

# When and Why do IPO Firms Manage Earnings? \*

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**Abstract:** There is significant disagreement about whether, when and why IPO firms manage earnings. We contribute to the literature by precisely identifying the timing and motives behind earnings management by IPO firms. We emphasize that the period around IPO is characterized by two distinct events: the IPO itself and the lockup expiration. Both the raising of capital at the IPO and the large-scale exit by pre-IPO shareholders at lockup expiration approximately 180 days later create incentives for firms to manage earnings. To disentangle the effect of these events, we examine quarterly, rather than annual, abnormal accruals. We find no evidence of income-increasing earnings management before the IPO. However, IPO firms exhibit positive abnormal accruals in the quarter before and the quarter of the lockup expiration. Positive abnormal accruals are concentrated in less scrutinized firms and firms with high selling by pre-IPO shareholders. Moreover, we find that these accruals subsequently reverse and that such reversals contribute to long-run IPO underperformance. Our results hold after controlling for the investment of IPO proceeds in working capital and suggest that the positive abnormal accruals in the IPO year reflect earnings management in anticipation of selling around lockup expiration.

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## 1. Introduction

Following their Initial Public Offerings (IPO), firms tend to underperform in the long-run, suggesting that informed shareholders can benefit from transferring ownership to (less informed) new investors at an opportune time (Ritter 1991; Derrien 2005; Field and Lowry 2009). In an influential study, Teoh, Welch and Wong (1998a) document high abnormal accruals in the year firms go public, link these accruals to long-run underperformance, and interpret their findings as evidence of earnings management to inflate the issue price. Nevertheless, almost twenty years after the publication of this paper, there is still significant disagreement about whether, when and why IPO firms manage earnings.

In order to inform this debate, it is crucial to recognize that there are two distinct events within a short time span around the IPO where earnings management could result in wealth transfers from new investors. First, the firm sells shares to investors at the time of the IPO. Second, about six months after the IPO, pre-IPO shareholders significantly reduce their stake in the firm when the lockup period expires. Because of the strong selling incentives of pre-IPO owners, firms have incentives to manage earnings in anticipation of the lockup expiration. Given the close proximity of the IPO and the lockup expiration date, *annual* accruals studied in prior research cannot be used to discern which of the two events result in earnings management. In this paper, we examine quarterly accruals and provide evidence that IPO firms manage earnings not before the IPO but before the lockup expiration to inflate the selling price for pre-IPO shareholders. This result is distinct from previously documented effects of working capital investments on accruals (Ball and Shivakumar 2008; Armstrong, Foster and Taylor 2016).

Lockup agreements are voluntary contracts between the underwriter and pre-IPO shareholders that restrict the ability of pre-IPO shareholders to sell their shares in the IPO firm for a specified period of time after the offering, typically 180 days. Following lockup expiration,

trading volume increases (permanently) by 40%, on average, reflecting a significant reduction of ownership by pre-IPO shareholders (Field and Hanka, 2001). Pre-IPO shareholders' selling gains depend on the stock price around lockup expiration. Thus, income increasing earnings management prior to lockup expiration can benefit these shareholders.

While large pre-IPO shareholders prefer selling their shares at favorable prices, it is not obvious that managers oblige with income-increasing accruals. Because lockup expiration dates are publicly known and anticipated, there is significant market scrutiny at that point in time. The resulting threat of litigation and potential loss of reputation can deter earnings management. Moreover, it is possible that managers are not motivated enough to manipulate earnings because they simply do not care about the stock price at which pre-IPO shareholders sell shares.

There are, however, at least two reasons why managers have incentives to overstate earnings at lockup expiration. First, reporting strong performance and a rosy outlook around lockup expiration can help managers to ensure adequate demand for the stock and thus avoid the price pressure from large scale selling by pre-IPO shareholders (Field and Hanka 2001). Second, pre-IPO shareholders can influence managers to take actions that benefit such shareholders (Ertimur, Sletten and Sunder 2014). Pre-IPO shareholders typically play an active role in start-up firms by providing funding and advice, resulting in lasting relationships with management. Holding significant ownership stakes and board seats in IPO firms enables pre-IPO shareholders to appoint and dismiss managers, as well as set their compensation to align them with these investors' horizons.<sup>1</sup> Further, despite significant share sales around lockup expiration, some pre-IPO shareholders continue to hold ownership stakes in the IPO firms for an extended period,

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<sup>1</sup> See, for example, Barry, Muscarella, Peavy and Vetsuypens (1990), Lerner (1995), Hellmann and Puri (2002), Gompers and Lerner (2004), Morsfield and Tan (2006), Cadman and Sunder (2014).

retaining an influence in the firm even after lockup expiration (Gompers and Lerner 2004; Wongsunwai 2013). Finally, CEOs of IPO firms are often serial entrepreneurs and therefore have repeated interactions with these investors, creating incentives for the managers to help them reduce their stakes on favorable terms.

In addition, some institutional features are likely to encourage earnings management by reducing the probability of detection and litigation. First, some pre-IPO shareholders are exempt from disclosing their sales to the SEC.<sup>2</sup> Second, given that pre-IPO shareholders are restricted from selling shares for a significant period of time prior to lockup expiration, it is difficult to distinguish between information and liquidity motives for their sales after the lockup expires. Third, information asymmetry between informed parties (managers and large pre-IPO shareholders) and any potential investors is particularly acute at IPO firms, making earnings management more difficult to detect.

In deciding whether to report income-increasing accruals, managers trade the costs of detection against the benefits of ceding to pressure from pre-IPO shareholders. Thus, we do not expect earnings management in anticipation of lockup expiration to be uniformly pervasive. Instead, it is likely to be stronger when pre-IPO shareholders with the ability to influence management have strong selling incentives, and weaker when firms are subject to high scrutiny or litigation risk.

Our empirical approach has four distinct features. First, we focus on *quarterly* abnormal accruals around *both* the IPO and the lockup expiration to pinpoint the timing of abnormal accruals. Second, our time-series research design with firm fixed effects captures whether accruals in

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<sup>2</sup> Shares in IPO firms are held by a variety of shareholders, many of whom are not required to report changes in ownership to the SEC on Form 4. The requirement to file Form 4 is limited to insiders, i.e. officers, non-executive directors and beneficial owners of ten percent or more of shares outstanding. Furthermore, VC firms often distribute their shares to partners, rather than selling them on the open market, circumventing the requirement to file Form 4.

suspect quarters depart from normal levels for a given firm. Third, we relate the abnormal accruals before lockup expiration to selling incentives of pre-IPO shareholders other than managers. Fourth, we control for IPO proceeds to capture the economic effect of cash infusion on working capital.

To examine whether managers overstate earnings prior to the IPO we use a comprehensive sample of IPOs over the 1990–2013 period and first identify the quarter preceding the IPO. We use the modified Jones model with accruals derived from the cash flow statement to measure earnings management.<sup>3</sup> Consistent with prior research (Ball and Shivakumar 2008; Venkataraman, Weber and Willenborg 2008), we do not find evidence of positive abnormal accruals in that quarter.

Turning our attention to the lockup expiration, using the same sample and the same measure of abnormal accruals, we find positive abnormal accruals in the quarter preceding and the quarter of the lockup expiration. To reconcile our results with prior studies, we also examine annual accruals while distinguishing between fiscal years with and without the lockup expiration event. We find that abnormal accruals in the fiscal year before the IPO are significantly negative. In the fiscal year that includes the IPO, we find significantly positive abnormal accruals only when lockup expiration falls in the same fiscal year as the IPO. We conclude that IPO year abnormal accruals are in fact tied to lockup expiration, rather than to the IPO event as has been suggested by prior research.

In multivariate analyses, using a panel data of firm-quarters that start after the IPO and span the lockup expiration quarter, we compare abnormal accruals around the lockup expiration with those from other quarters. Consistent with our univariate analyses, we find significant positive

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<sup>3</sup> Ball and Shivakumar (2008) argue that strong growth in assets in young IPO firms introduces a small denominator problem when total assets as of the beginning of the fiscal period are used as a deflator. To address this concern, when estimating discretionary accruals, we deflate by the average total assets for the quarter.

abnormal accruals in the quarter before and the quarter of the lockup expiration. We include firm-fixed effects, which suggests that our results are not driven by firm or IPO characteristics. Moreover, there is some evidence to suggest that abnormal accruals reverse, which is consistent with earnings management as discussed in Dechow, Hutton, Kim and Sloan (2012).

We next focus on cross-sectional variation in the intensity of earnings management prior to lockup expiration. We expect earnings management to be less pronounced for firms that are subject to stronger scrutiny and more pronounced if pre-IPO shareholders have strong selling incentives. We measure scrutiny using analyst following and litigation risk and we construct an ex ante measure of selling incentives based on a model proposed by Field and Hanka (2001).<sup>4</sup> This measure, predicted abnormal trading volume upon lockup expiration, is based on factors known to managers when they decide whether to manage earnings, eliminates the need for using actual post-lockup sales by pre-IPO shareholders, which are not readily available, and mitigates reverse-causality concerns associated with actual sales (i.e., pre-IPO shareholders sell shares when inflated earnings result in higher stock price).

Our results indicate that abnormal accruals increase significantly in the quarter before lockup expiration among firms less heavily followed by analysts and firms with lower litigation risk. We also find positive abnormal accruals only when pre-IPO shareholders are predicted to sell. In robustness tests, we confirm that these results hold when we use a noisier, ex post measure of selling: realized abnormal trading volume upon lockup expiration. Thus, we establish that both investor scrutiny and selling incentives influence manager's earnings management decisions.<sup>5</sup>

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<sup>4</sup> Field and Hanka (2001) attribute the additional trading volume after lockup expiration to selling of previously locked up shares. Thus, predicted abnormal trading volume is an appropriate proxy for selling incentives.

<sup>5</sup> Further tests show that investors do not unravel earnings management before lockup expiration: the stock price response to earnings is not significantly different if earnings are inflated with abnormal accruals.

In additional analyses, we find that abnormal accruals in the quarter before lockup expiration are positively related to the incidences of net selling by non-executive directors and beneficial owners, as long as officers do not sell shares themselves. Thus, managers do not seem to inflate earnings to benefit from the trades personally, perhaps because of particularly high litigation risk associated with “pumping and dumping.” Instead, their decision to inflate earnings is likely influenced by large, powerful pre-IPO shareholders and by the desire to maintain a positive outlook for the firm at the time of expected high selling pressure (Ertimur et al. 2014).

Next, we examine two possible explanations for earnings management in the lockup expiration quarter. First, firms may continue to inflate earnings in the lockup expiration quarter so that earnings management does not unravel too quickly and attract scrutiny. However, we find a negative autocorrelation between abnormal accruals in the quarter before and the quarter of the lockup expiration, which is inconsistent with this explanation. Second, firms may manage earnings in the lockup expiration quarter only when pre-IPO shareholders cannot sell enough shares between the lockup expiration date and the next quarterly earnings announcement because of “blackout” restrictions on trading by insiders.<sup>6</sup> Consistent with this conjecture, we find that firms with trading restrictions have positive abnormal accruals in the lockup expiration quarter, which highlights the importance of selling incentives for earnings management.

