Earnings Management Prior to Initial Public Offerings: Evidence from Secondary Share Data

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Ritter (1991) first documented the long-run underperformance of initial public offering (IPO) firms. This underperformance has become known as ***the new issues puzzle****. One possible explanation for the new issues puzzle is that managers may manipulate earnings upwards prior to IPOs, inducing mis-pricing that is reversed during the years following the issue (Teoh, Welch, and Wong, 1998a). I compare the performance-matched discretionary accruals and the long-run abnormal stock performance of firms issuing only primary shares with those of firms issuing only secondary shares or a combination of primary and secondary shares to examine this explanation. I find evidence supporting the hypothesis that earnings management contributes to the long-run under-performance of initial public offerings.*

Introduction

Since Ritter (1991) first documented the long-run underperformance of initial public offering (IPO) firms, the cause of this anomaly has been debated. Ritter (1991), Lerner (1994), Loughran and Ritter (1995 and 2000), and Baker and Wurgler (2000) offer theories based on asymmetric information. They suggest that managers take advantage of asymmetric information by issuing stock when it is overvalued, leading to negative abnormal returns as the market corrects the mispricing. Fama (1998) and Eckbo and Norli (2004) disagree. They offer rational explanations based on omitted risk factors and methodological issues. Teoh, Welch, and Wong (1998a), and Teoh, Wong, and Rao (1998) extend the asymmetric information argument, adding an earnings management component. They suggest that firms may not only take advantage of mispricing by issuing stock when it is overvalued, but also may contribute to or induce mispricing by manipulating earnings prior to a stock issue.

In this paper, I use primary and secondary share data to further examine the earnings management theory for underperformance. Specifically, I compare the performance-matched discretionary accruals and abnormal stock performance of firms issuing only primary shares with those of firms that issue a combination of primary and secondary (or all secondary) shares. I then use regression analysis to

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determine if the presence of secondary shares explains the level of discretionary accruals, and to examine how these variables impact the abnormal stock performance following the IPO.

Consistent with the liability avoidance theory, I find evidence that firms issuing only primary shares manage earnings upwards, while firms issuing secondary shares do not manage earnings upwards or manage earnings downwards. In addition, I find that the abnormal stock performance of these groups is consistent with the hypothesis that earnings management contributes to the underperformance of IPO firms.

Related Literature

Ritter (1991) first documented the long-run underperformance of initial public offerings. He found that IPO firms underperformed non-issuing firms, matched by size and industry, by an average of 27 percent over the three years following the issue. Loughran and Ritter (1995) found similar underperformance for both IPO and SEO firms. This underperformance following IPOs and SEOs has become known as *the new issues puzzle*.[1] Since these initial studies, several studies have shed more light on the issue. The majority of the literature in this area examines possible explanations of this anomaly, and these explanations have become the subject of much research and debate. The debate centers on whether a market inefficiency exists.

One potential inefficiency explanation is discussed by Ritter (1991), Lerner (1994), Loughran and Ritter (1995 and 2000), and Baker and Wurgler (2000). They suggest that managers take advantage of asymmetric information by issuing stock when their firms' stock specifically or equities in general are overvalued. As the true value of the firm is revealed through time, the stock price corrects, resulting in underperformance. Rangan (1998), Teoh, Welch, and Wong (1998a and 1998b), and Teoh, Wong, and Rao (1998) extend this idea. They suggest that some firms may manage earnings upwards to induce mispricing. The incentive for doing so is clear. Higher earnings produce higher stock prices, and higher stock prices produce greater proceeds from the stock issue with less dilution of earnings and control.

To test this hypothesis for IPO firms, Teoh, Welch and Wong (1998a) divide their IPO sample into quartiles based on discretionary accruals (their proxy for earnings management) and examine the abnormal returns across the quartiles. Consistent with this hypothesis, they find firms in the lowest quartile (those with the lowest levels of earnings management as proxied by discretionary accruals) significantly outperform those firms in the highest quartile (high earnings management firms) by about 20 percent over the three years following the issue. Supporting this finding, Teoh, Wong, and Rao (1998) find that IPO firms also have poor earnings performance following their IPOs and that the poor earnings performance is

[1]While the new issues puzzle refers to the underperformance following both IPOs and SEOs, this paper examines only IPO firms. For the related examination of SEO firms, see Cotten (2008).

explained by discretionary accruals. In addition, they too find that the abnormal stock returns of low earnings management firms are significantly higher than those of high earnings management firms. Thus, each of these studies finds evidence supporting the earnings management hypothesis.

To counter the explanations based on inefficiency above, several studies discuss rational explanations. Eckbo, Masulis, and Norli (2000) and Eckbo and Norli (2004) argue that the new issues puzzle can be explained by omitted risk factors. Eckbo, Masulis, and Norli (2000) provide evidence to this effect relating to SEOs, while Eckbo and Norli (2004) do so for IPO firms. Likewise, Fama (1998) argues that the new issues puzzle disappears with reasonable methodological changes: the use of the three factor model (Fama and French, 1993) to generate expected returns and the use of alternative return metrics. Finally, Brav and Gompers (1997) and Brav, Geczy, and Gompers (2000) show that underperformance is concentrated in small, low book-to-market firms and conclude that the return patterns seen following IPOs are not anomalous, but reflect the return pattern seen in the market as a whole.

This article contributes to this literature in several respects. First, I propose and test two theories regarding differing earnings management incentives faced by firms issuing only primary shares and firms issuing a combination of primary and secondary (or all secondary) shares. Second, I examine whether differences in abnormal stock performance between these groups of firms are consistent with the earnings management explanation for the underperformance of IPO firms. Third, I conduct regression analysis to determine if the issuance of secondary shares explains earnings management and to determine if earnings management explains the abnormal returns to IPO firms. In addition, I use performance-matched discretionary accruals in my analysis. Prior studies (Teoh, Wong, and Rao, 1998 and Teoh, Welch, and Wong, 1998a) do not utilize performance-matching when calculating discretionary accruals for use in their return analysis.[2]

Earnings Management and the IPO Process

The Incentive to Manage Earnings

Teoh, Wong, and Rao (1998) note that insiders have both the incentive and opportunity to manage earnings upward prior to an IPO. The incentive is clear. Insiders would like to issue shares at the highest price possible, as this would allow the company to raise the necessary capital with less dilution of earnings and control. Higher earnings lead to higher issue prices, as underwriters commonly use the P/E ratios of other firms in the IPO firm's industry and the IPO firm's earnings to set the offer price.[3] Thus, firms have an incentive to manage earnings upwards as higher

[2]Teoh, Wong, and Rao (1998) do use performance matching in some of their earnings performance analysis, but not in their analysis of stock performance.

