but *improves* over the four years after issue relative to the matched firm. Furthermore, Panel B in Table 5 shows that the conservative quartile of IPO firms has worsening cash flows in the post-issue periods while

Table 4. Post-issue performance-matched return on sales between conservative and aggressive abnormal accrual quartiles of IPO firms.

Panel A: Performance-matched Return on Sales

Year	0	1	2	3	4	5	6
			Conservative Quartile of IPO firms				
Median	−0.02	0.08	0.00	−0.64	−1.27	−0.53*	0.25
Mean	0.22	−0.24	−4.76***	−1.39	−2.08*	−3.86	0.03
% Positive	0.45	0.53	0.50	0.46	0.44	0.46	0.53
No. Obs.	379	325	•271	217	171	•120	73
			Aggressive Quartiles of IPO firms				
Median	0.01	−1.84***	−2.36***	−1.94***	−1.25***	−1.09*	−4.72***
Mean	−0.03	−7.13***	−9.57***	−3.57**	−8.30***	−3.80*	−7.41***
% Positive	0.52	0.40***	0.43***	0.42***	0.46	0.45	0.30***
No. Obs.	379	320	•274	229	169	•114	71

Panel B: Cumulative Excess Performance-matched Return on Sales from Years 1 to 3 relative to Year 0

	ALL	Conservative	Aggressive
Median	−1.88***	0.00	−8.28***
Prob($\|M\| > 0$)	0.00	0.97	0.00
Mean	−4.68***	−4.55	−16.50***
Prob($\|T\| > 0$)	0.00	0.12	0.00
% > 0	••44%***	51%	••35%***
Binprob(%, .5,2)	0.00	1.00	0.00

Note:
This table compares the post-IPO return on sales performance between extreme quartiles of IPO firms ranked by abnormal accruals in the fiscal year of offering; Conservative quartiles have the smallest, and Aggressive quartiles have the largest, issue-year abnormal accruals. The performance measure in Panel A is the difference in return on sales between IPO firms and their matches. In Panel B, the cumulative excess return on sales is computed as the difference in the sum of the changes in return on sales in years 1, 2, and 3 relative to base year 0 between IPO firms and their matches.
The means are trimmed at +/− 5%. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively, two-tailed, based on T distribution for means, Wilcoxon for median, and normal approximation to the binomial with continuity correction for the sign tests.

Table 4 indicates no earnings underperformance for this sub-group. In contrast, Panel C in Table 5 reports post-issue improving cash flow performance for the aggressive quartile while Table 4 reports greater post-issue earnings underperformance for this sub-group. The conflicting cash flow performance from earnings performance confirms that the post-issue earnings underperformance is not derived from cash flow underperformance in the same period.

The following picture emerges, taking together all the evidence on the pattern of accruals, net income, and cash flows from operations. The exceptionally high net income during the IPO year comes from exceptionally high abnormal accruals, not cash flows from operations. In subsequent years, the decline in net income is caused by a decline in abnormal accruals, not cash flows from operations. In sum, net income is high during the issue year because of

Table 5. Post-issue performance-matched cash flows from operations/sales, in percent, from fiscal year of IPO to six years after.

Panel A: ALL IPO Firms

Level of Performance-Matched Cash Flows from Operations/Sales							
Year	0	1	2	3	4	5	6
Median	−5.65***	−4.22***	−2.01***	−1.42***	−0.94***	−1.04***	−0.52
Mean	−9.28***	−7.41***	−3.92***	−2.52***	−2.14***	−2.05***	−0.80
% Positive	0.32***	0.37***	0.44***	0.44***	0.45***	0.45**	0.45**
No. Obs.	1507	1303	1090	885	709	486	287

Panel B: Conservative Abnormal Accruals Quartile of IPO Firms

Level of Performance-Matched Cash Flows from Operations/Sales							
Year	0	1	2	3	4	5	6
Median	1.48***	−3.82***	−0.72*	−1.84***	−1.51	−0.42	0.03
Mean	6.32***	−8.44***	−4.93***	−5.18***	−2.21	0.16	2.00
% Positive	0.56***	0.39***	0.48	0.45*	0.45	0.49	0.51
No. Obs.	375	322	270	215	171	119	73
Change in Performance-Matched Cash Flows from Operations/Sales							
Year	·	(0,1)	(1,2)	(2,3)	(3,4)	(4,5)	(5,6)
Median	·	−5.99***	0.62	0.03	2.08	−0.75	0.73
Mean	·	−17.17***	0.34	−1.27	2.64	0.19	−1.15
% Positive	·	0.37***	0.53	0.50	0.55*	0.46	0.55
No. Obs.	·	320	266	214	169	116	71

Panel C: Aggressive Abnormal Accruals Quartile of IPO Firms

Level of Performance-Matched Cash Flows from Operations/Sales							
Year	0	1	2	3	4	5	6
Median	−23.99***	−8.21***	−5.25***	−3.60***	−3.25***	−4.38***	−3.84***
Mean	−33.12***	−14.37***	−9.25***	−2.72*	−6.03***	−5.74***	−4.28***
% Positive	0.08***	0.32***	0.36***	0.38***	0.37***	0.35***	0.36***
No. Obs.	378	319	273	225	166	112	70
Change in Performance-Matched Cash Flows from Operations/Sales							
Year	·	(0,1)	(1,2)	(2,3)	(3,4)	(4,5)	(5,6)
Median	·	9.01***	2.64***	1.17	0.08	1.27	0.00
Mean	·	15.43***	7.05***	3.54**	0.33	0.91	3.20
% Positive	·	0.67***	0.56**	0.54	0.51	0.55	0.52
No. Obs.	·	319	270	222	166	109	69

Note:
This table presents cash flows from operations/sales from the fiscal year of the offering to six years after for all IPO firms, and for the Aggressive and Conservative abnormal accruals quartiles of IPO firms. The Aggressive quartile IPOs have the largest IPO-year abnormal accruals and the Conservative quartile IPOs have the lowest IPO-year abnormal accruals. The performance measures are the level and change in cash flows from operations/sales of IPO firms relative to their matches. The matched firms are selected as in Table 2. Panel A reports on all IPO firms; Panels B and C report on the Conservative and Aggressive quartiles.
The means are trimmed at +/− 5%. ***, **, and * represent significance at the 1%, 5%, and 10% levels respectively, two-tailed, based on T distribution for means, Wilcoxon for median, and normal approximation to the binomial with continuity correction for the sign tests.

abnormal accruals. When the high issue-year abnormal accruals cannot be sustained into post-issue years, the earnings of IPO firms underperform.[18]

4. Predicting Post-Issue Earnings Underperformance

4.1. Simple Correlation Tests

In this section, we test whether the IPO-year abnormal accruals predict the earnings underperformance in subsequent years. Table 6 reports the Spearman rank correlations of the IPO-year matched-pair abnormal accruals and the Beneish M-score with the performance-matched return on sales in Panel A and with changes in the performance-matched return on sales relative to base year 0 in Panel B.[19] For comparison, we also include correlations of earnings performance measures with expected accruals.