An alternative explanation for positive abnormal accruals in newly public firms is that firms invest the IPO proceeds or other sources of financing in working capital, which manifests as higher abnormal accruals. While we find a positive association between IPO proceeds and abnormal accruals, our results cannot be entirely attributed to this alternative explanation. First,

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<sup>6</sup> Blackout restrictions typically prohibit insiders from selling shares starting, at a minimum, at the end of the fiscal period-end until the earnings announcement (Jagolinzer, Lareker and Taylor 2011). During that period insiders are privy to information about quarterly performance not yet released to the public. We define the period in which selling is restricted accordingly.

we control for IPO proceeds and for pre-IPO financing cash flows throughout our multivariate tests. Second, our results are robust to the inclusion of firm fixed effects which absorb differences in economic activity between IPO firms and other firms. Third, we document a reversal of these accruals four quarters after the lockup expiration. Thus, our findings are distinct from the investment of IPO proceeds in the working capital documented in Armstrong et al. (2016).

In our final tests, we re-examine the role of earnings management in explaining long-run IPO underperformance (Teoh et al. 1998a). If high abnormal accruals before lockup expiration stem from earnings management, we expect the accruals to eventually reverse, leading to long-run negative abnormal returns. We partition firms into two groups based on the magnitude of abnormal accruals in the quarter before lockup expiration. Based on traditional and bootstrapped p-values that adjust for distributional biases with long-run returns, we find that firms with high accruals earn significantly negative value-weighted buy-and hold returns (adjusted for size, industry, and market-to-book) over the one-, two-, and three-year windows following lockup expiration. Firms with low accruals do not experience significantly negative returns, and the difference in returns between the two groups is significant over all windows.<sup>7</sup>

Our paper makes several contributions to the literature. First, our study adds to the literature on earnings management, particularly to the stream of studies that examine accruals management around equity issues (e.g., Teoh et al. 1998a; Teoh et al. 1998b; DuCharme, Malesta and Sefcik 2004; Katz 2009; Wongsunwai 2013; see Healy and Wahlen (1999) and Dechow, Ge and Schrand (2010) for an overview of this literature). We document that managers inflate earnings around the lockup expiration, resulting in a wealth transfer from less informed new investors to relatively

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<sup>7</sup> These results persist after we consider the effect of low cash flows on long-run underperformance, documented by Armstrong et al. (2016).



better informed pre-IPO shareholders, as is evidenced by the subsequent long-run underperformance.

Second, we unify the seemingly contradictory findings in the literature on earnings management around the IPO. Almost twenty years after the publication of the seminal paper by Teoh, Welch and Wong (1998a) there is still significant disagreement about whether, when and why IPO firms manage earnings. Ball and Shivakumar (2008) and Venkataraman et al. (2008) find no evidence of earnings management *prior to* the IPO, casting doubt on earnings management to inflate the issue price. Armstrong et al. (2016) document positive abnormal accruals *in the IPO year*. They also find a relation between abnormal accruals and SEC Enforcement Actions, suggesting that at least some firms are managing earnings. Yet, they do not find a link between the IPO year accruals and any incentives they study. They emphasize that the absence, thus far, of conclusive evidence linking abnormal accruals to incentives has been the primary limitation of the earnings management explanation. We fill this gap in the literature by pinpointing the timing of abnormal accruals and relating it to trading incentives of pre-IPO shareholders.

Finally, we contribute to the literature on the role of lockup periods. Lockup periods are typically perceived as means to reduce information asymmetry between pre-IPO owners and new, less informed investors in public firms (Brav and Gompers 2003). Our study shows that lockups can create perverse incentives when they expire: pre-IPO shareholders take advantage of the information asymmetry by inflating earnings and selling shares at a more beneficial price.

## **2. Earnings Management by IPO Firms: Prior Literature and Predictions**

Teoh et al. (1998a and 1998b) provide evidence of high abnormal accruals in the year firms go public. They propose that earnings management at the time of the offering results in buyers paying too high a price and, as more information about the firm is released over time, the firm

experiences a price correction. In their study, Teoh et al. (1998a and 1998b) recognize that it would be ideal to measure accruals using pre-IPO data, however, data availability forces them to focus on the IPO year accruals. A number of subsequent studies confirm that accruals are abnormally high in the IPO year and also attribute these accruals to managers' incentives to manipulate earnings *before* stock issues (see, for example, DuCharme et al. 2004).

Other studies question the typical interpretation of the findings in Teoh et al. (1998a and 1998b). The results of these studies suggest that intense scrutiny of firms' prospectuses makes firms report less, not more aggressively in the year *prior to* IPO (Ball and Shivakumar 2008; Venkataraman et al. 2008). It is important to note that researchers continue to document abnormal accruals in the IPO year, and these accruals are correlated with SEC enforcement actions (Armstrong et al. 2016). Moreover, while there does not appear to be a significant association between abnormal accruals in the IPO year and the issue price or trading by officers and directors, these abnormal accruals can be partly explained by strong growth experienced by the IPO firms (Armstrong et al. 2016).<sup>8</sup> Consequently, without clearly documented incentives for earnings management, the interpretation of positive abnormal accruals is ambiguous (Dechow et al. 2010).

Teoh et al. (1998a and 1998b) provide a number of potential reasons why firms might *maintain* earnings management after the IPO, including share sales by original entrepreneurs. They also mention that motivation to maintain earnings management might arise from: (1) pressure to meet optimistic earnings projections made during road shows, (2) preventing the unraveling of earnings management to avoid lawsuits, (3) pressure from investment bankers to report high earnings. Yet, Teoh et al. (1998a and 1998b) do not empirically examine any of these explanations, leaving unanswered the question why IPO firms manage earnings in the IPO year. Wongsunwai

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<sup>8</sup> The growth is fueled by the investment of IPO proceeds in the working capital, which, in turn, can be reflected in the measures of abnormal accruals.

(2013) studies the monitoring role of high reputation VCs and shows that firms backed by high quality VCs do not record positive abnormal accruals after the IPO. Wongsunwai (2013) also recognizes the importance of the lockup expiration, as he studies accruals over four phases, each encompassing multiple quarters, with the second phase ending before lockup expiration. However, the second phase includes all quarters subsequent to the IPO and prior to the lockup expiration. Thus, any of the incentives to manage earnings discussed by Teoh et al. (1998a and 1998b) as well as the economic effects of post-IPO cash infusion can affect accruals from this period.<sup>9</sup> We contribute to prior literature by clearly identifying the timing of abnormal accruals, and linking these accruals to pre-IPO shareholders' selling incentives while controlling for the effect of the investment of IPO proceeds in the working capital.

Pre-IPO shareholders enter into voluntary lockup agreements that restrict their ability to sell shares for a specific period of time after the IPO. Most lockup periods expire 180 days after the IPO and lockup expiration is followed by intense selling by pre-IPO shareholders.<sup>10</sup> These sales by pre-IPO shareholders generate a large spike in trading volume (Field and Hanka 2001; Bradley, Jordan, Roten and Yi 2001).<sup>11</sup>

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<sup>9</sup> Wongsunwai (2013) focuses on the monitoring role of high reputation VCs and partitions his sample based on shareholder profiles of IPO firms rather than on the selling incentives at lockup expiration. He interprets his finding that firms backed by large reputable VCs exhibit lower abnormal accruals as evidence that high quality VCs constrain earnings management. However, this finding is also consistent with the alternative explanation that abnormal accruals result from strong post-IPO growth in working capital due to cash infusion from IPO proceeds. Specifically, IPO firms not backed by high quality VCs are more likely to invest their IPO proceeds in working capital, giving the appearance of earnings management. In contrast, firms backed by high quality VCs have better access to capital pre-IPO and their working capital accruals are less sensitive to the post-IPO cash infusion (Carpenter and Petersen 2002; Bertoni, Colombo, and Croce 2010).

<sup>10</sup> Lockup agreements are widespread and over time their length has been standardized to 180 days after the IPO. For example, Brav and Gompers (2003) find lockup agreements in 99% of the firms in their sample of 2,871 IPOs. Field and Hanka (2001) report that the fraction of firms with a 180-day lockup period increased from 43% in 1988 to 91% in 1996.

<sup>11</sup> Volume initially increases to 185% of the previous average volume and eventually settles at a level approximately 40% higher than the lockup period volume.

We posit that the large scale selling by pre-IPO shareholders once the lockup expires provide incentives for firms to manage earnings. These shareholders prefer that the firm present a positive financial performance in anticipation of the lockup expiration. Further, many large pre-IPO shareholders such as angel investors, private equity firms, and venture capitalists exert lasting influence over managers and can pressure them to inflate accruals before lockup expiration. These shareholders provide funding and advice and often occupy board positions, influencing managerial compensation and career outcomes (Hellmann and Puri 2000, 2002; Cadman and Sunder 2014). In fact, standard contract terms between these investors and the firm frequently include provisions related to their access to detailed reporting, as well as the right to hire and dismiss management (Barry et al. 1990; Gompers and Lerner 2004). Moreover, while these shareholders reduce their stakes after lockup expiration, they often maintain some ownership in the IPO firms as well as board positions for an extended period of time after the lockup expiration, making it likely that managers respond to their pressure (Gompers and Lerner 2004; Wongsunwai 2013).

Consistent with pre-IPO shareholders' ability to influence management, Ertimur, Sletten and Sunder (2014) provide evidence that managers delay disclosure of bad news to enable pre-IPO shareholders to sell their shares at more favorable prices upon lockup expiration. These results indicate that strong selling incentives can temporarily dominate the monitoring role some of these pre-IPO shareholders play with respect to disclosure and financial reporting quality (Morsfield and Tan, 2006).<sup>12</sup> We thus posit that while VCs and other pre-IPO investors generally play a monitoring role, their selling incentives dominate around lockup expiration.

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<sup>12</sup> In untabulated tests we find that VC-backed firms have lower magnitudes of abnormal accruals than non-VC backed firms do, which is consistent with Morsfield and Tan 2006. This finding pertains not only to quarters that fall within the IPO year but other quarters as well. However, VC-backed firms display an inter-temporal pattern in accruals that is similar to non-VC-backed firms. Specifically, when we repeat our main multivariate tests for the subsamples of VC-backed and non-VC-backed firms separately, we find abnormal accruals for the quarter before and the quarter of the lockup expiration are significantly more positive than in other quarters in both subsamples. This is not to say that

Even in the absence of pre-IPO shareholders' direct influence, managers may choose to inflate earnings because it helps to ensure sufficient demand from new shareholders to absorb the dramatic increase in the supply of shares at lockup expiration. While the managers also have incentives to sell their stock after the IPO, insider trading laws likely prevent them from managing earnings for personal gain (Ertimur et al., 2014). Thus, earnings management, if any, is likely to be present at firms with significant selling by pre-IPO shareholders other than officers.

The incentive to manage earnings around lockup expiration is likely mitigated by scrutiny from investors, regulators and financial intermediaries. Earnings management at firms followed by a large number of analysts can be detected more easily and so the costs of inflating financial performance for these firms likely outweigh the benefits. Further, high litigation risk serves as a deterrent to earnings management (Hopkins, 2017). Consequently, we do not expect to find evidence of earnings management at firms most intensely followed by analysts and subject to high litigation risk.