[3]Teoh, Wong, and Rao (1998) support this, citing conversations with the head of the equity syndicate at a large New York underwriter.

earnings lead directly to higher prices and higher prices lead to a lower cost of capital.

The opportunity to manage earnings is also likely to be high for IPO firms. Teoh, Wong, and Rao (1998) discuss two reasons for this. First, under current accounting guidelines, a firm is allowed to change any accounting principles and restate all financial statements prior to issuing its initial prospectus. This provides firms with substantial opportunities to manage earnings. Second there is often little public information about IPO firms from outside sources prior to IPOs. This lack of outside information leaves investors with few objective sources to use in assessing the value of the firm or judging the quality of earnings.

Teoh, Wong, and Rao (1998) and Teoh, Welch, and Wong (1998a) each find evidence that firms are tempted by these incentives discussed above and do take advantage of the opportunity by managing earnings upwards. The next section proposes two additional earnings management incentives that impact firms issuing only primary shares and firms issuing a combination of primary and secondary (or only secondary) shares differently.

Incentives Relating to Primary and Secondary Shares

The primary reason companies go public is to raise capital. A company issues shares and uses the proceeds to fund its investments. In many offerings, however, all of the proceeds do not go to the company. In these instances, some of the shares sold belong to the company's private shareholders who are cashing out some or all of their holdings. The shares issued by the company are known as *primary shares*, and the shares sold by the insiders are called *secondary shares*. In rare cases, an issue may consist entirely of secondary shares, but more often an issue is composed entirely of primary shares or is a mixture of primary and secondary shares. In this study I refer to firms issuing only primary shares as *primary issue firms*, and I refer to firms issuing a mixture of primary and secondary shares (or only secondary shares) as *secondary issue firms*.

I identify two earnings management incentives that lead to the hypothesis that primary issue firms and secondary firms will have differing levels of earnings management. First, one could argue that secondary issue firms would have higher accruals because the insiders cashing out would have an even greater incentive to manage earnings upwards than primary issue firms. Here, the insiders cashing out have the added personal incentive to manage earnings upwards to maximize their payout. I refer to this theory as the *cashing out theory*. Second, DuCharme, Malatesta, and Sefcik (2004) find that the likelihood of lawsuits following stock offers and settlement amounts are positively related to discretionary accruals. Thus, one could also argue that secondary issue firms would have lower discretionary accruals for two reasons. First the fact that insiders are cashing out may lead to greater scrutiny and skepticism of their earnings. Second, perhaps more likely, the fact that insiders

are cashing out may increase the likelihood of and the success of shareholder lawsuits in the event of poor stock performance. Thus insiders, wanting to minimize the likelihood of litigation, may choose not to manage earnings upwards or even to manage earnings downwards to increase the likelihood of strong performance in the future. I refer to this theory as the *liability avoidance theory*.

Note that although the cashing out theory and the liability avoidance theory offer different predictions as to the levels of discretionary accruals for secondary issue firms, both theories predict that primary issue firms and secondary issue firms will have different levels of earnings management. As this is the case, comparisons of the discretionary accruals and abnormal stock performance between primary issue and secondary issue firms and examinations of the relationships between discretionary accruals, secondary shares, and abnormal stock performance can be used to test the hypothesis that earnings management contributes to the negative long-run abnormal returns of IPO firms.

In my analysis, I first address the question of which, if either, theory of IPO earnings management holds. Then I address the question of whether or not earnings management can explain the underperformance of IPO firms.

Discretionary Accruals- Proxies for Earnings Management

Overview and Model Selection

In this research, I use discretionary accruals as my proxy for earnings management. The majority of earnings management studies use accrual-based models for detecting earnings management. Under these models, a firm's total accruals are assumed to be composed of both a nondiscretionary component and a discretionary component. The nondiscretionary component represents the accruals that arise naturally during business operations, while the discretionary component is assumed to represent earnings management. Researchers use some method to estimate an expected level of nondiscretionary accruals and simply estimate the discretionary component as the difference between the firm's actual total accruals and the expected nondiscretionary component.

While there are several methods for calculating discretionary accruals, Deschow, Sloan, and Sweeney (1995) show that the most commonly used models [variations of the Jones (1991) model and the modified Jones model (Deschow, Sloan, and Sweeney, 1995)] are mispecified when applied to samples containing firms with extreme financial performance. As IPO firms tend to fall into this category, these models are not appropriate for this analysis.

Teoh, Wong, and Rao (1998) and Kothari, Leone and Wasley (2002) propose performance-matched discretionary accrual measures to solve this problem. Teoh, Wong, and Rao (1998) note that the matched-pair approach provides the benefit of eliminating any systematic errors in the Jones model accruals for similar performing firms. Kothari, Leone, and Wasley (2002) use simulation analysis to test several

models and find that a performance-matched modified Jones model (with matching on industry and current year ROA) is both powerful and well-specified in most samples. Based on these findings, I use a performance-matched modified Jones model to estimate discretionary accruals.

Estimating the Model

I estimate performance-matched modified Jones model discretionary accruals using a four step process. First, as noted above, I must calculate total accruals. I do this using the direct method, represented by equation 1[4].

$$TA_{i,t} = EBXI_{i,t} - CFO_{i,t} \tag{1}$$

where:

TA = Total accruals;
EBXI = Earnings before extraordinary items and discontinued operations; and
CFO = Cash flow from operations.

The variables i and t are firm and time subscripts, respectively.