Table 6 shows that the IPO-year abnormal accruals are significantly negatively correlated with both the levels and changes in return on sales in each of the post-issue years. In contrast, expected accruals are not correlated with the levels or changes in return on sales in any of the post-issue years except one. The Beneish M-score is consistently negatively correlated with the levels and changes in return on sales, but with lower estimated correlations and statistical significance.[20] This suggests that firms which are more likely to be manipulators during an IPO perform worse after the issue. Table 6 also presents correlations of post-issue earnings performance with cash flows from operations in the issue year. Cash flows from operations are positively associated with future income, and so are not contributing to the negative relation between the IPO-year abnormal accruals and future earnings performance. Thus, the evidence of negative correlations in Table 6 is consistent with opportunistic accruals management.

4.2. Regression Analyses

Next, we turn to cross-sectional regression analyses where we decompose the relative explanatory power of the four accruals variables (abnormal current and long-term accruals, and expected current and long-term accruals) for the earnings underperformance. Two dependent variables are considered in the regressions: the mean level of return on sales in years 1 through 3, and the change in return on sales in years 1 through 3 relative to base year 0.[21]

Besides the four accruals variables, we also include two other independent variables in the regression, the IPO-year cash flows from operations and capital expenditures. Cash flows from operations/sales are included to remove potential spurious correlations between the accruals variables and future earnings performance induced by contemporaneous correlations between the accruals and cash flows from operations in the IPO year. Cheng (1995) reports empirical evidence that firms which invest the proceeds from seasoned equity offerings experience less post-offering underperformance. Capital expenditures are calculated as the mean capital expenditures (item 128) in years 1 through 3 minus the mean capital expenditures in years -1 and 0, scaled by IPO-year total assets. According to Cheng's

Table 6. Spearman rank order correlations of performance-matched return on sales with IPO year matched-pair abnormal and expected accruals, Beneish M-score, and cash flows from operations/sales.

Panel A: Correlations with Level of Performance-Matched Return on Sales

Year	0	1	2	3	4	5	6
Matched-pair Abnormal Accruals	0.02	−0.14***	−0.12***	−0.10***	−0.09***	−0.10**	−0.13**
P-value	0.35	0.00	0.00	0.00	0.01	0.02	0.02
Observations	1644	1428	1191	976	775	531	313
Matched-pair Expected Accruals	−0.01	0.04	0.02	0.07**	0.02	−0.01	0.02
P-value	0.77	0.16	0.39	0.03	0.56	0.82	0.70
Observations	1644	1428	1191	976	775	531	313
Beneish M-score	0.04	−0.07**	−0.02	−0.01	−0.08**	−0.07	−0.19***
P-value	0.15	0.02	0.46	0.85	0.05	0.13	0.00
Observations	1302	1145	964	798	626	436	267
Cash Flows From Operations/Sales	0.10***	0.14***	0.10***	0.07**	0.06*	0.08**	0.21***
P-value	0.00	0.00	0.00	0.03	0.08	0.05	0.00
Observations	1673	1450	1208	990	785	538	317

Panel B: Correlations with Changes in Performance-Matched Return on Sales Relative to IPO-Year Return on Sales

Year	(0,1)	(0,2)	(0,3)	(0,4)	(0,5)	(0,6)
Matched-pair Abnormal Accruals	−0.14***	−0.12***	−0.10***	−0.10***	−0.09**	−0.13**
P-value	0.00	0.00	0.00	0.01	0.03	0.02
Observations	1428	1191	976	775	531	313
Matched-pair Expected Accruals	0.02	0.01	0.05	0.01	−0.03	0.01
P-value	0.41	0.82	0.11	0.87	0.49	0.84
Observations	1428	1191	976	775	531	313
Beneish M-score	−0.08***	−0.04	−0.02	−0.06	−0.06	−0.20***
P-value	0.00	0.20	0.66	0.11	0.18	0.00
Observations	1145	964	798	626	436	267
Cash Flows From Operations/Sales	0.12***	0.09***	0.04	0.03	0.05	0.16***
P-value	0.00	0.00	0.20	0.44	0.24	0.01
Observations	1450	1208	990	785	538	317

Note:
This table presents Spearman rank order correlations between performance-matched levels and changes in return on sales with abnormal and expected accruals, Beneish M-score, and performance-matched cash flows from operations/sales. Correlations with levels of return on sales from years 0 through 6 are in the top panel, and correlations with changes in return on sales from years 1 through 6 relative to year 0 are in the bottom panel. The performance-matched return on sales is the difference in performance-matched return on sales between IPO firms and the matched firm, as described in Table 2. The matched-pair asset-scaled abnormal and expected accruals are measured using the matched-pair model described in Table 3. The Beneish M-score is calculated as in equation (1) in the text. The performance-matched cash flows from operations/sales is the difference in cash flows from operations/sales between IPO firm and its matched firm.
***, **, and * represent significance at the 1%, 5%, and 10% levels respectively, two-tailed.

hypothesis, the estimated coefficient on capital expenditures in our regression is predicted to be positive.

Table 7 reports that the IPO year abnormal current accruals have the greatest predictive power for post-IPO earnings performance. The estimated coefficients on the abnormal current accruals variables are highly significantly negative, and are several orders of magnitude larger than the coefficients on the other accruals variables in absolute terms. Abnormal long-term accruals also predict future return on sales but not the decline in return on sales. In contrast, expected current or long-term accruals do not significantly predict future earnings performance. Like abnormal current accruals, the Beneish M-score also significantly predicts post-issue earnings underperformance. In all the regressions, the capital expenditure variable confirms Cheng's finding that IPO firms which invest the proceeds perform better post-issue. Finally, firms with high IPO-year cash flows from operations have high post-IPO return on sales and deterioration in the margins relative to the IPO year.

We also perform the cross-sectional regressions annually from 1989 to 1990 to reduce potential cross-correlation among the observations induced by year-specific economic conditions affecting both the earnings management measures and earnings performance. Table 8 presents summary statistics of the annual cross-sectional regressions. The t-statistics are based on the time-series standard deviations of the estimated coefficients. The results confirm the findings in the previous table. Among the four accruals measures, abnormal current accruals again dominate in terms of predictive power for future earnings performance. The Beneish M-score continues to have incremental explanatory power for future earnings performance. As before, the expected accruals do not have predictive power for future returns.

The contrast in the predictive power of abnormal accruals versus expected accruals in both the correlation and regression tests is important for our study. Any empirical model, such as the Jones (1991) model, will to some extent misclassify discretionary and non-discretionary components. It is difficult to rule out the possibility that the relation between discretionary accruals and the variable of interest may have been induced by the non-discretionary component. Since we find that expected accruals have no explanatory power for future earnings performance, spurious correlation seems unlikely. Any remaining non-discretionary component in abnormal accruals would, at worst, merely add noise to our abnormal accruals measure rather than induce bias in the estimated coefficient on abnormal accruals.