### **3. Sample**

To construct a sample of IPO companies, we first retrieve all IPOs from SDC over the 1990 – 2013 period.<sup>13</sup> We obtain offer dates from the “Founding date” dataset provided by Jay Ritter. We retain IPOs with issue/offer dates within 30 days of the start date of price data on CRSP. As in Loughran and Ritter (2004), we focus on IPOs with an offer price of at least \$5.00 and exclude ADRs, unit offers, closed-end funds, REITs, banks, S&Ls and stocks not listed on CRSP. We obtain lockup expiration dates from SDC and supplement them with dates hand-collected from

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the effect pertains to all VC-backed firms. As mentioned earlier, Wongsunwai (2013) finds that firms backed by highly reputable VCs do not manage earnings after the IPO.

<sup>13</sup> We begin our sample period in 1990 as our measures of abnormal accruals are based on the information derived from the cash flow statement (Hribar and Collins 2002; Ball and Shivakumar 2008) and cash flow statement for interim periods (i.e. quarterly) was only required for the fiscal years ending after July 15 1989.

EDGAR filings when SDC indicates that an IPO is subject to a lockup but lists the lockup expiration date as missing. We impose the following additional sample selection criteria: (1) an earnings announcement cannot fall within the three days starting on the lockup expiration date, and (2) the lockup period does not exceed two years. To correctly identify the quarter that we expect to be subject to earnings management, we require the earnings announcement date for the quarter immediately preceding lockup expiration.

We use the modified cross-sectional Jones (1991) model (Dechow, Sloan and Sweeney 1995) to measure abnormal accruals. First, we estimate the following specification for each industry (based on two-digit SIC codes), fiscal quarter and fiscal year<sup>14</sup>:

$$\frac{Accruals_{i,q,t}}{Average\ TA_{i,q,t}} = \beta_0 \frac{1}{Average\ TA_{i,q,t}} + \beta_1 \frac{\Delta REV_{i,q,t}}{Average\ TA_{i,q,t}} + \beta_2 \frac{PPE_{i,q,t}}{Average\ TA_{i,q,t}} + \varepsilon_{1,q,t}$$

$Accruals_{i,q,t}$  is defined as earnings before extraordinary items (Compustat item *IBCY*) less cash flow from operations (Compustat item *OANCFY* minus Compustat item *XIDOCY*).<sup>15</sup>  $\Delta REV_{i,q,t}$  is the change in total revenues (Compustat item *SALEQ*) between quarter  $q-1$  and quarter  $q$ .  $PPE_{i,q,t}$  is gross property, plant and equipment (Compustat item *PPEGTQ*). Ball and Shivakumar (2008) point out that pre-IPO assets do not reflect the impact of IPO proceeds on total assets and therefore scaling by the pre-IPO total assets “artificially” inflates scaled post-IPO accruals. To alleviate this problem, we use average total assets ( $Average\ TA_{i,q,t}$ , Compustat item *ATQ*) over quarters  $q$  and  $q-1$  instead of lagged assets to scale all variables.

Next, we calculate expected and abnormal accruals for our sample firms as follows:

$$Expected\ Accruals_{i,q,t} = \widehat{\beta}_0 \frac{1}{Average\ TA_{i,q,t}} + \widehat{\beta}_1 \frac{\Delta REV_{i,q,t} - \Delta REC_{i,q,t}}{Average\ TA_{i,q,t}} + \widehat{\beta}_2 \frac{PPE_{i,q,t}}{Average\ TA_{i,q,t}}$$

<sup>14</sup> We exclude firms that had an IPO in the previous five years from the estimation.

<sup>15</sup> Because *IBCY*, *OANCFY* and *XIDOCY* are year-to-date values, for fiscal quarters 2 – 4 we adjust the values as the reported value in quarter  $q$  less the reported value in quarter  $q-1$ .

$$Abnormal\ Accruals_{i,q,t} = \frac{Accruals_{i,q,t}}{Average\ TA_{i,q,t}} - Expected\ Accruals_{i,q,t}$$

$\Delta REC_{i,q,t}$  is the change in total receivables (Compustat item *RECTQ*) between quarter  $q-1$  and quarter  $q$ . To include a given firm quarter in our analyses, we require the availability of abnormal accruals, our primary variable of interest. This restriction results in an initial sample of 16,558 firm-quarters (corresponding to 3,495 IPOs) starting from the quarter before the IPO to four quarters after the lockup expiration.

Our univariate examination of abnormal accruals around the IPO issue date includes quarters starting from the quarter before the IPO quarter and ending four quarters after the IPO quarter (11,065 firm-quarters, corresponding to 3,417 IPOs). We identify the “announcement quarter” in which the IPO falls,  $Quarter_{IPO}$ , and define event quarters relative to  $Quarter_{IPO}$ .<sup>16</sup> Using announcement quarters, rather than fiscal quarters, allows us to determine which quarter’s earnings information is publicly known at the time of the event of interest (i.e., IPO or lockup expiration). Figure 1 depicts the timeline of event quarters relative to the IPO.

In our primary analyses we focus on the lockup expiration date and renumber the event quarters relative to that event (rather than the IPO). From the initial sample, we retain post-IPO announcement quarters starting from two quarters before and ending four quarters after the lockup expiration quarter. This allows us to examine abnormal accruals around the lockup expiration for the entire sample of IPO firms, no matter how many announcement quarters fall between the IPO and the lockup expiration.<sup>17</sup> After we require the availability of all control variables necessary for

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<sup>16</sup> An announcement quarter starts on the earnings announcement date of quarter  $t-1$  and ends on the day before the earnings announcement date of quarter  $t$ .

<sup>17</sup> Ideally, we would number quarters relative to both the IPO and the lockup expiration and conduct a single set of univariate analysis. This, however, is not possible because the number of announcement quarters between the IPO quarter and the lockup quarter varies depending on (i) the length of the lockup period, and (ii) when the issue date and the lockup expiration date fall relative to earnings announcements. While for the majority of IPO firms (52%), the lockup expires in  $Quarter_{IPO+2}$ , for 31% of the IPOs the lockup expires in  $Quarter_{IPO+3}$ , with the remaining 17% of

our multivariate analyses the final number of announcement quarters in this sample is 10,726 (corresponding to 2,648 IPOs). Figure 2 depicts the timeline of event quarters relative to the lockup expiration.

We provide descriptive statistics on the sample characteristics in Table 1. The average quarterly abnormal accruals scaled by average total assets are positive at 0.001 but we observe significant variation from -0.028 at the first quartile to 0.033 at the third quartile. The IPO firms in our sample are small growth firms with median total assets of \$68 million, return on assets of 2.9%, and book-to-market of 0.461. The average IPO proceeds are 90% of average assets and 43% of the sample is backed by venture capitalists.

## 4. Research Design and Results

### 4.1. Timing of Earnings Management in IPO firms

To reconcile with prior research, we begin by examining quarterly abnormal accruals around the IPO issue date. If IPO firms manage earnings to maximize the proceeds from the IPO, we will observe income-increasing accruals in  $Quarter_{IPO-1}$ . This is because for earnings management to influence investors' assessment of the firm value at the time of the offering, earnings has to be publicly announced by the issue date. In contrast, earnings for  $Quarter_{IPO}$  are announced only after the issue date, by which time it is too late to influence the IPO price.

Table 2, Panel A reports mean and median quarterly abnormal accruals from  $Quarter_{IPO-1}$  to  $Quarter_{IPO+4}$  for the full sample as well as a constant sample of firms represented in all quarters we analyze.<sup>18</sup> We find no evidence of upward earnings management in  $Quarter_{IPO-1}$ —median

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lockup expirations falling in other event quarters relative to the IPO. In additional tests in Section 4.1, to provide evidence on accruals quarter-by-quarter from before the IPO to after the lockup expiration in the same test, we use the most common case: the subsample of firms with lockup expiration in  $Quarter_{IPO+2}$ .

<sup>18</sup> There are fewer observations for the  $Quarter_{IPO-1}$  and  $Quarter_{IPO}$  primarily because computing abnormal accruals for any quarter  $t$  using the cash flow statement approach requires data for both quarter  $t$  and quarter  $t-1$  and not all firms report cash flows for  $Quarter_{IPO-1}$  and  $Quarter_{IPO-2}$ .



abnormal accruals are not significantly different from zero at conventional levels and mean abnormal accruals are significantly *negative* with a p-value less than 0.05. The results are thus inconsistent with IPO firms inflating earnings to secure a higher issue price. Our conclusion from the analysis of quarterly accruals is in line with the findings in Ball and Shivakumar (2008), Venkataraman et al. (2008), and Wongsuwai (2013) who compute accruals over more extended pre-IPO fiscal periods and do not find positive abnormal accruals before the IPO.

Interestingly, we observe positive and statistically significant (p-value less than 0.01 and 0,05 for the full and constant samples, respectively) mean and median abnormal accruals in  $Quarter_{IPO+1}$  and  $Quarter_{IPO+2}$ . A typical lockup period lasts for 180 days from the issue date and 83% of the lockup periods in our sample expire in  $Quarter_{IPO+2}$  or in  $Quarter_{IPO+3}$ . Thus, the large abnormal accruals in  $Quarter_{IPO+1}$  and  $Quarter_{IPO+2}$  are consistent with earnings management occurring in anticipation of lockup expiration. We further analyze the subsample of firms for which the lockup expiration falls in  $Quarter_{IPO+2}$  (52% of our sample) which allows us to precisely identify quarters relative to both the IPO and the lockup expiration. Table 2, Panel B reports the results. Consistent with our prior inferences, we observe negative mean abnormal accruals before the IPO ( $Quarter_{IPO-1}$ ). Interestingly, we also find significant positive abnormal accruals in  $Quarter_{IPO+1} = Quarter_{Lockup-1}$  and  $Quarter_{IPO+2} = Quarter_{Lockup}$ . This analysis provides preliminary evidence for our hypothesis that the timing of upward earnings management is in anticipation of lockup expiration.

Next, we turn our attention to quarterly abnormal accruals around the IPO lockup expiration date. We create two samples of firms, one that has data available for each firm in the sample in every period (Constant Sample) and one that removes this restriction (Full sample). We denote the announcement quarter in which the lockup expiration falls as  $Quarter_{Lockup}$  (see Figure

2). Our focus is abnormal accruals in  $Quarter_{Lockup-1}$ . The earnings for this quarter are the last earnings information investors observe before the expiration of the lockup period.

Table 2, Panel C reports the results. As expected, we find significant positive mean abnormal accruals in  $Quarter_{Lockup-1}$ . Median abnormal accruals are positive and significantly different from zero only for our full sample of firm-quarters. As in Panel B, we also observe significant positive abnormal accruals in  $Quarter_{Lockup}$ . We discuss two potential explanations for this result and test them in Section 4.4. Finally, we note significant negative abnormal accruals in  $Quarter_{Lockup+4}$ , suggesting that accruals reverse around that time. Overall, our univariate tests indicate that there is no upward earnings management in the quarter before the IPO, but that young public firms manage earnings around lockup expiration.