Second, I use equations (2) and (3) below to estimate nondiscretionary accruals. These equations represent a cross-sectional modified Jones model. The nondiscretionary component of accruals is calculated using equation (2):

$$NDA_{i,t} = \hat{\beta}_{0_{j,t}}\left[\frac{1}{A_{i,t-1}}\right] + \hat{\beta}_{1_{j,t}}\left[\frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}}\right] + \hat{\beta}_{2_{j,t}}\left[\frac{PPE_{i,t}}{A_{i,t-1}}\right] \tag{2}$$

where:

NDA = Nondiscretionary accruals (scaled by total assets);
A = Total assets;
ΔREV = The change in revenues; and
PPE = Gross property, plant, and equipment.

The variables i, j, and t are firm, industry, and time subscripts, respectively, and β_0, β_1, and β_2 are time- and industry-specific parameters estimated using equation (3):

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_{0_{j,t}}\left[\frac{1}{A_{i,t-1}}\right] + \beta_{1_{j,t}}\left[\frac{\Delta REV_{i,t}}{A_{i,t-1}}\right] + \beta_{2_{j,t}}\left[\frac{PPE_{i,t}}{A_{i,t-1}}\right] + \varepsilon_{j,t} \tag{3}$$

Here, industry specific parameters are estimated for each year.

In the third step, I calculate discretionary accruals (scaled by total assets), DA, as the difference between each firm's actual total accruals (scaled by assets), TA*,

[4]Total accrual may also be calculated indirectly as

$$TA_{i,t} = \Delta CA_{i,t} - \Delta Cash_{i,t} - \Delta CL_{i,t} - DEP_{i,t}.$$

Hribar and Collins (2002) find that this method may produce substantial errors in accrual estimation, and recommend the direct approach.

and its scaled nondiscretionary accruals estimated by equation (2), NDA. This is equation (4).

$$DA_{i,t} = TA^{*}_{i,t} - NDA_{i,t} \tag{4}$$

Finally, to complete the process, each IPO is matched with a non-issuing firm. The firm selected is the firm from the same industry (two-digit SIC code) and year having the closest ROA to that of the IPO firm. The discretionary accruals of each matched firm are subtracted from the discretionary accruals of its corresponding sample firm. Thus, the performance-matched discretionary accruals (PMDA) are calculated using equation (5), where m is the match firm subscript.

$$PMDA_{i,t} = DA_{i,t} - DA_{m,t} \tag{5}$$

Data Sources and Methodology

Data Sources

The initial sample of IPO firms used in this study comes from the SDC New Issues database. Discretionary accruals, book-to-market ratios, and other accounting variables are calculated using data from Standard & Poor's Compustat database. Data necessary for the calculation of abnormal stock performance are obtained from the CRSP database.

Measuring Abnormal Stock Performance

My analysis focuses on comparisons of the discretionary accruals and the abnormal stock performance of primary and secondary issue firms. In the previous section, I outline my procedure for calculating performance-matched modified Jones model discretionary accruals. In this section, I discuss my calculation of abnormal stock performance. To calculate abnormal stock performance I use the matched firm approach recommended by Lyon, Barber, and Tsai (1999). I calculate abnormal stock performance (ASP) for 12, 24, 36, 48, and 60 month holding periods as the difference between the compounded return to an individual IPO firm, i, and the compounded return to a matched firm, j, over each holding period, T. This is shown in equation (6).

$$ASP_{i,T} = \prod_{t=1}^{T}\left(1 + R_{i,t}\right) - \prod_{t-1}^{T}\left(1 + R_{j,t}\right) \tag{6}$$

The observation period begins four months following the IPO year fiscal year end in order to ensure accrual information is available to investors.[5]

[5]This is the method used by Teoh, Welch, and Wong (1998a), and Teoh, Wong and Rao (1998). While using pre-issue accruals would be more appropriate, the pre-issue data are largely unavailable. Using issue year accruals that contain both pre- and post-IPO data allows for a much larger sample size.

To select a matching company for a sample firm, all non-sample firms for that year are screened to identify those with the same fiscal year end as the sample firm whose market capitalization is within 20 percent of that of the sample firm. From these firms the one having a book-to-market ratio closest to that of the sample firm and return data available from CRSP at the start of the return calculation period is selected. If a matched firm delists during the return calculation period, the delisting return is included as the return for the delisting month, and the return on the CRSP equally-weighted index is substituted in subsequent months. This is consistent with an investor shifting to a broad index fund. The fiscal year end requirement is included to ensure that accrual information on the matched firm is available at the beginning of the return period.

Testing the Underperformance of IPO firms

To begin my analysis, I test for the underperformance of IPO firms in my sample. To do so, I calculate the mean and median abnormal stock performance for all IPO firms. I use t-tests and Wilcoxon signed rank tests to determine if the mean and median abnormal stock performance over 12, 24, 36, 48, and 60 month holding periods is significantly different from zero. I also repeat this analysis after segmenting my sample on the basis of subsequent stock offerings within five years. Teoh, Welch, and Wong (1998a) find that firms with subsequent offerings outperform those without. I conduct my analyses across sub-samples to see if the results are consistent with their finding.

Comparisons of Primary and Secondary Sub-Samples

Testing for Differences in Discretionary Accruals

Next, I test for differences in discretionary accruals of primary and secondary issue firms. To conduct this analysis, I segment my sample on the basis of whether a firm's IPO contains only primary shares or contains at least some secondary shares. I then calculate the mean and median discretionary accruals for each sub-sample and use t-tests and Wilcoxon signed ranks tests to test whether the discretionary accruals of the two samples are significantly different from zero. Finally, I test whether the means and medians of the two sub-samples are different from each other using two-sample t-tests and Wilcoxon signed ranks tests, respectively. I then repeat this analysis comparing the discretionary accruals of primary issue firms with those of firms issuing only secondary shares.

Testing for Differences in Abnormal Stock Performance

Next, I test for differences in abnormal stock performance of primary and secondary issue firms. To conduct this analysis, I again divide my sample into primary issue and secondary issue sub-samples. I then calculate the mean and median abnormal stock performance of each sub-sample and use two-sample t-tests and Wilcoxon

signed ranks tests to determine if the means and medians of the sub-samples differ from one another.