Furthermore, Subramanyam (1996) reports that discretionary and non-discretionary Jones model accruals are *positively* associated with one-year, two-year, and three-year ahead earnings. Thus, any induced spurious effects from the presence of non-discretionary accruals in our abnormal accruals measure would likely bias against our finding a *negative* correlation between abnormal accruals and subsequent earnings.

In addition, the contrast in our finding of a negative relation between abnormal accruals and subsequent earnings for IPO firms versus Subramanyam's positive relation for the average firm in the population is interesting for the earnings management hypothesis. All accruals ultimately reverse since accruals sum to zero within the life of the firm. The positive association reported by Subramanyam suggests that any potential reversal in future accruals does not result in lower future earnings for the average firm in the population because any

Table 7. Cross-sectional regressions predicting post-issue net income underperformance with IPO-year accruals, Beneish M-score, cash flows from operations, and capital expenditures.

	Dependent Variables Performance-Matched Return on Sales			
	Mean Level in Years 1–3		Mean Change in Years 1–3 Relative to Year 0	
	(1)	(2)	(3)	(4)
Independent variables	Parameter Estimates (T-statistics)		Parameter Estimates (T-statistics)	
Abnormal Current Accruals	−0.17***		−0.20***	
	(−6.46)		(−7.80)	
Abnormal Long-term Accruals	−0.11**		−0.06	
	(−1.98)		(−1.06)	
Expected Current Accruals	−0.00		−0.01	
	(−0.12)		(−0.21)	
Expected Long-term Accruals	0.06		0.12*	
	(0.89)		(1.76)	
Cash Flows from Operations	0.00**	0.00	−0.01***	−0.01**
	(0.47)	(0.79)	(−2.87)	(−1.99)
Capital Expenditures	0.07	0.13***	0.13***	0.15***
	(2.19)	(3.80)	(3.85)	(4.26)
Beneish M-score		−0.01***		−0.01***
		(−4.10)		(−4.60)
Regression Statistics				
Adjusted R-square	4.37%	3.86%	7.15%	4.86%
F-statistics	2.90	2.51	4.19	2.93
Prob(F)	0.0001	0.0001	0.0001	0.0001
Number of Observations	1286	1059	1286	1054

Note:
This table presents results from four cross-sectional regressions. The dependent variable in the first two regressions is the mean level of the return on sales in years 1 to 3, and in the next two regressions is the mean change in return on sales in years 1 to 3 relative to base year 0 (= fiscal year of IPO). The key independent variables in the first and third regressions are the four term-adjusted Jones model asset-scaled accruals variables (abnormal current accruals, abnormal long-term accruals, expected current accruals, and expected long-term accruals) in year 0, and in the second and fourth regressions is the Beneish M-score. The accruals variables and the Beneish M-scores are trimmed at the fifth and 95th percentiles. All four regressions include the following control variables: cash flows from operations/sales in year 0, capital expenditure growth (calculated as the mean capital expenditures in years 1 to 3 minus the mean capital expenditures in year −1 and 0), and a set of year and industry dummies (representing the industry groups listed in Table 1) which are not reported. Performance-matched return on sales and cash flows from operations/sales are used, accrual measures are from the matched-pair model, and Beneish M-score is as described in equation (1) in the text. ***, **, and * represent significance levels at the 1%, 5%, and 10% levels, two-tailed, respectively.

Table 8. Annual cross-sectional regressions predicting post-issue net income underperformance using IPO-year accruals and Beneish M-score.

Panel A: Dependent Variable is Mean Level of Performance-matched Return on Sales in Years 1 to 3

Independent Variables	Mean	T-statistics	Mean	T-statistics
Abnormal current accruals	−0.09**	−2.32		
Abnormal long-term accruals	−0.07	−1.69		
Expected current accruals	0.01	0.42		
Expected long-term accruals	0.02	0.50		
Cash flows from operations	0.05	1.41	0.05***	2.69
Capital expenditures	0.10***	3.36	0.18***	3.42
Beneish M-score			−0.01**	−2.44

Panel B: Dependent Variable is Mean Change in Performance-matched Return on Sales in Years 1 to 3 relative to Year 0

Independent Variables	Mean	T-statistics	Mean	T-statistics
Abnormal current accruals	−0.11***	−2.86		
Abnormal long-term accruals	−0.06	−1.49		
Expected current accruals	−0.01	−0.39		
Expected long-term accruals	0.00	0.05		
Cash flows from operations	0.03	0.88	0.07***	3.95
Capital expenditures	0.11***	3.60	0.19***	3.66
Beneish M-score			−0.01*	−1.93

Note:
This table presents the summary statistics of year-by-year regressions from 1980 to 1990. The dependent and independent variables are as described in Table 7. The accruals variables and Beneish M-scores are trimmed at the fifth and 95th percentiles. The time-series mean of the estimated coefficients is reported. The T-statistic is based on time-series standard deviation of the estimated coefficients.***, **, and * represent significance levels at the 1%, 5%, and 10% levels, two-tailed, respectively.

reversal in accruals may be more than compensated for by contemporaneous new accruals. (No net reversals are expected for steady-state firms and net increases in accruals, instead, are expected for growth firms.) In contrast, if the IPO-year accruals are opportunistically managed, their reversal in subsequent periods may be so large as to dominate any new accruals, resulting in a net reversal of accruals and hence a decline in future earnings.[22]

To summarize, we find that the earnings management proxies in the year of going public forecast the long-term decline in post-issue earnings performance, consistent with opportunistic earnings management. Abnormal current accruals has the greatest consistent explanatory power among all the proxies, perhaps because it is the component most easily subject to successful managerial manipulation.

5. Do Abnormal Accruals Predict Future Stock Returns?

We have so far focused on examining whether information contained in the IPO-year financial report, particularly in items related to abnormal accruals, is useful for predicting future earnings. We now evaluate whether investors understand and interpret this information correctly for valuing the IPO firm. Teoh, Welch, and Wong (1998a, 1998b) find that abnormal accruals have predictive power for stock returns after IPOs and seasoned equity offerings (SEOs), but that expected accruals do not. We provide here a robustness check on these results by examining whether post-IPO-year abnormal stock returns are predictable based on IPO-year expected accruals, abnormal accruals, and the Beneish M-score for our IPO sample, which covers a partially different time period from Teoh, Welch, and Wong (1998a). The predictive ability of the Beneish M-score for long-term future stock returns has not been studied previously.

We rank IPO firms by each of the three variables (abnormal accruals, expected accruals, and M-score) separately into quartile groups Q1 through Q4. Q1 has the lowest of the partitioning variables and Q4 the highest. For each quartile, the market-adjusted stock returns are computed for three 12-month holding periods beginning in the fourth month of fiscal years 1, 2, and 3, and one 36-month period beginning in the fourth month after the IPO fiscal year end. The market-adjusted returns for each IPO firm are computed as the IPO buy-and-hold returns minus the equivalent period CRSP value-weighted market index. Averaging over the market-adjusted returns for the IPO firms gives the quartile market-adjusted returns. These returns are graphed in Figure 3 and reported in Table 9. The p-values for the difference in the market-adjusted returns between Q1 and Q4 are also reported.