A natural question is how our results reconcile with the original findings of Teoh et al. (1998a) and Armstrong et al. (2016). One possible explanation that reconciles our paper with theirs is that the positive abnormal accruals observed in the IPO year are driven by firms whose lockup expiration falls in the fiscal year of the IPO. To test this possibility, we measure annual abnormal accruals in the IPO year (like Armstrong et al., 2016, and Teoh et al., 1998) over the same sample period as in Armstrong et al. (1987-2006) and condition the analysis on whether the lockup expiration falls in the fiscal year of the IPO.<sup>19</sup> We find that when the lockup expires in the subsequent year to the IPO, the average abnormal accruals in the IPO year are not significantly different from zero (-0.001, with p-value of 0.81). However, when the lockup expires in the IPO year, the abnormal accruals are on average positive and significant (0.019, with p-value of 0.01).

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<sup>19</sup> While it would be ideal to compute annual accruals over the sample period used by Teoh et al, annual cash flow statement was only required starting from 1987, making us unable to compute cash-flow statement based accruals for the years prior to 1987. As explained in Hribar and Collins (2002), the balance sheet approach to computing accruals is problematic.

This suggests that abnormal accruals in the IPO year are at least partly driven by incentives created by the lockup expiration.

We next examine abnormal accruals around the lockup expiration in a multivariate framework:

$$\begin{aligned} \text{Abnormal Accruals} = & \beta_0 + \beta_1 \text{Quarter}_{\text{Lockup-1}} + \beta_2 \text{Quarter}_{\text{Lockup}} + \beta_{3-12} \text{Controls} \\ & + \text{Fixed Effects} + \varepsilon \end{aligned} \quad (1)$$

*Abnormal Accruals* denotes quarterly abnormal accruals obtained from the cross-sectional modified Jones model and adjusted for the growth in total assets as explained in Section 3.  $\text{Quarter}_{\text{Lockup-1}}$  is an indicator variable, which takes the value of one for the quarter prior to lockup expiration and zero otherwise.  $\text{Quarter}_{\text{Lockup}}$  is an indicator variable, which takes the value of one for the quarter in which the lockup expiration date falls and zero otherwise. We single out these two quarters based on our univariate evidence that IPO firms display positive abnormal accruals both in the quarter before and the quarter of the lockup expiration. The intercept captures the other quarters ( $\text{Quarter}_{\text{Lockup-2}}$ , and  $\text{Quarter}_{\text{Lockup+1}}$  through  $\text{Quarter}_{\text{Lockup+4}}$  relative to lockup expiration) and thus is the benchmark we use to evaluate whether accruals depart from normal levels in time-series, and not just vary cross-sectionally.

We control for a number of variables that are likely to affect accruals: firm size, book to market ratio, and profitability (Fairfied, Whisenant, and Yohn 2003; Francis, LaFond, Olsson and Schipper 2005; Ashbaugh-Skaife, Collins, Kinney and LaFond 2008). We also control for the fourth fiscal quarter because financial reporting attracts much more attention from financial intermediaries and investors in the fourth quarter and a firm's ability to manage earnings is likely to be more limited in that quarter (Baginski and Hasell 1990; Roychowdhury and Sletten 2012). To capture any other potential seasonality in accruals, we also include indicator variables for the

first and second fiscal quarters, with the intercept capturing the third fiscal quarter. We also control for VC backing (Morsfield and Tan 2006, Wongsunwai 2013) and for IPO proceeds to address the concerns put forward by Ball and Shivakumar (2008) and Armstrong et al. (2016) that high abnormal accruals post-IPO can result from the investment of IPO proceeds in working capital. Since this same concern can also apply to pre-IPO financing cash flows we also control for pre-IPO financing cash flows in our regressions. We estimate two sets of regressions. In the first set, we include industry fixed effects and control for both time variant and time invariant variables described above. In the second set of regressions, we include firm fixed effects and control for the time-variant variables. In these regressions, firm fixed effects capture VC-backing, IPO proceeds and pre-IPO financing cash flows, as well as any other time-invariant firm characteristics. In all regressions we cluster standard errors by firm. See Appendix A for detailed descriptions of control variables.

Table 3 presents results from the estimation of equation (1). We first tabulate results without any control variables other than fixed effects. Next, we augment these specifications with the control variables described above. We find that the coefficients on  $Quarter_{Lockup-1}$  and on  $Quarter_{Lockup}$  are positive and statistically significant at the 1% level in all four specifications. Abnormal accruals are thus significantly higher in these two quarters than in other quarters, consistent with firms inflating earnings around lockup expiration. Control variables are generally significant and in the expected direction: larger firms, with higher book to market ratios and backed by VCs have lower levels of abnormal accruals. The fourth fiscal quarter is characterized by lower abnormal accruals. Finally, IPO proceeds and pre-IPO financing cash flows are positively related to abnormal accruals indicating that there is a link between the investments in the working capital

and the measures of abnormal accruals. Importantly, even after controlling for that link, there is evidence of higher accruals in the quarter prior to and the quarter of lockup expiration.

#### **4.2. Effect of Analysts' Scrutiny and Litigation Risk on IPO Firms' Earnings Management**

If the positive abnormal accruals in the quarter before and the quarter of the lockup expiration stem from earnings management activities, we expect the documented patterns to be less pronounced for firms with high analyst following or firms subject to greater litigation risk. We classify a firm-quarter as characterized by *High Analyst Following* if the firm's analyst following as of  $Quarter_{Lockup-1}$  is in the top quartile of the distribution, and as *Low Analyst Following* otherwise. We estimate a modified version of Equation (1) in which we replace  $Quarter_{Lockup-1}$  with two terms: *High Analyst Following*  $\times$   $Quarter_{Lockup-1}$ , and *Low Analyst Following*  $\times$   $Quarter_{Lockup-1}$ . The results of this estimation are reported in Table 4, Panel A. The coefficients on *Low Analyst Following*  $\times$   $Quarter_{Lockup-1}$  are positive and significant at the 1% level (Panel A of Table 4). In contrast, abnormal accruals in firms subject to high analyst scrutiny (captured by the coefficient on *High Analyst Following*  $\times$   $Quarter_{Lockup-1}$ ) are not significantly different from zero. Moreover, the coefficients on *High Analyst Following*  $\times$   $Quarter_{Lockup-1}$  and *Low Analyst Following*  $\times$   $Quarter_{Lockup-1}$  are significantly different from each other before imposing firm fixed effects.

We then repeat this process using *High Litigation* and *Low Litigation*. *High Litigation* (*Low Litigation*) takes the value of one (zero) if the predicted value from Kim and Skinner's (2012) litigation risk model as of  $Quarter_{Lockup-1}$  is in the top quartile of the distribution. The results of the partition on litigation risk are reported in Table 4, Panel B. We observe positive and statistically significant coefficients on *Low Litigation*, while the coefficients on *High Litigation* are not significantly different from zero. The evidence of positive abnormal accruals is thus concentrated

in those firms that are not subject to high litigation risk. Overall, these results suggest that firms subject to less scrutiny from financial analysts and lower litigation risk are more likely to manage earnings before lockup expiration.

### **4.3. The Role of Selling Incentives**

We conjecture that the positive abnormal accruals in the quarter preceding lockup expiration result from earnings management to benefit pre-IPO shareholders who significantly reduce their share-holdings upon lockup expiration. If that is indeed the case, we should observe a positive relation between accruals in the quarter preceding lockup expiration and the intensity of selling incentives of pre-IPO shareholders.

In our analyses so far we use event time indicators to proxy for the presence of selling incentives. In this section, we allow for cross-sectional variation in the intensity of selling incentives. The main empirical challenge we face is the potential endogenous relation between earnings management and post-lockup-expiration sales by pre-IPO shareholders. Managers who anticipate sales by pre-IPO shareholders may inflate earnings announced right before lockup expiration. At the same time, pre-IPO shareholders likely sell shares subsequent to lockup expiration only when the latest earnings announcement was favorable enough to secure a high price for the shares, i.e. earnings management was successful in inflating the stock price. To address this issue, we first use an ex ante measure of selling incentives: predicted abnormal trading volume upon lockup expiration.<sup>20</sup>

The abnormal volume prediction model we use is based on Field and Hanka (2001) and Ertimur et al. (2014) and utilizes independent variables known prior to lockup expiration. We estimate this model for the sample of IPO firms for which all the above variables are available—

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<sup>20</sup> The IPO literature considers abnormal trading volume shortly after lockup expiration as arising from the sales by pre-IPO shareholders (Field and Hanka 2001; Bradley et al. 2001; Ertimur et al. 2014).

see Appendix B for the estimation results and Appendix A for a description of variables. We use the coefficients from this model to construct predicted abnormal trading volume for each firm in our final sample.

To examine whether positive abnormal accruals in the quarter before lockup expiration are related to selling incentives, we modify equation (1) and split  $Quarter_{Lockup-1}$  into two groups: those with positive predicted abnormal trading volume (*High Selling Incentives* x  $Quarter_{Lockup-1}$ ) and those with zero or negative predicted abnormal trading volume (*Low Selling Incentives* x  $Quarter_{Lockup-1}$ ). If there is a link between selling incentives at lockup expiration and abnormal accruals in the quarter leading up to it, we expect to find significant positive abnormal accruals for *High Selling Incentives* x  $Quarter_{Lockup-1}$  but not for *Low Selling Incentives* x  $Quarter_{Lockup-1}$ .

The results in Table 5, Panel A are consistent with our expectations—the coefficient on *High Selling Incentives* x  $Quarter_{Lockup-1}$  is positive and significant and the coefficient on *Low Selling Incentives* x  $Quarter_{Lockup-1}$  is insignificant. The two coefficients are significantly different from each other with a p-value of less than 0.05. These results point to a link between positive abnormal accruals in the quarter before lockup expiration and selling incentives of pre-IPO shareholders.

In robustness tests, we replace predicted abnormal trading volume with realized abnormal trading volume. We split  $Quarter_{Lockup-1}$  into two groups: those with positive abnormal trading volume (*High Trading Volume* x  $Quarter_{Lockup-1}$ ) and those with zero or negative abnormal trading volume (*Low Trading Volume* x  $Quarter_{Lockup-1}$ ). The results of this test are presented in Table 5, Panel B. Consistent with our inferences from Panel A, we find significant positive abnormal

accruals in the quarter before lockup expiration only for the *High Trading Volume* subsample. The Wald tests, however, fall short of finding the difference between the coefficients.<sup>21</sup>

In our last set of tests on selling incentives, we investigate whether abnormal accruals in the quarter before lockup expiration are related to sales by officers, nonexecutive directors, and beneficial owners of at least ten percent of shares outstanding who are required to file Form 4 with the SEC. As discussed before, given particularly high litigation risk associated with “pumping and dumping,” we do not expect officers to benefit personally from inflating the stock price around lockup expiration (Ertimur et al. 2014; Armstrong et al. 2016). As for the nonexecutive directors and beneficial owners, their sales create incentives to inflate earnings before lockup expiration, but are subject to insider trading regulations, so whether their sales are linked to abnormal accruals is ultimately an empirical question.