Cross-Sectional Regression Analysis

Does the Issuance of Secondary Shares Explain Discretionary Accruals?

I use cross-sectional regression analysis to examine the relationship between secondary shares and discretionary accruals. For this analysis I use discretionary accruals (DA) as my dependent variable and use the issuance of secondary shares (represented by a dummy variable (SEC) that is set to one for firms issuing secondary shares) and the percentage of secondary shares issued (PCT) as independent variables in two univariate regressions. The two formulations are represented by equations (7) and (8).

$$DA = \alpha + \beta(SEC) + \varepsilon \tag{7}$$

$$DA = \alpha + \beta(PCT) + \varepsilon \tag{8}$$

Does Earnings Management Explain Abnormal Stock Performance?

To address the question of whether or not earnings management explains abnormal stock performance, I again use cross-sectional regression analysis. For my first test, I use a univariate model, regressing abnormal stock performance (ASP) on discretionary accruals (DA). This is represented by equation (9).

$$ASP = \alpha + \beta(DA) + \varepsilon \tag{9}$$

Next, I add the percentage of secondary shares issued (PCT) to the equation to determine if discretionary accruals has power to explain returns beyond the issuance of secondary shares, and I add an interaction term (INT), constructed as the PCT*DA, to examine the relationship between these terms. This is equation (10).

$$ASP = \alpha + \beta_1(DA) + \beta_2(PCT) + \beta_3(INT) + \beta_4(VC) + \beta_5(IBREP) + \beta_6(FO) + \varepsilon \tag{10}$$

In the final model, I add three additional variables to control for factors previously shown to influence the returns of IPO firms. Brav and Gompers (1997) find that non-venture-backed firms underperform venture-backed firms. To control for this, I add a dummy variable (VC) to identify firms with venture backing. This variable is set to one for firms with venture backing and zero otherwise. Venture data are obtained from the SDC New Issues database. Similarly, Carter, Dark, and Singh (1998) find that underwriter reputation has an impact on the long-run returns following IPOs. Specifically, they find that underperformance is less severe in IPOs underwritten by more prestigious underwriters. To control for this, I include an

underwriter reputation variable (IBREP). This variable is an adjusted Carter-Manaster (1990) ranking, available from Jay Ritter's website.[6] Finally, Teoh, Welch, and Wong (1998a) find that IPOs soon followed by additional offerings outperform other IPOs. To control for this, I include a dummy variable (FO), which is set to one for firms conducting a subsequent offering within five years and zero otherwise. This regression is represented by equation (11).

$$ASP = \alpha + \beta_1(DA) + \beta_2(PCT) + \beta_3(INT) + \beta_4(VC) + \beta_5(IBREP) + \beta_6(FO) + \varepsilon \quad (11)$$

Sample and Results

Sample

My initial sample consists of 6,652 firms conducting initial public offerings between 1988 and 2002 obtained from the Securities Data Corporation's New Issues database. I begin my sample in 1988, as this is the first year in which firms were required to report operating cash flow and operating cash flow is needed for the direct calculation of accruals.[7] Firms for which the data necessary to calculate discretionary accruals and book-to-market ratios are not available in Compustat are eliminated from the sample, reducing its size to 3,870 firms. Of these firms, 394 are eliminated because the return data necessary to calculate abnormal stock performance are not available in the CRSP database. This leaves a final sample of 3,476 firms. Of these, 2,248 are classified as primary issue firms, and 1,228 are classified as secondary issue firms.

Sample firm characteristics are presented in Table 1. Panel A presents general sample firm characteristics, while Panels B and C present the distribution of sample firms across industries and over time, respectively. Notice in Panel A that 35 percent of IPO firms issued secondary shares during this time period and that, on average, 30 percent of the shares issued by these firms were secondary shares. Mean and median discretionary accruals are positive and significant at the 1 percent level. This is consistent with prior research (Teoh, Welch, and Wong, 1998a; Teoh, Wong, and Rao, 1998), suggesting that, as a group, IPO firms manage earnings upwards.

The Abnormal Stock Performance of IPO Firms

The first question I address is whether IPO firms have negative long-run abnormal stock performance following their IPOs. I calculate the mean and median abnormal stock performance for all IPO firms and test the hypothesis that there is no abnormal stock performance among IPO firms. The results of this analysis are presented in Table 2.

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[6] http://bear.cba.ufl.edu/ritter/

[7] Recall that while accruals may be calculated using an indirect method, Hribar and Collins (2002) find that this method may produce substantial errors in estimation. Thus, I sacrifice a longer sample period for more accuracy in accrual calculations.

Table 1—Sample Firm Characteristics

This sample for this study consists of 3,746 firms undertaking initial public offerings between 1988 and 2002. To be included in the sample, a firm must have both the accounting data necessary to calculate discretionary accruals in Compustat and the stock return data necessary to calculate abnormal stock performance in CRSP. Panel A presents the general characteristic of sample firms. Panel B presents the distribution of sample firms across industries. Panel C presents the distribution of sample firms across years. A firm is considered a secondary issue firm if any shares offered are secondary share. Firms offering no secondary shares are classified as primary issue firms. Discretionary accruals reported are calculated using a performance-matched modified Jones model and are significant at the 1 percent level

Panel A: General Characteristics

Total Number of IPO Firms:	3,476	
Total Number of Primary Issue Firms:	2,248	
Percent of Total:		64.67%
Total Number of Secondary Issue Firms:	1,228	
Percent of Total:		35.33%
Mean % of Secondary Shares Issued by Secondary Issue Firms:		29.61%
Median % of Secondary Shares Issued by Secondary Issue Firms:		25.00%

	Market Value ($m)	Book Value ($m)	Book to Market Ratio	Total Assets ($m)	Sales ($m)	Discretionary Accruals (% $Assets_{t-1}$)
Mean Values	445.8	126.4	0.5756	319.1	243.2	0.0149
Median Values	91.63	41.4	0.4133	68.4	57.2	0.0171