The results in Table 9, Panels A and B, confirm the ability of expected and abnormal accruals to predict post-issue stock returns. Panel A of Table 9 reports that the aggressive abnormal accruals quartile Q4 consistently earns poorer market-adjusted returns in all holding periods relative to the conservative quartile Q1. The difference is statistically significant in all the holding periods. (When the holding period is extended to the fourth year, the difference in the fourth year is not significant.) Over the 36-month holding period, the market-adjusted returns are -52% for Q4 and only -21% for Q1, indicating that aggressive IPO firms underperform conservative IPO firms by about 31%. A similar magnitude underperformance (29%) is observed when annual rebalanced market-adjusted returns are used; the market-adjusted returns are -44% for Q4 and -15% for Q1. As reported by Teoh, Welch, and Wong (1998a), expected accruals exhibit no predictive power. Panel B shows that in all holding periods, the four quartiles earn about the same market-adjusted returns.

Panel C of Table 9 reports on the Beneish M-score's predictive ability for future returns. Before we discuss the results, note that the mean M-score is about 2.8, median is -1.19. These scores suggest that a significant majority of IPO firms are considered likely manipulators by the Beneish model. Panel C indicates that the aggressive M-score quartile Q4 consistently underperforms the conservative quartile Q1. Over the 36-month holding period, Q4 underperforms by 32%, which is similar to that reported in Panel A. On an annual basis, the difference between Q1 and Q4 is less significant for Panel C than Panel A, suggesting possibly greater predictive power for abnormal accruals than the M-score.

Table 9. Post-issue market-adjusted stock returns in percent by IPO-year characteristics.

Panel A: By IPO-Year Abnormal Accrual Quartiles

	BH1	BH2	BH3	BH13
Q1 Conservative	•−4.05	•−6.53	•−5.36	−20.60
Q2	•−5.07	•−1.83	−10.00	−19.57
Q3	−11.35	•−2.29	•−2.30	−28.46
Q4 Aggressive	−18.86	−15.41	−18.77	−52.10
p-value (Q1–Q4)	–•0.00	–•0.09	–•0.01	–•0.00

Panel B: By IPO-Year Expected Accrual Quartiles

	BH1	BH2	BH3	BH13
Q1 Conservative	−10.62	•−9.94	•−9.24	−34.49
Q2	•−8.63	•−6.69	•−3.54	−26.39
Q3	−12.77	•−0.90	−11.46	−29.63
Q4 Aggressive	•−7.29	•−8.60	-11.74	−30.20
p-value (Q1–Q4)	•–0.56	–•0.85	–•0.61	–•0.67

Panel C: By IPO-Year Beneish M-score

	BH1	BH2	BH3	BH13
Q1 Conservative	•−3.81	•–0.23	•−6.69	−16.69
Q2	•−4.26	•−5.08	•−2.04	−20.54
Q3	−12.77	•−7.56	•−6.77	−30.56
Q4 Aggressive	−15.03	−10.75	−19.05	−48.28
p-value (Q1–Q4)	•–0.13	–•0.21	–•0.02	–•0.00

Note:
This table reports market-adjusted returns by quartiles ranked on IPO fiscal-year abnormal and expected asset-scaled accruals, and the Beneish M-scores in panels A, B, and C respectively. The abnormal and expected accruals are as defined in Tables 2 and 3, and the Beneish M-score in Table 6. The market-adjusted returns are calculated as the buy-and-hold stock returns for the IPO firm minus the buy-and-hold CRSP value-weighted stock market index over the equivalent holding period. Market-adjusted returns are computed over three 12-month holding periods, BH1, BH2, BH3, for each consecutive year after the IPO fiscal year, and one 36-month holding period, BH13, for the three years from the IPO fiscal year. The returns are compounded starting in the fourth month of the fiscal year to allow for a reporting lag. The market-adjusted returns for each quartile are obtained by averaging over all IPOs belonging to the quartile. See Tables 2 and 3 for definitions of the accruals and net income variables. Two-tailed p-values are reported for the significance of the t-test between market-adjusted returns for conservative quartile 1 and aggressive quartile 4. When the 36-month market-adjusted returns are computed with annual rebalancing, quartile 4 underperforms quartile 1 in Panels A and C, but not in Panel B.

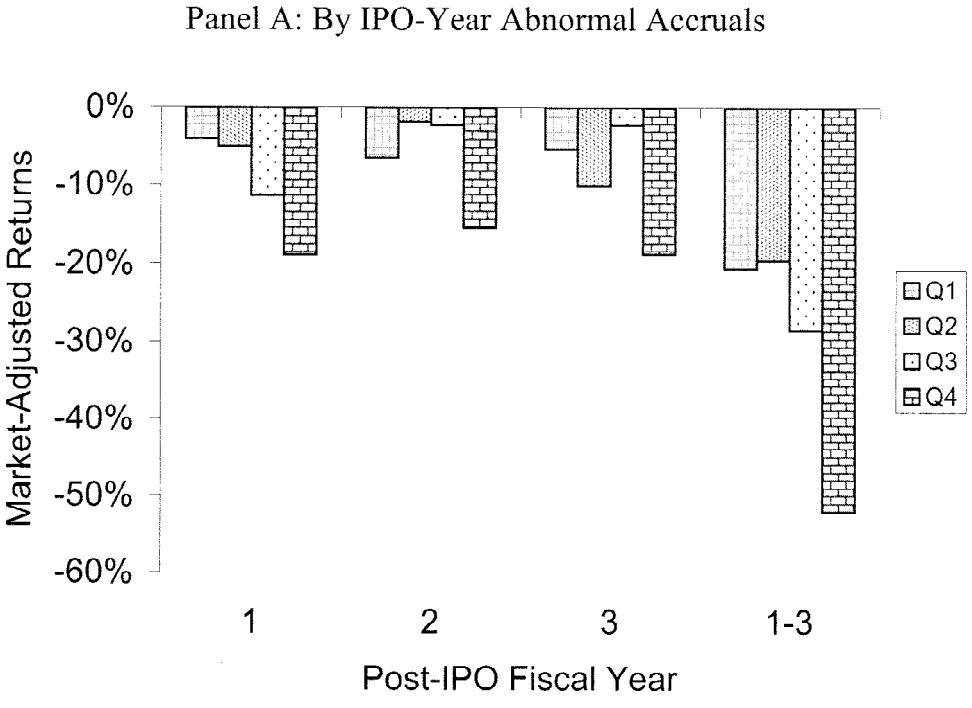

Figure 3. Market-adjusted stock returns by IPO-year abnormal accruals, expected accruals, and Beneish M-score quartiles.

These results suggest that the market is inefficient with respect to information in IPO-year abnormal accruals and the Beneish M-score. Together, the results suggest the following earnings-management based explanation for the long-run stock return anomaly. Opportunistic accruals at the time of the issue mislead investors into overoptimism about future earnings prospects. Subsequently, when earnings fall, investors realize that the high issue accruals were opportunistic and not reflective of fundamentals. As a result, the firm is on average revalued downwards in the years after the offering.