We obtain Form 4 data from Thomson Reuters. Using this data, we interact  $Quarter_{Lockup-1}$  with the following indicator variables: (1) sales by officers but no sales by nonexecutive directors and beneficial owners in the lockup quarter (*Officer Only Sales*), (2) sales by nonexecutive directors and beneficial owners but not officers in the lockup quarter (*Ben. Own. & Non-Exec. Dir. Only Sales*), (3) sales by officers and nonexecutive directors and beneficial owners in the lockup quarter (*Officer and Ben. Own. & Non-Exec. Dir. Sales*), and (4) no sales filed on Form 4 for the lockup quarter (*No Form 4 Sales*).

The results, reported in Table 6, provide evidence of significant positive abnormal accruals in the quarter before lockup expiration when there are sales by beneficial owners or non-executive directors but no officer selling.  $Quarter_{Lockup-1} \times Ben. Own. \& Non-Exec. Dir. Only Sales$  is positive and significant at the 5% level. Further, the coefficients on  $Quarter_{Lockup-1} \times Officer Only Sales$  and

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<sup>21</sup> Note realized abnormal trading volume is subject to significant look ahead bias, and is a much noisier measure of selling incentives, reducing the power of our tests.



on  $Quarter_{Lockup-1} \times Officer\ and\ Ben.\ Own.\ \&\ Non-Exec.\ Dir.\ Sales$  are not significantly different from zero, suggesting that the threat of litigation prevents managers from managing earnings when they sell shares themselves. Finally, we find a significant positive coefficient on  $Quarter_{Lockup-1} \times No\ Form\ 4\ Sales$ . This coefficient captures abnormal accruals when there were no insider sales reported to the SEC on Form 4. Such cases include sales by those pre-IPO shareholders that hold and sell significant stakes in the firm as long as their holdings account for less than ten percent of shares outstanding. In these cases incentives to inflate earnings are still present while litigation risk is mitigated.

Overall, we find support for the link between high abnormal accruals in  $Quarter_{Lockup-1}$  and the selling by pre-IPO shareholders. The evidence also indicates that personal gain of officers is unlikely to explain positive abnormal accruals in  $Quarter_{Lockup-1}$ .

#### **4.4. Earnings Management in the Quarter of Lockup Expiration**

Consistent with our expectations, so far we have provided evidence of positive abnormal accruals in the quarter before lockup expiration. In addition, we document positive abnormal accruals in the quarter of lockup expiration, a result that warrants further investigation. In this section, we examine two possible explanations for this finding: (1) firms continue to inflate earnings in the quarter of lockup expiration to prevent the prior quarter earnings management from unraveling too quickly and attracting scrutiny, and (2) firms manage earnings in the quarter of lockup expiration when pre-IPO shareholders are not able to sell shares between lockup expiration date and the next quarterly earnings announcement.

To test the first explanation, we analyze the relation between abnormal accruals in the quarter before and the quarter of lockup expiration. If earnings management observed in the quarter after the lockup expires is to prevent prior earnings management from becoming apparent, we

would expect to find a positive association between abnormal accruals from these two adjacent quarters. To test this hypothesis we re-estimate equation (1) with one modification: we split the indicator variable for the lockup quarter ( $Quarter_{Lockup}$ ) into two groups depending on whether the abnormal accruals in the quarter before lockup expiration are in the top quartile of the distribution. The coefficient on  $High\ Lag\ Accruals \times Quarter_{Lockup}$  ( $Low\ Lag\ Accruals \times Quarter_{Lockup}$ ) captures abnormal accruals in the lockup expiration quarter for firms with abnormal accruals in the previous quarter falling in (below) the top quartile of the distribution.

Table 7, Panel A presents the results.<sup>22</sup> We find no support for the explanation that firms that engage in earnings management in the quarter before lockup expiration continue to do so in the quarter of lockup expiration. The coefficient on  $High\ Lag\ Accruals \times Quarter_{Lockup}$  is negative, while that on  $Low\ Lag\ Accruals \times Quarter_{Lockup}$  is positive and highly statistically significant, indicating that firms that did not manage earnings up in  $Quarter_{Lockup-1}$  display positive abnormal accruals in  $Quarter_{Lockup}$ . The coefficients corresponding to the two groups of firms are significantly different from each other (see Wald test reported in Panel A). Overall, the results from this test suggest a substitution between earnings management in  $Quarter_{Lockup-1}$  and  $Quarter_{Lockup}$ .

We try to understand this substitution further by relating the timing of abnormal accruals to selling restrictions. First, insider sales are subject to volume limitations of Rule 144.<sup>23</sup> Second, diversifying shareholders may prefer to execute a number of smaller trades, potentially spread over more than one quarter, to avoid a negative price impact from their sales. Finally, many firms have “blackout” provisions which prevent insiders from selling shares when in possession of material

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<sup>22</sup> Because we require the availability of accruals from quarter minus one in addition to our regular set of control variables, our sample declines to 8,556 observations.

<sup>23</sup> Under Rule 144, in any quarter an insider is prohibited from selling shares that exceed the greater of one percent of the total shares outstanding or the average weekly trading volume.

private information, typically between the fiscal period end and the earnings announcement (Jagolinzer, Larcker and Taylor 2011). These provisions may not apply to all pre-IPO shareholders but many influential shareholders such as VCs, angel, private equity and institutional investors are represented on boards, and are thus potentially prevented from selling during blackouts. To the extent that the trading window in the lockup expiration quarter is shortened by blackout restrictions, pre IPO shareholders will shift (some of) their trades to the subsequent quarter ( $Quarter_{Lockup+1}$ ). This would make the lockup quarter earnings relevant for influencing the stock price at which pre-IPO shareholders sell in the subsequent quarter.

To examine this explanation empirically, we create two indicator variables, *Trading Restricted* and *Trading Not Restricted*, which partition firm-lockup quarter observations based on pre-IPO shareholders' ability to sell shares in the lockup expiration quarter. *Trading Restricted* (*Trading Not Restricted*) takes the value of one (zero) if there are seven or fewer (more than seven) days between the lockup expiration date and the fiscal period end date of the lockup quarter and there are no sales by insiders.<sup>24, 25</sup> We then modify equation (1) by replacing  $Quarter_{Lockup-1}$  and  $Quarter_{Lockup}$  with the following interaction terms: *Trading Not Restricted* x  $Quarter_{Lockup-1}$  and *Trading Restricted* x  $Quarter_{Lockup-1}$ , *Trading Not Restricted* x  $Quarter_{Lockup}$  and *Trading Restricted* x  $Quarter_{Lockup}$ .

The results of this estimation, reported in Table 7, Panel B, show that abnormal accruals are positive and significant in  $Quarter_{Lockup-1}$  only when trading is not restricted in the period immediately following lockup expiration. However, when trading is restricted after lockup expiration, abnormal accruals are positive and significant in the lockup expiration quarter, consistent with some pre-IPO shareholders delaying sales until after the lockup quarter earnings

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<sup>24</sup> Note that earnings from  $Quarter_{Lockup-1}$  are less salient as the earnings announcement of  $Quarter_{Lockup}$  approaches.

<sup>25</sup> Our results are qualitatively similar when using 1, 3, and 5 days as alternative thresholds.

announcement. The coefficients on *Trading Restricted* x  $Quarter_{Lockup-1}$  and *Trading Not Restricted* x  $Quarter_{Lockup-1}$  are significantly different from each other at the 5% level in the first model. However, the difference between the coefficient on *Trading Not Restricted* x  $Quarter_{Lockup}$  and *Trading Restricted* x  $Quarter_{Lockup}$  is not statistically significant. Because data on the specific blackout periods for each company is not available, our proxy captures trading restrictions with some measurement error. Overall, our findings indicate that IPO firms inflate earnings ahead of the quarter when pre-IPO shareholder sales are likely.

## **5. Robustness Tests and Additional Analyses**

### **5.1. Alternative Measures of Abnormal Accruals**

We repeat our main multivariate tests using a measure that incorporates accrual reversals as proposed by Dechow, Hutton, Kim and Sloan (2012). The accrual reversal measure alleviates the concern that the Modified Jones Model suffers from low power (Dechow, Hutton, Kim and Sloan 2012), which biases against finding evidence of earnings management in anticipation of the lockup expiration. It is difficult to know exactly when accruals reverse. Following Dechow et al. (2012) we assume that accruals reverse one year (four quarters) from the quarters in which earnings management took place. This assumption seems justified given our univariate evidence (Table 2, Panel C) of negative abnormal accruals four quarters after the lockup expiration quarter. We thus re-estimate our main model after adding two indicator variables:  $Quarter_{Lockup+3}$  and  $Quarter_{Lockup+4}$ . We then subtract the sum of the coefficients on  $Quarter_{Lockup+3}$  and  $Quarter_{Lockup+4}$  from the sum of the coefficients on  $Quarter_{Lockup}$  and  $Quarter_{Lockup-1}$  and test whether the resulting number is different from zero. We find the difference is significantly positive with p-value less than 0.01.

The date of the lockup expiration is set before the IPO and publicly known. It is thus exogenous relative to performance and the confounding effect of performance is not a significant concern in our setting. Nevertheless, to provide further assurance, in the second set of our robustness tests we employ performance matched discretionary accruals (Kothari et al. 2005). We match each observation in our IPO sample with a non-IPO firms based on fiscal year, fiscal quarter, two-digit SIC code and earnings before extraordinary items scaled by average total assets. Similar to Armstrong et al. (2016), we exclude observations where the absolute difference in earnings before extraordinary items scaled by average total assets between an IPO firm and its matched control is more than 0.10. We calculate performance-matched accruals as the difference in Modified Jones Model accruals between IPO firm and its matched control. Using performance-matched accruals results in a significantly smaller sample but still yields  $Quarter_{Lockup-1}$  significantly positive in three out of four of our main models, and  $Quarter_{Lockup}$  significantly positive in all four models.

## **5.2. Earnings Management and Earnings Announcement Returns**

Earnings management prior to lockup expiration is beneficial only if investors do not unravel it and if inflated earnings translate to higher stock valuations. We therefore examine whether the stock price response to earnings (earnings response coefficient or ERC) differs between firms that report high accruals in the quarter before lockup expiration versus other firms. We regress abnormal returns in the three-day window around earnings announcement for  $Quarter_{Lockup-1}$  on the earnings surprise (*Earnings Surprise*) and an interaction of earnings surprise and an indicator variable capturing abnormal accruals in the top quartile of the distribution in  $Quarter_{Lockup-1}$  (*High Accruals*). The number of observations in this analysis declines as a result of requiring IBES data to compute *Earnings Surprise*. The results are reported in Table 8. We find

that the coefficient on earnings surprise is positive and significant, as expected, while the coefficient on the interaction terms is indistinguishable from zero. Thus, investors do not appear to see through the earnings management. Instead, they value earnings of all firms in  $Quarter_{Lockup-1}$  similarly, regardless of the extent of abnormal accruals.