Panel B: Sample Breakdown by Industry

Industry	Number of Issues	Percent of Total
Oil and Gas	60	1.7%
Food Products	59	1.7%
Paper & Paper Products	73	2.1%
Chemical Products	269	7.7%
Manufacturing	141	4.1%
Computer Hardware & Software	909	26.2%
Electronic Equipment	281	8.1%
Transportation	166	4.8%
Scientific Instruments	274	7.9%
Communications	124	3.6%
Electric and Gas Services	55	1.6%
Durable Goods	89	2.6%
Retail	192	5.5%
Eating and Drinking Establishments	59	1.7%
Financial Services	100	2.9%
Entertainment Services	78	2.2%
Health	105	3.0%
Other	442	12.7%
Total	3,476	100.0%

Panel A of Table 2 reveals that IPO firms do underperform non-issuing firms across all five time horizons (12, 24, 36, 48, and 60 month) during the sample period. The abnormal stock performance for all periods is negative and significant at the 1 percent level.

Table 1 (cont.)—Sample Firm Characteristics

Panel C: Sample Breakdown by Fiscal Year

Fiscal Year	Number of Issues	Percent of Total
1988	153	4.4%
1989	93	2.7%
1990	98	2.8%
1991	98	2.8%
1992	201	5.8%
1993	294	8.5%
1994	378	10.9%
1995	321	9.2%
1996	318	9.1%
1997	483	13.9%
1998	309	8.9%
1999	197	5.7%
2000	226	6.5%
2001	247	7.1%
2002	60	1.7%
Total	3,476	100.0%

Panels B and C present the results of this analysis for sub-samples segmented by subsequent stock issues within five years. Consistent with the findings of Teoh, Welch, and Wong (1998a), firms in Panel B (firms with no subsequent offerings within five years) have even more negative returns than IPO firms in general, while the firms in Panel C (those with subsequent offerings) show positive abnormal stock performance. Teoh, Welch, and Wong (1998a) present a reputational theory for this finding, suggesting that firms planning subsequent issues seek to establish a reputation for quality. Given these differences between these sub-samples, I test many of my hypotheses relating to differences between primary and secondary sub-samples in these subsequent issue sub-samples as well as the entire sample. I do this to ensure my results are not simply a manifestation of the stronger returns to subsequent issue firms.

Comparisons of Primary and Secondary Sub-Samples
Testing for Differences in Discretionary Accruals

Having established that IPO firms do underperform in the sample, I now turn to an analysis of the characteristics of primary and secondary issue firms to address the question of whether earnings management explains the abnormal performance. To begin this analysis, I test the hypothesis that primary issue and secondary issue firms have different levels of earnings management. A finding that discretionary accruals differ between the two samples would suggest differing levels of earnings management and support either the cashing out or liability avoidance hypothesis. This, in combination with differing abnormal stock performance, would support the hypothesis that earnings management contributes to the long-run underperformance of IPO firms.

Table 2—Abnormal Stock Performance of IPO Firms

This table presents the mean and median abnormal stock performance (ASP) of IPO firms, along with p-values resulting from tests of the null hypothesis that ASP=0. The p-values for the means and medians result from t-tests and Wilcoxon signed rank tests, respectively. A firm's abnormal stock performance is calculated as the difference between its buy-and-hold return and that of a firm matched by industry, size, and book-to-market ratio. Abnormal stock performance is calculated for 12, 24, 36, 48, and 60 month holding periods. Panel A presents the results for the entire sample of 3,488 IPO Firms. Panel B presents the results for the subsample of 2,441 firms that have no additional stock offerings within five years of the IPO. Panel C presents the results for the subsample of 1,035 firms that have at least one additional stock offering within five years of the IPO

	12 Month	24 month	36 month	48 month	60 month
Panel A: All IPO Firms					
Mean ASP	-0.180	-0.216	-0.187	-0.151	-0.219
P-Value	0.0001	0.0001	0.0009	0.0075	0.0044
Median ASP	-0.177	-0.198	-0.188	-0.190	-0.162
P-Value	0.0001	0.0001	0.0001	0.0001	0.0001
Panel B: IPO Firms with No Subsequent Offerings within Five Years of Issue Date					
Mean ASP	-0.297	-0.408	-0.441	-0.440	-0.428
P-Value	0.0001	0.0001	0.0009	0.0075	0.0044
Median ASP	-0.230	-0.286	-0.272	-0.248	-0.238
P-Value	0.0001	0.0001	0.0001	0.0001	0.0001
Panel C: IPO Firms with Subsequent Offerings within Five Years of Issue Date					
Mean ASP	0.097	0.230	0.410	0.526	0.271
P-Value	0.0167	0.0049	0.0003	0.0001	0.0044
Median ASP	-0.016	0.027	0.049	0.031	0.021
P-Value	0.1673	0.0099	0.0021	0.0093	0.0280

Table 3 presents the results of this analysis. Panel A presents the results for the entire sample.[8] It reveals that primary issue firms have statistically significant positive discretionary accruals, suggesting that these firms manage earnings upwards. On the other hand, the average discretionary accrual of secondary issue firms is not statistically different from zero, suggesting that these firms do not manage earnings upwards. An examination of the differences in means and medians reveals that primary issue firms have higher discretionary accruals and that this difference is significant at the 1 percent level. This finding is consistent with the liability avoidance theory of earnings management, suggesting that secondary issue firms do not manage earnings upwards to reduce the likelihood of lawsuits and the likelihood that any lawsuits will be successful.

Panel B presents the results of discretionary accrual comparisons between primary issue firms and firms issuing only secondary shares and reveals even stronger results. In this case, while discretionary accruals are again positive and significant

[8]This analysis also was conducted on each of the subsequent issue sub-samples. The analysis of the sub-sample of firms with no subsequent stock issues within five years produces results of similar magnitudes and significance. The analysis of the sub-sample of firms with subsequent stock issues within five years produces results of similar magnitudes, but these results are not significant (possibly due to the smaller sample size).