This explanation is consistent with our combined findings that abnormal accruals are high in the issue year, and that high abnormal accruals predict both low future earnings and low future stock market returns. Earnings predictability alone does not necessarily imply the returns' predictability or vice versa. For example, even if managers adjust accruals opportunistically, if investors rationally take this into account there will be no abnormal stock returns.[23] This would lead to abnormal accruals and earnings predictability without return predictability. Alternatively, investors could fail to account properly for information in accruals even when there is no opportunism and accruals appropriately reflect future firm prospects. If so, abnormal accruals would predict future stock returns, and yet not be

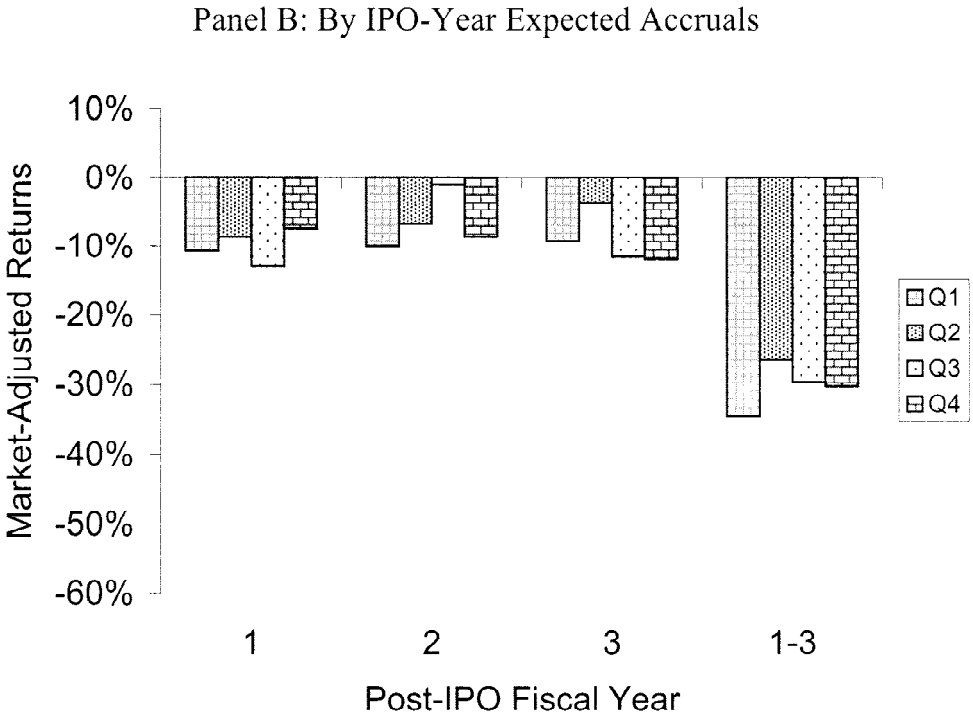

Figure 3. Continued.

negatively related to future earnings. Basically, long-run stock returns are determined by the direction of market inefficiency (investors' overoptimism or overpessimism in forming expectations). In contrast, long-run earnings are unrelated to market inefficiency, and instead depend solely on whether the event (new issue) is associated with good or bad prospects for the firm. The joint results of high abnormal issue-year accruals, and abnormal accruals and M-scores that predict both future earnings and stock returns underperformance, suggest that investors may have been misled by opportunistic earnings management at the time of the IPO.

6. Supplementary Analyses of Individual Accounting Items

Given the evidence consistent with opportunistic accruals management, we explore in more detail two accounting accrual items related to the two key Jones explanatory variables. We compare depreciation methods and the allowance for bad debts of IPO firms with their earnings-performance matches in Table 10 and Figure 4. Depreciation methods are ranked from most income-increasing to least in the following manner: straight-line, combination

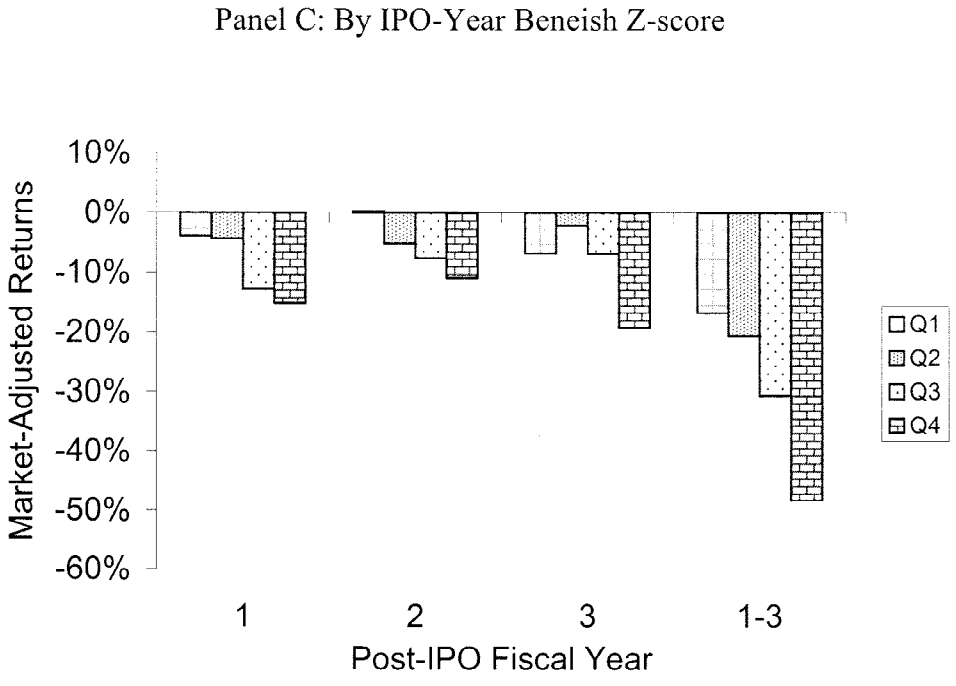

Figure 3. Continued.

of straight-line and accelerated, and accelerated. The depreciation methods of IPO firms are compared with their matches, and placed in three categories in Panel A depending on whether the IPO firms' choices are more or less income-increasing than their matches. Panel B compares the allowance for bad debts as a fraction of gross accounts receivable between IPO firms and their matches.