### 5.3. Earnings Management and Long-Run Stock Performance

To the extent that high abnormal accruals cause the stock price at the time of lockup expiration to be overstated relative to its fundamental value, then over time, as information about the firm's true earnings arrives, the stock price will decline, resulting in negative long-run returns. Using two sub-samples split on the median level of abnormal accruals in  $Quarter_{Lockup-1}$ , we compute the long-run abnormal buy-and-hold returns over 12, 24 and 36 months starting in the month following the lockup expiration. We compute the abnormal returns as the value-weighted average monthly size- and book-to-market-adjusted buy-and-hold returns.<sup>26</sup>

Table 9, Panel A reports these returns. We find negative abnormal buy-and-hold returns over the one-, two-, and three-year windows after lockup expiration for firms with high abnormal accruals in  $Quarter_{Lockup-1}$ . These returns are statistically significant using both standard and bootstrapped p-values.<sup>27</sup> In contrast, abnormal returns over the 24- and 36-month periods are not significantly different from zero for the sub-sample of firms with low abnormal accruals and significantly positive over the 12-month period using the standard p-value. Finally, long-run returns for firms with high and low abnormal accruals are significantly different from each other. In unreported tests, we use calendar-time portfolios as recommended by Mitchell and Stafford (2000). We group firms in each of the sub-samples based on abnormal accruals in  $Quarter_{Lockup-1}$  into portfolios by event month. A given firm enters the portfolio for all months that fall in the

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<sup>26</sup> Inferences are unchanged when we use equal-weighted average abnormal buy-and-hold returns (not tabulated).

<sup>27</sup> We describe our bootstrapping procedure in Table 9.

window for long-run returns computation. We regress the calendar portfolio excess returns (value-weighted monthly returns) on the momentum and three Fama-French factors. We find that the portfolio alpha is negative and significant for the first 12 months following the lockup expiration, but it is not significant over the 24- and 36-month horizon.

Finally, we address the concern that the relation between high accruals and negative long-run returns is driven by low cash flows generated by firms with high accruals (Armstrong et al. 2016). We split the subsample of firms with high accruals into two groups based on the median cash flow from operations. If the documented negative long-run returns are driven by cash flows alone, we would find significant negative returns for firms with high accruals only in the subsample with below median cash flows. Instead, as reported in Table 9, Panel B, we find significant negative long-run returns both in the high cash flow and in the low cash flow group providing reassurance that high accruals in  $Quarter_{Lockup-1}$  indeed affect the long run returns after lockup expiration. For completeness, we also report the results for the subsample of firms with below median accruals. We do not observe any significant abnormal returns in that subsample.

#### **5.4. Special Items and Restructuring Charges**

All of our results so far relied on abnormal accruals to capture managers' discretion in financial reporting. In supplemental tests we examine patterns in special items and restructuring charges, which can also be subject to managerial discretion but do not rely on the estimation of discretionary accruals. For example, managers can time inventory write-offs or restructuring charges to avoid these negative charges before lockup expiration. In Table 10 we report the mean *Special Items and Restructuring Charges* by quarter relative to the lockup expiration date.  $Quarter_{Lockup-1}$  is the only quarter for which we do not observe significantly negative *Special Items and Restructuring Charges*. Interestingly, the magnitude of these items is particularly high about

one year later, in quarters  $Quarter_{Lockup+1}$  and  $Quarter_{Lockup+2}$ . These findings confirm the tenor of our results with a measure that does not rely on the computation of abnormal accruals.

## 6. Conclusion

In this study we examine quarterly abnormal accruals of newly public firms around the IPO and the lockup expiration dates. Our findings show that while firms do not display positive abnormal accruals in anticipation of the IPO issue date, they engage in earnings management in the quarter before and the quarter of the lockup expiration. Our analyses establish a link between earnings management by IPO firms and the selling incentives of pre-IPO shareholders. Using the lockup expiration event to capture the incidence of selling incentives and predicted volume of share sales by pre-IPO shareholders to proxy for the intensity of selling incentives, we find evidence consistent with firms managing earnings ahead of anticipated selling. We find positive abnormal accruals around the lockup expiration only at less scrutinized firms, consistent with attention from investors, intermediaries and regulators mitigating firms' incentives to manage earnings. Finally, we document that long-run IPO underperformance is related to abnormal accruals reported at the time of lockup expiration. Firms with high accruals in the quarter before lockup expiration subsequently experience significant negative abnormal returns over 12-, 24-, and 36-month windows following the lockup expiration. In contrast, long-run returns in firms with low abnormal accruals are not significantly different from zero.

Overall, our evidence speaks to the exact timing and motivation behind earnings management at IPO firms: firms attempt to inflate the stock price in anticipation of selling by pre-IPO shareholders. Our research addresses seemingly contradicting conclusions from prior literature. While Teoh et al. (1998a) find positive abnormal accruals in the IPO year and link these accruals to long-run IPO underperformance, Ball and Shivakumar (2008) argue that IPO year



accruals affect earnings that are announced after the IPO—too late to influence the issue price. Instead of managerial discretion, they attribute abnormal accruals in the year of the IPO to economic growth and investment of IPO proceeds in working capital. In addition, Ball and Shivakumar (2008) and Venkataraman et al. (2008) find that firms report *conservatively* in the year before the IPO. Consistent with these studies we find no positive abnormal accruals in the quarter preceding the IPO. However, even after controlling for the investment of IPO proceeds, we find evidence of positive abnormal accruals in the year of the IPO—in the quarter before and the quarter of lockup expiration. Linking these accruals to selling incentives of pre-IPO shareholders and showing that they are mitigated by market scrutiny allows us to conclude that at least some of these accruals reflect managerial discretion. Thus, we unify the seemingly contradictory findings in the prior literature and contribute to the debate on whether firms engage in earnings management around the IPO.

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## Appendix A – Variable Definitions

Variable Name	Variable Definition
<i>Abnormal Accruals</i>	Quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter t, rather than total assets at the end of quarter t-1. Source: COMPUSTAT.
<i>Abnormal Volume</i>	The average daily abnormal trading volume multiplied by the number of days in the trading window (lockup expiration day and the following day). The average daily abnormal trading volume is the difference between the average volumes over the trading window and days -50 to -6 relative to the lockup expiration, scaled by shares outstanding. Source: CRSP.
<i>Analyst Following</i>	Number of analysts that issue at least one one-quarter-ahead earnings forecast for the firm during the announcement quarter. Source: IBES.
<i>Ben. Own. &amp; Non-Exec.</i>	
<i>Dir. Only Sales</i>	An indicator variable that is equal to one if the number of shares sold by company beneficial owners and non-executive directors in the following quarter ( $Quarter_{Lockup}$ ) exceeds the number of shares purchased by these owners and if there are no net sales by officers over the same period. Source: Thomson Financial.
<i>Book-to-Market</i>	Book value of equity scaled by market capitalization for a given quarter. Source: COMPUSTAT.
<i>Buy -Hold Abnormal Returns</i>	Buy and hold abnormal returns over 12, 24 and 36 months starting in the month following the lockup expiration. The abnormal returns are computed as the value-weighted average monthly size- and book-to-market-adjusted buy-and-hold returns. Source: CRSP.
<i>CAR around EA Quarter<sub>Lockup-1</sub></i>	The market-adjusted cumulative abnormal returns over the [-1,+1] window around the earnings announcement in $Quarter_{Lockup-1}$ . Source: CRSP.
<i>Earnings Surprise</i>	Actual earnings less median one-quarter ahead analyst forecast (for $Quarter_{Lockup-1}$ ) scaled by the absolute value of the actual earnings. At least two analysts are required to compute the median forecast. Source: IBES.
<i>High Lag Accruals</i>	An indicator variable which takes the value of one if abnormal accruals in $Quarter_{Lockup-1}$ are in the top quartile, zero otherwise.
<i>High Analyst Following</i>	An indicator variable which takes the value of one if <i>Analyst Following</i> are in the top quartile, and zero otherwise. Source: IBES.
<i>High Litigation Risk</i>	An indicator variable which takes the value of one if <i>Litigation Risk</i> in $Quarter_{Lockup-1}$ is in the top quartile, zero otherwise. Source: COMPUSTAT, CRSP.
<i>High Selling Incentives</i>	An indicator variable which takes the value of one if predicted abnormal volume is greater than zero.
<i>High Trading Volume</i>	An indicator variable which takes the value of one if realized abnormal volume is greater than zero.

<i>High Tech</i>	An indicator variable that is equal to one for firms in the following SIC industries: 2833, 2834, 2835, 2836, 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372, 7373. Source: COMPUSTAT.
<i>Litigation Risk</i>	Predicted value from the litigation risk model in Kim and Skinner (2012). Predicted value is based on model (3) reported in Table 7 on p. 302. Source: COMPUSTAT, CRSP.
<i>Lockup Length</i>	Number of days between the issue date and the lockup expiration date. Source: SDC.
<i>Low Analyst Following</i>	An indicator variable which takes the value of one if <i>Analyst Following</i> is below the top quartile, and zero otherwise. Source: IBES.
<i>Low Lag Accruals</i>	An indicator variable which takes the value of one if abnormal accruals in <i>Quarter<sub>Lockup-1</sub></i> are below the top quartile.
<i>Low Litigation Risk</i>	An indicator variable which takes the value of one if <i>Litigation Risk</i> in <i>Quarter<sub>Lockup-1</sub></i> is below the top quartile, zero otherwise. Source: COMPUSTAT, CRSP.
<i>Low Selling Incentives</i>	An indicator variable which takes the value of one if predicted abnormal volume is equal to or less than zero.
<i>Low Trading Volume</i>	An indicator variable which takes the value of one if realized abnormal volume is equal to or less than zero.
<i>% of Shares Locked</i>	One minus the percentage of shares outstanding sold in the IPO, following Field and Hanka (2001). Source: SDC.
<i>No Form 4 Sales</i>	An indicator variable equal to one if no officers or beneficial owners and non-executive directors reported net sales of shares in the following quarter ( <i>Quarter<sub>Lockup</sub></i> ). Source: Thomson Financial.
<i>Officer Only Sales</i>	An indicator variable that is equal to one if the number of shares sold by company officers in the following quarter ( <i>Quarter<sub>Lockup</sub></i> ) exceeds the number of shares purchased by the officers. Source: Thomson Financial.
<i>Officer and Ben. Own. &amp; Non-Exec. Dir. Sales</i>	An indicator variable that is equal to one if both officers and beneficial owners or non-executive directors had net sales of shares in the following quarter ( <i>Quarter<sub>Lockup</sub></i> ). Source: Thomson Financial.
<i>Predicted Abnormal Volume</i>	Predicted value from the Abnormal Volume Model in Appendix B.
<i>Pre-IPO Financing CF</i>	Financing Cash Flow from the year before the IPO deflated by average total assets. Source: COMPUSTAT.
<i>Proceeds</i>	IPO proceeds divided by average total assets for the fiscal year encompassing the IPO. Source: SDC, COMPUSTAT.
<i>Quarter 1</i>	An indicator variable equal to one for the first fiscal quarter, and zero for the remaining fiscal quarters. Source: COMPUSTAT.
<i>Quarter 2</i>	An indicator variable equal to one for the second fiscal quarter, and zero for the remaining fiscal quarters. Source: COMPUSTAT.