Table 3—Discretionary Accruals of Primary and Secondary Issue Firms

This table presents the mean and median performance-matched discretionary accruals (DA) of primary and secondary issue firms, along with the differences in mean and median discretionary accruals of these two groups. P-values resulting from the test of the null hypothesis that DA = 0 are presented to the right of the mean and median discretionary accrual values. P-values for means and medians are calculated using t-tests, and Wilcoxon signed ranks tests, respectively. The P-values presented beneath the difference in mean and difference in median values result from tests of the null hypothesis that the means and medians of the two sub-samples are equal. These tests are conducted using two sample t-tests and two-sample Wilcoxon signed ranks tests. Panel A presents the results of these comparisons between primary and secondary issue firms. Panel B presents the results of these comparisons between primary issue firms and firms issuing only secondary shares. Panel C presents the results of these comparisons between primary and secondary issue firms, excluding firms issuing only secondary shares

Panel A: Primary Issues Firms v. Secondary Issue Firms			
Mean DA of Primary Issue Firms (p-value)	n=2248	0.0243	(0.0001)
Mean DA of Secondary Issue Firms (p-value)	n=1228	-0.0024	(0.7820)
Difference in Means - Primary-Secondary		0.0267	
P-Value		0.0026	
Median DA of Primary Issue Firms (p-value)	n=2248	0.0230	(0.0001)
Median DA of Secondary Issue Firms (p-value)	n=1228	0.0048	(0.1690)
Difference in Means - Primary-Secondary		0.0182	
P-Value		0.0011	
Panel B: Primary Issue Firms v. Firms issuing only Secondary Shares			
Mean DA of Primary Issue Firms (p-value)	n=2248	0.0243	(0.0001)
Mean DA of Secondary Issue Firms (p-value)	n=46	-0.0394	(0.0989)
Difference in Means - Primary-Secondary		0.0637	
P-Value		0.0110	
Median DA of Primary Issue Firms (p-value)	n=2248	0.0230	(0.0001)
Median DA of Secondary Issue Firms (p-value)	n=46	-0.0337	(0.0650)
Difference in Means - Primary-Secondary		0.0568	
P-Value		0.0119	
Panel C: Primary Issue Firms v. Secondary Issue Firms, excluding 100% Secondary Share Offerings			
Mean DA of Primary Issue Firms (p-value)	n=2248	0.0243	(0.0001)
Mean DA of Secondary Issue Firms (p-value)	n=1182	-0.0009	(0.8961)
Difference in Means - Primary-Secondary		0.0252	
P-Value		0.0051	
Median DA of Primary Issue Firms (p-value)	n=2248	0.0230	(0.0001)
Median DA of Secondary Issue Firms (p-value)	n=1182	0.0086	(0.0888)
Difference in Means - Primary-Secondary		0.0145	
P-Value		0.0033	

for primary issue firms, they are negative and significant for firms issuing only secondary shares. This is again consistent with the liability avoidance theory, as it suggests the firms issuing only secondary shares actually manage earnings downwards to provide a cookie jar of earnings that could be used to ensure future earnings are strong.

Panel B raises the possibility that the results in Panel A are driven by the firms issuing only secondary shares. Panel C, however, shows that this is not the case. An examination of the means reveals results consistent with those in Panel A. Although

the results for medians differ slightly from those in Panel A, the implications are essentially the same. Here, although the secondary issue firms, excluding the issuers issuing only secondary shares, have small positive accruals (significant at the 10 percent level), they are 62 percent lower than those of primary issue firms, and the difference is significant at the 1 percent level. This suggests that some secondary issue firms may manage earnings upwards, but to a much smaller degree than do primary issue firms. Again, this is consistent with the liability avoidance hypothesis.

Testing for Differences in Abnormal Stock Performance

Having shown that primary issue firms have higher discretionary accruals, I now examine abnormal stock performance to see if there are differences between the primary and secondary sub-samples and if any differences are consistent with the earnings management hypothesis. Again, I segment the sample into primary issue and secondary issue sub-samples. I then test for differences in the mean and median abnormal stock performance of the two groups using two-sample t-tests and Wilcoxon signed ranks for the means and medians, respectively. The results of this analysis are presented in Table 4.

Panel A of Table 4 shows the results for the entire sample of IPO firms. The mean and median abnormal stock performance is more negative for primary issue firms across all holding periods. The differences in means range from 5.5 percent over a twelve month holding period to 57.6 percent over the 60 month holding period, and the differences are significant at either the 1 percent or 5 percent levels for all but the twelve month holding period. The differences in medians are not as great, but are statistically significant at the 1 percent or 5 percent levels for all holding periods. They range from 4.4 percent to 13.9 percent, increasing monotonically across holding periods.

Panels B and C present the results for this analysis performed on the no- subsequent issue and subsequent issue sub-samples, respectively. This analysis was conducted to see if the results in Panel A were driven by the higher returns to subsequent issue firms documented by Teoh, Welch, and Wong (1998a). Panel B shows that this is not the case, as the results for the no-subsequent issue sub-sample are similar in magnitude and significance to the results for all firms in Panel A. The result seems to be concentrated in the no-subsequent issue firms, as Panel C shows no significant difference between sub-samples for firms with subsequent issues. This is consistent with untabulated results that show no significant difference in the discretionary accruals of primary and secondary issues in this sub-sample. This finding suggests that primary issue firms with subsequent issues may manage earnings upwards less than other primary issue firms, possibly for the reputational issues suggested Teoh, Welch, and Wong (1998a).