Panel A shows that a majority of IPO firms uses depreciation methods similar to their matches in all years. That IPO firms generally follow the industry norm is not surprising since depreciation method choices are relatively more transparent than abnormal accrual choices. However, Table 10 also shows that a substantial fraction of IPO firms deviate from their matches (between 30%–40%). Most relevantly, when IPO firms deviate, a significant majority (58.8%) uses more income-increasing depreciation than their matches. The Z-statistic test for significance of the relative fraction of income-increasing to income-decreasing observations is calculated as the normal approximation to the binomial distribution with continuity correction. While the number of IPO deviants decrease over time, the Z-statistic remains positive and highly significant throughout the sample window.[24]

Panel B shows that IPO firms on average allow significantly less for bad debts than the matched firms in the year before going public and during the offering year. Differences in both the median and mean statistics are highly significant in years -1 and 0; the magnitude

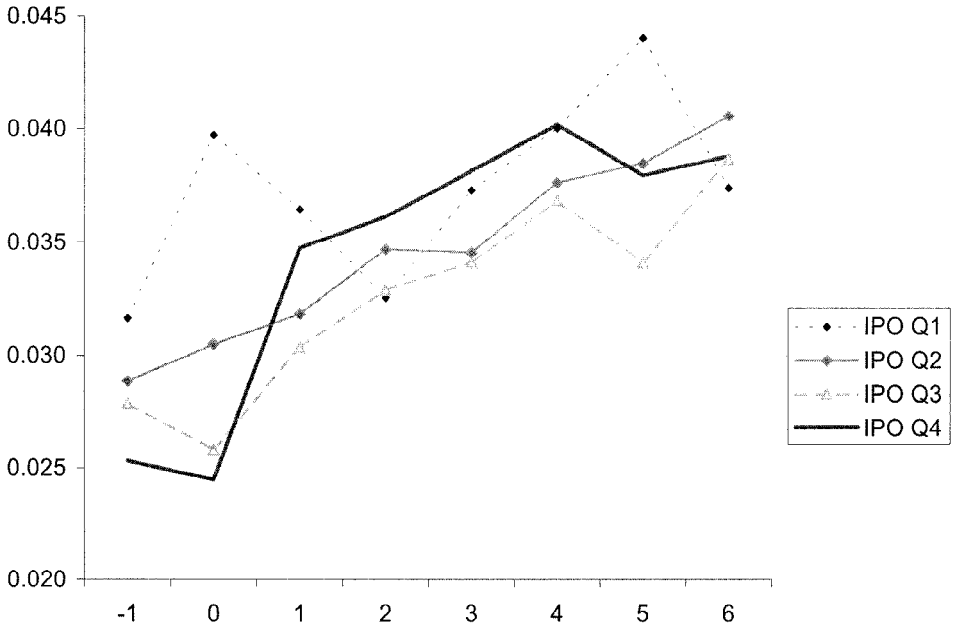

Figure 4. IPO median allowance for accounts receivables/gross accounts receivables by abnormal accrual quartiles.

Table 10. Depreciation policy and provision for uncollectible accounts receivable of IPOs in years −1 through 6 relative to issue year.

Panel A: Depreciation Policy Relative to Matched Firm

Year	Income Decreasing #	Income Decreasing %	Income Increasing #	Income Increasing %	Equivalent #	Equivalent %	Z (Income-increasing)
−1	240	15.2	334	21.1	1008	63.7	3.88***
–0	237	14.7	330	20.5	1040	64.7	3.86***
–1	197	13.9	299	21.2	•917	64.9	4.54***
–2	160	13.4	238	19.9	•798	66.7	3.86***
–3	132	13.1	201	20.0	•674	66.9	3.73***
–4	103	12.7	163	20.0	•547	67.3	3.62***
–5	•72	11.3	124	19.4	•444	69.4	3.64***
–6	•47	11.7	•76	18.9	•279	69.4	2.52***

of the mean difference is especially large. For post-IPO years, no significant difference in median statistics for the allowance for bad debt is observed from year +1 onwards, unlike the results for depreciation choice. Depreciation policy is highly visible, so firms are less likely to change depreciation policy over time. On the other hand, it is probably quickly apparent that accounts receivables are uncollectible over time, so a firm is unlikely to get auditor approval for continued low provision for uncollectibles over a long time period when

Panel B: Allowance for Uncollectible Accounts Receivable/Gross Accounts Receivables (%)

Year	Median			Mean		
	IPO	Match	Difference	IPO	Match	Difference
−1	2.80	3.37	−0.23***	6.82	9.90	−2.90***
–0	2.91	3.51	−0.16***	6.96	9.24	−1.86***
–1	3.32	3.49	0.00	7.57	8.43	−1.43**
–2	3.46	3.50	−0.05	7.18	8.00	−1.53**
–3	3.62	3.57	0.00	6.91	8.07	−1.46**
–4	3.81	3.50	0.20	7.29	7.78	−0.33
–5	3.77	3.46	0.00	6.58	6.94	−0.98*
–6	3.85	3.55	0.00	7.28	7.05	−0.22

Note:
The depreciation methods are grouped into three categories: accelerated, straight line, and a combination of straight-line and accelerated. Straight-line is viewed as most income-increasing, then the combination, and finally accelerated. Thus, the income-increasing group includes any observation where the IPO firm uses a more income-increasing method than the matched firm. the income-decreasing group includes observations when the opposite is true. In the equivalent group, the IPO and matched firm belong to the same depreciation category.
The Z-statistic tests for significance of whether the fraction of income-increasing firms among deviant firms (income-increasing and income-decreasing firms) is different from 1/2. It is obtained using the normal approximation with continuity correction to the binomial distribution. Panel B considers the allowance for bad debts as a fraction of the gross accounts receivable. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively using a two-tailed test.

the firm is underperforming. Figure 4 shows an order reversal for allowance for doubtful accounts receivables/gross accounts receivables across the four abnormal accruals quartiles over the post-IPO period. In year 0, the provision for bad debts monotonically decreases across the abnormal current accruals quartiles. The most aggressive accruers provided for the smallest amount of bad debts and the most conservative provided for the most. By year 2, this order is flipped so that the provision for bad debts by aggressive accruers now exceeds that by the conservative accruers. Between years 0 and 2, the aggressive accruers have increased the provision for bad debts the most, whereas there is no change in provision for the conservative accruers.

Taken together, the evidence in Table 10 suggests that IPO firms tend to be more aggressive in their accounting choices. They prefer income-increasing choices in depreciation methods when they deviate from their similar-performing matches, and generally provide for less bad debt expenses relative to their accounts receivable than their matches. Such behaviors are consistent with opportunistic earnings management.[25]

7. Conclusion

This paper examines the hypothesis that managers select accruals at the time of the IPO to report high earnings opportunistically. We find evidence consistent with opportunistic accruals management. During the year of going public, the return on sales of IPO firms is

significantly higher relative to subsequent years, and relative to non-issuing industry peers. Post-issue, IPO firms earn significantly less than non-issuing industry peers and previously similarly-performing matched non-issuers. We provide evidence that this time series pattern of earnings is derived from a similar time series pattern of abnormal accruals; that is, IPO firms report high earnings during the IPO by reporting abnormal accruals aggressively. After issue, when the high abnormal accruals cannot be sustained, the IPO firms' earnings underperform relative to their matched firms and non-issuing industry peers. The results are robust under alternative benchmarks for abnormal accruals.