<i>Quarter 4</i>	An indicator variable equal to one for the fourth fiscal quarter, and zero for the remaining fiscal quarters. Source: COMPUSTAT.
<i>Quarter Lockup-1</i>	An indicator variable equal to one for the last announcement quarter for which earnings announcement precedes lockup expiration. SOURCE: SDC, COMPUSTAT.
<i>Quarter Lockup</i>	An indicator variable equal to one for the announcement quarter that encompassed lockup expiration date. SOURCE: SDC, COMPUSTAT.
<i>Return on Assets</i>	Income before extraordinary items for a given year scaled by the average total assets for the year. Source: COMPUSTAT.
<i>Run-up</i>	Natural logarithm of one plus market adjusted buy and hold returns over the window starting five days after the issue date of the IPO and ending on the fiscal quarter end date of the quarter before lockup expiration. Source: CRSP.
<i>Size</i>	Log of total assets at the beginning of quarter t. Source: COMPUSTAT.
<i>Special Items &amp; Rst. Charges</i>	The sum of special items (Compustat item SPIQ) and restructuring charges (Compustat item RCPQ) for quarter t. We assume zero in place of missing values. Source: COMPUSTAT.
<i>Top-tier Underwriter</i>	An indicator variable that is equal to one if the underwriter for the IPO has a modified Carter Manaster Rank of 9.1 (Carter and Manaster 1990, Loughran and Ritter 2004). We thank Jay Ritter for making the data available at <a href="http://bear.cba.ufl.edu/ritter/ipolink.htm">http://bear.cba.ufl.edu/ritter/ipolink.htm</a> .
<i>Trading Restricted</i>	An indicator variable which takes the value of one if there are seven or fewer days between the lockup expiration date and the fiscal period end date of the lockup quarter and there are no insider sales in that period. Source: SDC, COMPUSTAT.
<i>Trading Not Restricted</i>	An indicator variable which takes the value of one if there is more than seven days between the lockup expiration date and the fiscal period end date of the lockup quarter or there are fewer than seven days but there are insider sales during that period. Source: SDC, COMPUSTAT.
<i>Venture Capital Backed</i>	An indicator variable that is equal to one if the firm is venture capital backed and zero otherwise. Source: SDC.

## Appendix B – Abnormal Trading Volume Prediction Model

The following table presents the results from an OLS regression in which *Abnormal Volume* is the dependent variable. The sample consists of 3,011 IPO-firm-lockup expiration quarters over the 1990-2013 period. \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. All variables are defined in Appendix A.

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*Dependent Variable = Abnormal Volume*

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<b>Variable</b>	<b>Coefficient</b>	<b>t-statistic</b>
<i>Intercept</i>	-0.0779 ***	-2.37
<i>Run-up</i>	0.0242 ***	3.39
<i>Venture Capital Backed</i>	0.0464 ***	6.21
<i>% of Shares Locked</i>	0.0007 ***	3.26
<i>Top-tier Underwriter</i>	0.0097	1.32
<i>High Tech Firm</i>	0.0395 ***	5.09
<i>Lockup Length</i>	-0.0001 *	-1.69
Observations	3,011	
Adjusted R <sup>2</sup>	6.41%	

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## Table 1 Descriptive Statistics

Table 1 reports descriptive statistics for our final sample of 10,726 firm-quarter observations. Q1 and Q3 denote the first and the third quartile, respectively. All variables are defined in Appendix A.

	<b>N</b>	<b>Mean</b>	<b>Q1</b>	<b>Median</b>	<b>Q3</b>	<b>Std. Dev.</b>
<i>Abnormal Accruals</i>	10,726	0.001	-0.028	0.001	0.033	0.084
<i>Assets (in millions)</i>	10,726	375.4	29.8	67.6	176.3	3206.0
<i>Size</i>	10,726	4.334	3.395	4.214	5.172	1.467
<i>Book-to-Market</i>	10,726	0.519	0.279	0.461	0.694	0.326
<i>ROA</i>	10,726	-0.107	-0.173	0.029	0.091	0.450
<i>Quarter 1</i>	10,726	0.191	0.000	0.000	0.000	0.393
<i>Quarter 2</i>	10,726	0.209	0.000	0.000	0.000	0.407
<i>Quarter 4</i>	10,726	0.382	0.000	0.000	1.000	0.486
<i>Proceeds</i>	10,726	0.899	0.432	0.754	1.224	0.659
<i>Pre-IPO Year Financing CF</i>	10,726	0.105	-0.013	0.041	0.180	0.215
<i>VC-Backed</i>	10,726	0.427	0.000	0.000	1.000	0.495

## Table 2 Univariate Analyses of Abnormal Accruals

Table 2 reports descriptive statistics on abnormal accruals. Panel A provides these statistics by quarter relative to the IPO, Panel B by quarter relative to the IPO and to the lockup expiration for the subsample of firms where the lockup expiration falls in  $Quarter_{IPO+2}$  (see Section 3 for a more detailed explanation), and Panel C by quarter relative to the lockup expiration for the final sample after imposing all data restrictions. \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Quarters relative to the IPO and to the lockup expiration are outlined in Figures 1 and 2, respectively. Abnormal accruals are defined in Appendix A.

### Panel A Abnormal Accruals around the IPO Date

	Full Sample					Constant Sample				
	N	Mean <i>Abnormal</i> <i>Accruals</i>	t-statistic	Median <i>Abnormal</i> <i>Accruals</i>	z-statistic	N	Mean <i>Abnormal</i> <i>Accruals</i>	t-statistic	Median <i>Abnormal</i> <i>Accruals</i>	z-statistic
$Quarter_{IPO-1}$	623	-0.007 **	-2.01	-0.004	-1.56	320	-0.0124 **	-2.36	-0.0013	-0.34
$Quarter_{IPO}$	1,632	0.001	0.26	-0.001	-0.89	320	0.0024	0.46	-0.0017	-0.47
$Quarter_{IPO+1}$	2,159	0.010 ***	4.97	0.005 ***	3.42	320	0.0128 **	2.44	0.0114 ***	3.39
$Quarter_{IPO+2}$	2,237	0.010 ***	5.33	0.006 ***	5.44	320	0.0116 **	2.22	0.0068 *	1.90
$Quarter_{IPO+3}$	2,141	0.003	1.47	0.002	1.49	320	-0.0009	-0.18	-0.0008	-0.36
$Quarter_{IPO+4}$	2,273	-0.002	-1.16	-0.001	-0.58	320	0.0006	0.12	0.0005	0.16

**Panel B Abnormal Accruals around the IPO Date and the Lockup Expiration Date (Subsample Analysis)**

	Final Sample					Constant Sample				
	N	Mean <i>Abnormal Accruals</i>	t-statistic	Median <i>Abnormal Accruals</i>	z-statistic	N	Mean <i>Abnormal Accruals</i>	t-statistic	Median <i>Abnormal Accruals</i>	z-statistic
<i>Quarter</i> <sub>IPO-1</sub>	473	-0.011 ***	-2.71	-0.0042	-1.38	242	-0.0169 ***	-2.93	-0.0001	-0.02
<i>Quarter</i> <sub>IPO</sub>	1,071	-0.002	-0.59	-0.0046 **	-2.41	242	-0.0038	-0.66	-0.0075 **	-2.13
<i>Quarter</i> <sub>IPO+1</sub> = <i>Quarter</i> <sub>Lockup-1</sub>	1,119	0.013 ***	4.97	0.0078 ***	4.10	242	0.0106 *	1.84	0.0095 **	2.53
<i>Quarter</i> <sub>IPO+2</sub> = <i>Quarter</i> <sub>Lockup</sub>	1,239	0.010 ***	3.81	0.0074 ***	5.20	242	0.0114 *	1.98	0.0085 **	2.27
<i>Quarter</i> <sub>IPO+3</sub> = <i>Quarter</i> <sub>Lockup+1</sub>	1,094	0.004	1.42	0.0022 *	1.66	242	-0.0025	-0.44	-0.0004	-0.16
<i>Quarter</i> <sub>IPO+4</sub> = <i>Quarter</i> <sub>Lockup+2</sub>	1,159	-0.008 ***	-2.95	-0.0028 *	-1.88	242	-0.0056	-0.96	-0.0025	-0.76

**Panel C Abnormal Accruals around the Lockup Expiration Date**

	Final Sample					Constant Sample				
	N	Mean <i>Abnormal</i> <i>Accruals</i>	t-statistic	Median <i>Abnormal</i> <i>Accruals</i>	z-statistic	N	Mean <i>Abnormal</i> <i>Accruals</i>	t-statistic	Median <i>Abnormal</i> <i>Accruals</i>	z-statistic
<i>Quarter</i> <sub>Lockup-2</sub>	1,080	0.0011	0.45	-0.0015	-0.78	561	0.0047	1.4	0.0006	0.29
<i>Quarter</i> <sub>Lockup-1</sub>	1,571	0.0080 ***	3.80	0.0028 *	2.24	561	0.0091 ***	2.70	0.0028	1.36
<i>Quarter</i> <sub>Lockup</sub>	1,783	0.0050 **	2.53	0.0041 ***	3.40	561	0.0080 **	2.39	0.0046 *	2.08
<i>Quarter</i> <sub>Lockup+1</sub>	1,667	0.0011	0.51	0.0011	0.83	561	-0.0021	-0.63	-0.0017	0.90
<i>Quarter</i> <sub>Lockup+2</sub>	1,578	-0.0040 *	-1.89	-0.0013	-1.03	561	0.0006	0.17	0.0017	1.07
<i>Quarter</i> <sub>Lockup+3</sub>	1,500	0.0008	0.36	0.0022	1.61	561	0.0029	0.86	0.0021	0.99
<i>Quarter</i> <sub>Lockup+4</sub>	1,547	-0.0086 ***	-4.06	-0.0031 **	-2.52	561	-0.0062 *	-1.85	-0.0030	-1.41

**Table 3 Abnormal Accruals around Lockup Expiration – Multivariate Evidence**

Table 3 reports results from an OLS estimation of equation (1). The dependent variable is *Abnormal Accruals*, quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter  $t$ , rather than total assets at the end of quarter  $t-1$ . \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Industry and firm fixed effects are not reported. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