Table 4—Comparison of the Abnormal Stock Performance of Primary and Secondary Issue Firms

This table presents the mean and median abnormal stock performance (ASP) of primary and secondary issue firms, along with the differences in mean and median discretionary accruals of these two groups. A firm's abnormal stock performance is calculated as the difference between its buy-and-hold return and that of a firm matched by industry, size, and book-to-market ratio. Abnormal stock performance is calculated for 12, 24, 36, 48, and 60 month holding periods. P-values presented beneath the difference in mean and difference in median values result from tests of the null hypothesis that the means and medians of the two sub-samples are equal. These tests are conducted using two sample t-tests and two-sample Wilcoxon signed ranks tests. Panel A presents the results of these comparisons between primary and secondary issue firms using the entire IPO sample. Panel B presents the results of these comparisons using the subsample of IPO firms with no subsequent issues within five years. Panel C presents the results of these comparisons using the subsample of firms with subsequent issues within five years

	Months				
	12	24	36	48	60
Panel A: Primary Issues Firms versus Secondary Issue Firms, All IPO Firms					
Mean ASP of Primary Issue Firms	-0.1991	-0.2891	-0.2542	-0.2747	-0.3882
Mean ASP of Secondary Issue Firms	-0.1443	-0.0882	-0.0666	0.0723	0.0883
Difference in Means: Primary-Secondary	-0.0548	-0.2008	-0.1876	-0.3470	-0.4765
P-Value	0.1074	0.0066	0.0446	0.0031	0.0064
Median ASP of Primary Issue Firms	-0.1917	-0.2156	-0.2211	-0.2233	-0.2055
Median ASP of Secondary Issue Firms	-0.1473	-0.1617	-0.1526	-0.0897	-0.0667
Difference in Means: Primary-Secondary	-0.0444	-0.0539	-0.0685	-0.1336	-0.1388
P-Value	0.0280	0.0410	0.0138	0.0006	0.0004
Primary Issue Firms	n=2448				
Secondary Issue Firms	n=1228				
Panel B: Primary Issues Firms versus Secondary Issue Firms, IPO Firms with So Subsequent Offerings Within Five Years of Issue Date					
Mean ASP of Primary Issue Firms	-0.3131	-0.4889	-0.5255	-0.5508	-0.6173
Mean ASP of Secondary Issue Firms	-0.2659	-0.2488	-0.2755	-0.2206	-0.0549
Difference in Means: Primary-Secondary	-0.0472	-0.2401	-0.2500	-0.3302	-0.5625
P-Value	0.1792	0.0025	0.0141	0.0025	0.0129
Median ASP of Primary Issue Firms	-0.2416	-0.3026	-0.3012	-0.2965	-0.2922
Median ASP of Secondary Issue Firms	-0.2071	-0.2439	-0.2138	-0.1402	-0.1264
Difference in Means: Primary-Secondary	-0.0345	-0.0587	-0.0874	-0.1563	-0.1659
P-Value	0.0560	0.0081	0.0183	0.0005	0.0010
Primary Issue Firms	n=1620				
Secondary Issue Firms	n=821				
Panel C: Primary Issues Firms versus Secondary Issue Firms, IPO Firms with Subsequent Offerings within Five Years of Issue Date					
Mean ASP of Primary Issue Firms	0.0949	0.2263	0.4455	0.4376	0.2028
Mean ASP of Secondary Issue Firms	0.1009	0.2356	0.3546	0.6631	0.3770
Difference in Means: Primary-Secondary	-0.0061	-0.0093	0.0909	-0.2255	-0.1741
P-Value	0.4709	0.4782	0.7022	0.2248	0.2631
Median ASP of Primary Issue Firms	-0.0319	0.0344	0.0040	0.0235	0.0088
Median ASP of Secondary Issue Firms	0.0142	0.0249	0.1120	0.0417	0.0925
Difference in Means: Primary-Secondary	-0.0461	0.0095	-0.1080	-0.0182	-0.0837
P-Value	0.3700	0.2969	0.3776	0.2305	0.1480
Primary Issue Firms	n=628				
Secondary Issue Firms	n=407				

Regression Results

Does the Issuance of Secondary Shares Explain Discretionary Accruals?

I continue my research with the regression analysis. First, I use univariate regressions [equations (7) and (8)] to examine the question of whether the issuance of secondary shares or the percentage of secondary shares issued can explain the level of discretionary accruals. The results are presented in Table 5. In the first regression using secondary issuance (the dummy variable SEC) as the independent variable, the coefficient on SEC is negative and significant at the 1 percent level. This suggests that firms issuing secondary shares manage earnings upwards less than do the primary issue firms. Results are similar for the second regression, using percentage of secondary shares (PCT). The p-value is even lower, suggesting that the level of secondary shares issued is an important factor—the greater the percentage, the lower the discretionary accruals. These findings are consistent with those from the sub-sample comparisons of discretionary accruals presented in Table 3.

Table 5—Discretionary Accruals and the Issuance of Secondary Shares

This table contains the regression coefficients and their associated p-values from two cross-sectional regression models. Panel A examines the impact of issuing any secondary shares on a firm's discretionary accruals. Here, the model used is DA = α + β(SECDUM). The variable DA represents performance-matched modified Jones model discretionary accruals, and the variable SECDUM is a dummy variable that is set to 1 for secondary issue firms. Panel B examines the impact of issuing different percentages of secondary shares on a firm's discretionary accruals. Here, the model used is DA = α + β(PCT), where the variable PCT is the percentage of secondary shares in an issue

Panel A: DA = α+ β(SECDUM)

	Intercept	SECDUM
Coefficient	0.0245	-0.0269
p-value	0.0001	0.0034
n	3488	

Panel B: DA = α + β(PCT)

	Intercept	PCT
Coefficient	0.0238	-0.0008
p-value	0.0001	0.0002
n	3488	

Does Earnings Management Explain Abnormal Stock Performance

Next I use regression analysis to address the question of whether earnings management explains the abnormal stock performance of IPO firms. For this analysis, I use equations (9) through (11). Equation (9) regresses abnormal stock performance (ASP) on discretionary accruals (DA). Equation (10) adds the percentage of secondary shares (PCT) and an interaction term (INT) constructed as DA*PCT. These variables are included to determine if the discretionary accruals variable has explanatory power beyond that of the percentage of secondary shares and if there is