Most interestingly, we find evidence that our term-adjusted Jones model abnormal accruals, specifically abnormal current accruals, explains the post-issue underperformance in earnings. IPO firms with high abnormal current accruals at the time of issue subsequently underperform most in the three years after the issue. In contrast, expected current and long-term accruals do not explain the post-issue earnings underperformance. The evidence on abnormal current accruals contrasts with Subramanyam (1996), who finds in a general sample (not just IPOs) that high accruals predict *high* future earnings. Teoh, Welch, and Wong (1998a) find that abnormal accruals predict future stock returns. We find here that these results are robust to using alternative benchmarks for abnormal accruals.

Additionally, we examine the accounting method choices of the IPO firms during the year of going public. We find that when compared with similarly performing non-issuing industry peers, IPO firms use more income-increasing depreciation methods and provide significantly less for uncollectible accounts receivable. Taken altogether, the evidence is consistent with firms inflating earnings when going public by opportunistically managing current accruals. Lastly, our finding of opportunistic accruals and the results in other related papers offer an earnings management explanation for the new issues anomaly.

These findings are potentially useful to investors, managers, and regulators. Investors are concerned about how accruals management might affect the long-term future stock returns of new securities. Managers and issuing firms are concerned about how accruals management might affect the cost of equity. If constraints on opportunistic accruals management are ineffective, then we would expect firm-value-maximizing managers to window-dress earnings to obtain capital more cheaply. This may be undesirable if the cheap capital comes at the expense of unwitting investors. Finally, these findings are relevant to accounting and financial policy regulators who are concerned about the informativeness of accounting numbers. The efficiency of the capital market, in part, depends on how accurately accounting information communicates firm performance.

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Notes

1. We separate accruals into current and long-term components when appropriate to examine whether there are differential net incentives and opportunities in managing these components.
2. In Section 1, we discuss why earnings management, if it exists, is likely to persist into the issue year.
3. This generalization is based on discussions with the head of the equity syndicate at a large New York underwriter, and evidence that offer price is positively related to reported earnings per share (see Rao (1993)).
4. An earlier version of the paper examines pre-issue accruals for 130 issuers and finds qualitatively similar results.
5. The SEC acknowledges that stabilization is a form of price manipulation but permits it in the belief that the success of firm commitment underwriting depends on the ability of the underwriter to sell securities at or near the offer price. See Hanley, Kumar, and Seguin (1993) for a description of the regulation of price stabilization in the IPO market.
6. Beneish (1995) estimates gains to insiders from violating GAAP. He finds that the two predominant incentives to violating GAAP are associated with new offerings and insider sales subsequent to the offerings. Seven of the 64 GAAP violators undertook IPOs of which 6 involved insider sales, and 18 undertook seasoned equity offerings (SEOs) of which 13 involved insider sales. The estimated gain to insiders is $5.9m for IPOs and $29.2m for SEOs. The estimated gain from insider sales subsequent to IPOs and SEOs are an even larger amount of $73.9m. Thus, for this sample of violators, there is a strong incentive for managers to sustain earnings management until after the lock-up period when they can sell their holdings to realize gains.
7. The boilerplate in the prospectus of US IPOs does not include earnings projections, possibly out of the investment banker's fear of lawsuits. In the UK, written earnings projections are mandatory.
8. It has been suggested in media articles and it is our impression from conversations with specialists that underwriter firm analysts are under pressure to forecast high earnings to help establish the underwriter's reputation of issuing shares that tend to go "up" in the short run after the offering; see examples and references in Teoh and Wong (1998).
9. Jay Ritter generously provided an initial sample of IPO firms going public from 1980–84. We supplemented the sample from Securities Data Co. for firms going public between 1985–1990.
10. Previous empirical studies have reported the presence of earnings management to benefit the firm or management in some contexts but not others, and they have differed in the model used for estimating the abnormal component of accruals. Earnings management has been found to be used to strengthen claims of harm from foreign imports (Jones, 1991), to reduce regulatory costs imposed by capital ratio requirements on banks (Moyer, 1990), to loosen debt covenant constraints (DeFond and Jiambalvo, 1994), and to smooth earnings to time debt-equity swaps (Hand, 1989). Liberty and Zimmerman (1986) report no evidence of earnings management prior to an upcoming union negotiation and Pourciau (1993) finds no evidence of earnings management prior to a non-routine management departure. There is conflicting evidence for whether earnings are managed to affect executive bonuses and prior to a management buy-out. See Healy (1985), McNichols and Wilson (1988), Gaver, Gaver, and Austin (1995), and Holthausen, Larcker, and Sloan (1995) for studies on earnings management and executive bonuses. Perry and Williams (1994) find evidence of earnings management prior to management buy-outs, which reverses the evidence reported in DeAngelo (1986).

11. Cash flows from operations are unavailable from Compustat prior to 1987, and so is computed as the difference between funds flow from operations (item 110) minus working capital accruals. This definition has been used by Bowen, Burgstahler, and Daley (1986), and DeFond and Jiambalvo (1994) among others. Note that cash flows from operations are estimated as item 110 when working capital accruals are not reported separately in the funds flow statement (format code for item 318 is 2) or the cash by activity statement (format code for item 318 is 3) because Compustat already excludes working capital accruals from item 110 in these cases. See page 111 of Compustat 1994 manual.
12. DeAngelo (1986), Aharony, Lin, and Loeb (1993) and Friedlan (1994) use the year-to-year *changes* in a firm's accruals as a measure of abnormal accruals. This differenced approach has several disadvantages for IPOs. If accruals are independent, and identically distributed with constant mean and variance, differencing will induce a negative serial correlation (of -0.5); see Dechow (1994) and Choi, Gramlich, and Thomas (1993). The latter report that first differences adequately capture abnormal long-term accruals (e.g. depreciation) but not abnormal current accruals. Furthermore, the differenced measure can be perverse if earnings management occurs in periods prior to the test period. The differenced measure is particularly suspect for examining immediate post-IPO accruals, because the benchmark period (just prior to the IPO) may have been also manipulated.
13. See Guay, Kothari, and Watts (1996) and Healy (1996).
14. We do not focus explicitly on fraudulent reporting behavior. However, it is possible that firms with high abnormal accruals may be found later to have reported fraudulently. We found relatively few cases of subsequent revelation of fraud in the IPO sample. Of the sample of 159 SEC actions involving alleged financial fraud from January 1, 1980, to December 31, 1985, which was generously provided by Mike Maher, we found only three cases associated with IPO firms.
15. For a given year t, the variables in the Beneish's M-score, with the Compustat data item numbers in brackets are:

$$\text{Days sales in receivables} = \frac{\text{Receivables}_t[2]}{\text{Sales}_t[12]} \Big/ \frac{\text{Receivables}_{t-1}}{\text{Sales}_{t-1}}$$

$$\text{Gross margin} = \left[1 - \frac{\text{Cost of goods sold}_{t-1}[14]}{\text{Sales}_{t-1}[12]}\right] \Big/ \left[1 - \frac{\text{Cost of goods sold}_t}{\text{Sales}_t}\right]$$