Table 6—Abnormal Stock Performance and Discretionary Accruals

This table contains the regression coefficients and their associated p-values for three cross-sectional regression models. Model 1 regresses abnormal stock performance (ASP) on performance-matched modified Jones model discretionary accruals (DA). Model 2 adds the independent variables PCT and INT which represent the percentage of secondary shares in an IPO and an interaction term constructed as DA*PCT. Model 3 adds three additional control variables shown to impact the returns following IPOs. The first is a dummy variable (VC) that is 1 for venture backed firms and zero for non-venture backed firms. The second (IBREP) is a underwriter reputation rank variable. The third (FO) is a dummy variable that is 1 for firms with subsequent offerings within 5 years and zero otherwise. Panel A presents the results of these models where ASP_12 (12 month abnormal stock performance) is the dependent variable. Panels B, C, D, E, present the results of these models using the dependent variables ASP_24, ASP_36, ASP_48, and ASP_60, respectively. There were 3,476 observations used in this analysis

	Intercept	DA	PCT	INT	VC	IBREP	FO
Panel A: Analysis for Dependent Variable ASP_12							
Model 1							
Coefficient	-0.1795	-0.0051					
p-value	0.0001	0.4749					
Model 2							
Coefficient	-0.1786	-0.0342	0.0000	0.0036			
p-value	0.0001	0.3539	0.9944	0.4809			
Model 3							
Coefficient	-0.2198	-0.0436	-0.0001	0.0023	-0.0899	-0.0062	0.4085
p-value	0.0006	0.3175	0.9326	0.6494	0.0460	0.5078	0.0001
Panel B: Analysis for Dependent Variable ASP_24							
Model 1							
Coefficient	-0.2136	-0.1777					
p-value	0.0001	0.1376					
Model 2							
Coefficient	-0.2403	-0.2915	0.0029	0.0155			
p-value	0.0001	0.0550	0.1807	0.1220			
Model 3							
Coefficient	0.60842	-0.2643	0.0021	0.0136	0.0577	0.0248	0.6031
p-value	0.0001	0.0767	0.3598	0.1792	0.525	0.1895	0.0001
Panel C: Analysis for Dependent Variable ASP_36							
Model 1							
Coefficient	-0.1823	-0.3488					
p-value	0.0013	0.0553					
Model 2							
Coefficient	-0.2158	-0.4528	0.0036	0.0156			
p-value	0.0008	0.0323	0.2272	0.2762			
Model 3							
Coefficient	-0.58358	-0.4378	0.0030	0.0130	0.2487	0.0039	0.8234
p-value	0.0008	0.0392	0.3385	0.3362	0.0413	0.8774	0.0001

any significant interaction between the variables. Finally, equation (12) adds the three additional variables to control for factors previously shown to affect returns following an IPO. These variables are a dummy variable for venture backing (VC), a dummy variable to indicate subsequent stock offerings (FO), and a variable representing the underwriter's reputation (IBREP).

Table 6 (cont.)—Abnormal Stock Performance and Discretionary Accruals

	Intercept	DA	PCT	INT	VC	IBREP	FO
Panel D: Analysis for Dependent Variable ASP_48							
Model 1							
Coefficient	-0.1475	-0.2546					
p-value	0.0091	0.1215					
Model 2							
Coefficient	-0.2146	-0.1555	0.0061	-0.0085			
p-value	0.0009	0.2621	0.0374	0.5242			
Model 3							
Coefficient	-0.60245	-0.1355	0.0059	-0.0109	0.3204	-0.0025	0.9340
p-value	0.0005	0.2917	0.0554	0.4198	0.0081	0.9206	0.0001
Panel E: Analysis for Dependent Variable ASP_60							
Model 1							
Coefficient	-0.2106	-0.2000					
p-value	0.0050	0.1252					
Model 2							
Coefficient	-0.2918	-0.2544	0.0074	0.0109			
p-value	0.0009	0.1111	0.0628	0.5527			
Model 3							
Coefficient	-0.66326	-0.2286	0.0079	0.0100	0.4694	-0.0024	0.6355
p-value	0.005	0.2499	0.0606	0.5885	0.0047	0.9457	0.0003

The results of these analyses are presented in Table 6. Panel A presents the results of these equations where the dependent variable is 12-month abnormal stock performance (ASP_12). Panels B, C, D, and E present the results for 24, 36, 48, and 60 month abnormal stock performance (ASP_24, ASP_36, ASP_48, and ASP_60), respectively. The results in Panel A reveal that while the coefficient on DA is negative in all formulations (as expected), it is not statistically significant for the 12 month holding period. This changes, however, as the holding period increases, suggesting that there may be a delay in the reversal of the accruals. Panel B, like Panel A, reveals negative coefficients for DA for all models. Here, however, the coefficients are more negative and for equations (10) and (11) (models 2 and 3 in Table 6); they are significant at the 10 percent level. Similarly, for the 36-month holding period, Panel C shows the coefficient for DA is negative and significant in across all formulations at either the 5 percent or 10 percent levels. The results weaken as the holding period is extended further. Panels D and E show that over the 48- and 60-month holding periods, the coefficient for DA remains negative but is no longer statistically significant. Thus, the results presented in this section suggest that earnings management does play a role in the underperformance of IPO firms. The impact of earnings management is strongest in the second and third years following the offering. While these findings suggest other factors contribute to the underperformance, the fact that earnings management plays a role is evidence against market efficiency.

Conclusions

My results support the liability avoidance theory for earnings management in IPO firms. I find that while firms issuing only primary shares manage earnings upwards, those issuing a combination of primary and secondary shares do not manage earnings upwards, and firms issuing only secondary shares manage earnings downwards. These results have implications on the hypothesis that earnings management leads to the long-run underperformance of IPO firms. Specifically, if earnings management drives the underperformance, firms issuing secondary shares (as they don't manage earnings upwards) should underperform less than firms issuing only primary shares (as they manage earnings upwards). Comparisons of abnormal stock performance across primary issue and secondary issue sub-samples produce results supporting this hypothesis. Regression analysis examining the impact of discretionary accruals on abnormal stock returns also produces results that support the earnings management hypothesis, showing 24- and 36-month post-issue returns to be significantly negatively related to discretionary accruals. Based on these findings, I conclude that earnings management does contribute to the negative long-run performance of IPO firms. While my results indicate that earnings management is not the only factor driving these returns, they provide further support for the earnings management hypothesis and suggest that the new issues puzzle represents a market inefficiency.

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