$$\text{Asset quality} = \left[1 - \frac{\text{current assets}_t[4] + \text{PPE}_t[8]}{\text{Total assets}_t[6]}\right] \Big/ \left[1 - \frac{\text{current assets}_{t-1} + \text{PPE}_{t-1}}{\text{Total assets}_{t-1}}\right]$$

$$\text{Sales growth} = \text{Sales}_t[12]/\text{Sales}_{t-1}$$

$$\text{Depreciation} = \left[\frac{\text{Depreciation}_{t-1}[14-65]}{\text{Depreciation}_{t-1} + \text{PPE}_{t-1}[8]}\right] \Big/ \left[\frac{\text{Depreciation}_t}{\text{Depreciation}_t + \text{PPE}_t}\right]$$

$$\text{SGA} = \left[\frac{\text{SGA expense}_t[189]}{\text{Sales}_t[2]}\right] \Big/ \left[\frac{\text{SGA expense}_{t-1}}{\text{Sales}_{t-1}}\right]$$

$$\text{Leverage index} = \left[\frac{\text{LTD}_t[93] + \text{Current liabilities}_t[5]}{\text{Total assets}_t[6]}\right] \Big/ \left[\frac{\text{LTD}_{t-1} + \text{Current liabilities}_{t-1}}{\text{Total assets}_{t-1}}\right]$$

$$\text{Accruals} = (\text{working capital accruals} - \text{depreciation}[14])/\text{total assets}.$$

See Section 2.1 for the Compustat items to compute working capital accruals. A later model in Beneish (1997) includes additional variables such as the amount of time listed on the exchange, abnormal returns in prior periods (usually 12 previous months), dummy variable for number of consecutive quarters with positive abnormal accruals, and a slightly different variant of the leverage index.
16. Net income is measured as Compustat item 172, the bottom line net income. The results using earnings before interest and taxes (item 18) are qualitatively similar, and are not reported here. We focus on bottom line net income because it is the number reported in an earnings announcement in the *Wall Street Journal*, and is more comprehensive than item 18. Thus, we can capture more fully the effects of discretionary reporting choices, such as extraordinary items, on the earnings performance. The results are also robust with respect to scaling by beginning total assets.
17. The median return on assets is 5.47, 3.50, 2.20, 2.00, and 1.62 in years 0, 1, 2, 3, and 4. A similar pattern is observed using means.

18. We also examine whether the post-issue earnings underperformance is unique to IPO firms or is common also to non-IPO firms following large abnormal current accruals. Instead of matching by prior earnings performance, we consider an alternative benchmark based on abnormal current accruals. All firms excluding our test sample are ranked by their abnormal current accruals in each year. All non-IPO firms with abnormal current accruals above 0.334 (IPO-firm top abnormal accruals quintile cut-off) belong to the aggressive non-IPO portfolio. (We did not use quartile cut-offs because the aggressive IPO firm's abnormal current accruals remain significantly higher than the matched firm portfolio in the year of the match.) The median of the aggressive non-IPO portfolio is used as the relative benchmark.
    The IPO-aggressive quartile firms' median abnormal current accruals are lower in years 0, 4, 5, and 6, and higher in years 1, 2, and 3 when compared with the non-IPO aggressive portfolio medians. The higher abnormal accruals immediately post-IPO suggests a more persistent incentive to manage earnings for IPO firms than for non-issuing firms. However, this evidence is weak because only year 1 median difference is statistically significant at conventional levels.
    The median return on sales is statistically lower for the aggressive IPO firms than for the aggressive non-IPO firms in all years subsequent to the matched year. Thus, it appears that the subsequent decline in performance is somewhat worse for IPO firms than for non-IPO firms.
19. Correlations using IPO-firm abnormal accruals (not the matched-pair measure) yield similar qualitative results and so are not reported.
20. Correlations of Beneish M-score with industry-relative earnings levels and changes yield stronger significance; with levels they are -0.01, -0.11^{***}, -0.15^{***}, -0.09^{***}, -0.13^{***}, and -0.11^{***}; and with changes they are -0.12^{***}, -0.12^{***}, -0.08^{**}, -0.12^{***}, and -0.11^{***}, respectively. A possible explanation for the higher significance is that the Beneish M-score captures some normal mean reversion of high earnings which is removed by the performance-matching procedure.
21. Various windows for return on sales were considered, and the results were qualitatively similar and so are not reported.
22. We examine whether the negative relation between accruals and subsequent earnings is special to IPO firms or is also present for non-IPO firms with large accruals. We match IPO firms with non-IPO firms by the size of IPO-year total accruals. We calculate the matched-relative abnormal accruals and we adjust the earnings performance measure by subtracting the IPO firm's return on sales by the accruals-matched firm's return on sales. Using rank correlations, these adjusted abnormal accruals continue to predict significantly the earnings performance in years $+1$, $+2$, and $+3$, and the change in earnings performance between years $+1$ and $+2$ and between $+2$ and $+3$.
    Note that this procedure yields a rather conservative test for earnings management. In our sample, we find that the matched firms have even higher abnormal accruals than the IPO firms in the year of the match. If there is a mechanical reversal effect for abnormal accruals rather than total accruals, the accruals-matched firm will have greater subsequent reversals and hence lower subsequent earnings than the IPO firm. In addition, the matched firms may have non-IPO related incentives to also manipulate earnings. Thus, the matched-relative abnormal accruals measure, here, proxies for incremental earnings management incentives for IPOs beyond non-IPO earnings management incentives.
23. This raises the question of why firms manage accruals opportunistically when investors correctly discount for the amount of earnings management. The models of Narayanan (1985) and Stein (1989) of boosting short-term cash flows provide useful insights for why this can occur. In these models, firms attempt to improve short-term cash flows even though investors fully discount for the fact that results are not as good as they seem. In the context of accruals management, the reasoning is somewhat different. Suppose that investors do not know what level of accruals is appropriate. Were investors to believe no earnings management would occur, then there would be an incentive to manage earnings. By increasing accruals, a firm would seem in the short run to be doing well. Thus, under appropriate assumptions, no earnings management is not a viable equilibrium. Instead, investors will correctly conjecture the positive average amount of earnings management that takes place. If the entrepreneur were to make the mistake of failing to inflate earnings, the offering would be undervalued by investors. Of course, if investors fail to discount rationally for the management of accruals, this adds a further incentive to inflate earnings at the time of the IPO in order to mislead investors.

24. Neill, Pourciau, and Schaefer (1995) report that 436 IPOs use liberal accounting methods while only 69 IPOs use conservative methods, in their sample, by defining firms as conservative if they choose accelerated depreciation and LIFO cost flow assumption; all others are classified as liberal. We compare IPO firms with similar high-performing matches, and as Beneish (1995) suggests, find they are also likely aggressive reporters. Thus, our comparisons are more conservative than reported in Neill, Pourciau, and Schaefer.
25. In a previous draft, we also evaluate the relation between abnormal accruals and firm/offering characteristics representing incentives and opportunities to engage in opportunistic earnings management. We find that younger firms, more risky issues, and larger issues tend to have greater opportunistic earnings management.

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