	Dependent Variable = <i>Abnormal Accruals</i>											
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.				
<i>Quarter<sub>Lockup-1</sub></i>	0.0105	***	4.64	0.0073	***	3.26	0.0104	***	4.46	0.0066	***	2.69
<i>Quarter<sub>Lockup</sub></i>	0.0072	***	3.36	0.0069	***	3.26	0.0083	***	3.76	0.0064	***	2.87
<i>Size</i>				-0.0049	***	-6.32				0.0011		0.42
<i>Book-to-Market</i>				-0.0053	*	-1.87				-0.0120	**	-2.49
<i>ROA</i>				0.0460	***	7.38				0.0671	***	6.02
<i>Quarter 1</i>				-0.0012		-0.50				-0.0010		-0.40
<i>Quarter 2</i>				-0.0016		-0.70				-0.0024		-1.02
<i>Quarter 4</i>				-0.0080	***	-3.71				-0.0079	***	-3.21
<i>Proceeds</i>				0.0047	**	2.27						
<i>Pre-IPO Year Financing CF</i>				0.0107	*	1.88						
<i>VC-Backed</i>				-0.0092	***	-5.05						
<i>Intercept</i>	0.0305		1.03	0.0700	**	2.02	-0.0023	***	-4.21	0.0108		0.92
Fixed Effects			Industry			Industry			Firm			Firm
N			10,726			10,726			10,726			10,726
Adjusted R <sup>2</sup>			1.92%			7.19%						
Within R <sup>2</sup>									0.35%			2.38%

**Table 4 Abnormal Accruals around Lockup Expiration – Role of Scrutiny**

Table 4, Panels A and B report results from an OLS estimation of equation (1), interacting  $Quarter_{Lockup-1}$  and  $Quarter_{Lockup}$  with two mutually exclusive indicators: (i) *High Analyst Following* and *Low Analyst Following* in Panel A, and (ii) *High Litigation* and *Low Litigation* in Panel B. The dependent variable is *Abnormal Accruals*, quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter  $t$ , rather than total assets at the end of quarter  $t-1$ . \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Industry and firm fixed effects are not reported. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

**Panel A Analyst Following as a Proxy for Scrutiny**

	Dependent Variable = <i>Abnormal Accruals</i>					
	Coeff.	t-stat.	Coeff.	t-stat.		
$Quarter_{Lockup-1} \times High\ Analyst\ Following$	-0.0001	-0.03	0.0006	0.14		
$Quarter_{Lockup-1} \times Low\ Analyst\ Following$	0.0091 ***	3.61	0.0080 ***	2.91		
$Quarter_{Lockup}$	0.0069 ***	3.25	0.0064 ***	2.89		
<i>Size</i>	-0.0038 ***	-4.38	0.0013	0.49		
<i>Book-to-Market</i>	-0.0062 **	-2.16	-0.0121 **	-2.51		
<i>ROA</i>	0.0459 ***	7.45	0.0671 ***	6.02		
<i>Quarter 1</i>	-0.0012	-0.50	-0.0011	-0.45		
<i>Quarter 2</i>	-0.0016	-0.67	-0.0024	-1.04		
<i>Quarter 4</i>	-0.0080 ***	-3.69	-0.0081 ***	-3.29		
<i>Proceeds</i>	0.0052 **	2.53				
<i>Pre-IPO Year Financing CF</i>	0.0102 *	1.80				
<i>VC-Backed</i>	-0.0090 ***	-4.91				
<i>High Analyst Following</i>	-0.0070 ***	-3.16				
<i>Intercept</i>	0.0645 *	1.83	0.0101	0.86		
Fixed Effects		Industry		Firm		
N		10,694		10,694		
Adjusted R <sup>2</sup>		7.32%				
Within R <sup>2</sup>				2.42%		
<b>Wald Tests</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>
$Quarter_{Lockup-1} \times Low\ Analyst\ Following$ vs. $Quarter_{Lockup-1} \times High\ Analyst\ Following$	0.0092	3.42	0.065	0.0074	2.01	0.1565

**Panel B Litigation Risk as a Proxy for Scrutiny**

Dependent Variable = <i>Abnormal Accruals</i>						
	<b>Coeff.</b>	<b>t-statistic</b>		<b>Coeff.</b>	<b>t-statistic</b>	
<i>Quarter<sub>Lockup-1</sub> x High Litigation</i>	0.0057		1.53	0.0039		0.94
<i>Quarter<sub>Lockup-1</sub> x Low Litigation</i>	0.0085 ***		3.20	0.0073 **		2.57
<i>Quarter<sub>Lockup</sub></i>	0.0070 ***		3.25	0.0062 ***		2.77
<i>Size</i>	-0.0037 ***		-3.71	0.0007		0.28
<i>Book-to-Market</i>	-0.0070 **		-2.49	-0.0125 **		-2.57
<i>ROA</i>	0.0445 ***		7.32	0.0695 ***		6.07
<i>Quarter 1</i>	-0.0016		-0.64	-0.0012		-0.47
<i>Quarter 2</i>	-0.0023		-1.00	-0.0028		-1.19
<i>Quarter 4</i>	-0.0080 ***		-3.68	-0.0078 ***		-3.15
<i>Proceeds</i>	0.0052 **		2.49			
<i>Pre-IPO Year Financing CF</i>	0.0122 **		2.17			
<i>VC-Backed</i>	-0.0094 ***		-5.16			
<i>High Litigation</i>	-0.0059 **		-2.28			
<i>Intercept</i>	0.0644 *		1.84	0.0130		1.09
Fixed Effects		Industry			Firm	
N		10,482			10,482	
Adjusted R <sup>2</sup>		7.10%				
Within R <sup>2</sup>					2.54%	
<b>Wald Tests</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>
<i>Quarter<sub>Lockup-1</sub> x Low Litigation</i> vs. <i>Quarter<sub>Lockup-1</sub> x High Litigation</i>	0.0028	0.38	0.537	0.0034	0.53	0.467

**Table 5 Abnormal Accruals around Lockup Expiration – Role of Selling Incentives**

Table 5 reports results from an OLS estimation of equation (1), interacting  $Quarter_{Lockup-1}$  with two mutually exclusive indicators *High Selling Incentives* and *Low Selling Incentives*. The proxy for selling incentives is predicted abnormal trading volume and actual trading volume in Panels A and B, respectively. The dependent variable is *Abnormal Accruals*, quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter t, rather than total assets at the end of quarter t-1. \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Industry and firm fixed effects are not reported. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

**Panel A Predicted Abnormal Trading Volume as a Proxy for Selling Incentives**

	Dependent Variable = <i>Abnormal Accruals</i>							
	Coeff.		t-stat.		Coeff.		t-stat.	
$Quarter_{Lockup-1} \times High\ Selling\ Incentives$	0.0099	***	4.17	0.0093	***	3.59		
$Quarter_{Lockup-1} \times Low\ Selling\ Incentives$	-0.0029		-0.51	-0.0044		-0.74		
$Quarter_{Lockup}$	0.0070	***	3.28	0.0064	***	2.88		
<i>Size</i>	-0.0047	***	-5.98	0.0012		0.45		
<i>Book-to-Market</i>	-0.0047		-1.61	-0.0119	**	-2.47		
<i>ROA</i>	0.0461	***	7.33	0.0671	***	6.01		
<i>Quarter 1</i>	-0.0013		-0.51	-0.0011		-0.44		
<i>Quarter 2</i>	-0.0017		-0.73	-0.0025		-1.06		
<i>Quarter 4</i>	-0.0082	***	-3.80	-0.0079	***	-3.21		
<i>Proceeds</i>	0.0087		1.54					
<i>Pre-IPO Year Financing CF</i>	0.0047	**	2.26					
<i>High Selling Incentives</i>	-0.0034		-1.31					
<i>Intercept</i>	0.0721	**	2.06	0.0104		0.89		
Fixed Effects			Industry			Firm		
N			10,726			10,726		
Adjusted R <sup>2</sup>			6.99%					
Within R <sup>2</sup>						2.45%		
<b>Wald Tests</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>		
$Quarter_{Lockup-1} \times High\ Selling\ Incentives$								
vs. $Quarter_{Lockup-1} \times Low\ Selling\ Incentives$	0.0128	4.32	0.038	0.0137	4.70	0.030		



**Panel B Actual Trading Volume as a Proxy for Selling Incentives**

	Dependent Variable = <i>Abnormal Accruals</i>					
	Coeff.		t-statistic	Coeff.		t-statistic
<i>Quarter<sub>Lockup-1</sub> x High Trading Volume</i>	0.0063	**	2.04	0.0060	*	1.81
<i>Quarter<sub>Lockup-1</sub> x Low Trading Volume</i>	0.0034		0.83	-0.0003		-0.07
<i>Quarter<sub>Lockup</sub></i>	0.0044		1.48	0.0058	*	1.91
<i>Size</i>	-0.0047	***	-5.93	0.0005		0.18
<i>Book-to-Market</i>	-0.0057	**	-2.00	-0.0131	***	-2.74
<i>ROA</i>	0.0459	***	7.37	0.0674	***	6.04
<i>Quarter 1</i>	-0.0014		-0.58	-0.0013		-0.51
<i>Quarter 2</i>	-0.0019		-0.81	-0.0026		-1.11
<i>Quarter 4</i>	-0.0086	***	-3.97	-0.0082	***	-3.36
<i>Proceeds</i>	0.0045	**	2.19			1.32
<i>Pre-IPO Year Financing CF</i>	0.0090		1.61			
<i>High Trading Volume</i>	-0.0047	**	-2.44			
<i>Intercept</i>	0.0732	**	2.02	0.0151		1.32
Fixed Effects			Industry			Firm
N			10,726			10,726
Adjusted R <sup>2</sup>			6.95%			
Within R <sup>2</sup>						2.32%
<b>Wald Tests</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>
<i>Quarter<sub>Lockup-1</sub> x High Trading Volume</i>						
vs. <i>Quarter<sub>Lockup-1</sub> x Low Trading Volume</i>	0.0029	0.28	0.594	0.0063	1.22	0.270

**Table 6 Abnormal Accruals around Lockup Expiration – Role of Insider Trades**

Table 6 reports results from an OLS estimation of equation (1) modified to include mutually exclusive variables that capture insider trading activity:  $Quarter_{Lockup-1} \times Officer\ Only\ Sales$ ,  $Quarter_{Lockup-1} \times Ben.\ Own.\ \&\ Non-Exec.\ Dir.\ Only\ Sales$ ,  $Quarter_{Lockup-1} \times No\ Form\ 4\ Sales$ ,  $Quarter_{Lockup-1} \times Officer\ and\ Ben.\ Own.\ \&\ Non-Exec.\ Dir.\ Sales$ . The dependent variable is *Abnormal Accruals*, quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter  $t$ , rather than total assets at the end of quarter  $t-1$ . \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Industry and firm fixed effects are not reported. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

	Dependent Variable = <i>Abnormal Accruals</i>			
	Coeff.	t-stat.	Coeff.	t-stat.
$Quarter_{Lockup-1} \times Officer\ Only\ Sales$	0.0067	1.10	0.0063	0.95
$Quarter_{Lockup-1} \times Ben.\ Own.\ \&\ Non-Exec.\ Dir.\ Only\ Sales$	0.0253 **	2.54	0.0269 **	2.50
$Quarter_{Lockup-1} \times No\ Form\ 4\ Sales$	0.0069 ***	2.79	0.0060 **	2.21
$Quarter_{Lockup-1} \times Officer\ and\ Ben.\ Own.\ \&\ Non-Exec.\ Dir.\ Sales$	0.0097	1.14	0.0125	1.32
$Quarter_{Lockup}$	0.0068 ***	3.22	0.0065 ***	2.89
<i>Size</i>	-0.0047 ***	-5.89	0.0012	0.46
<i>Book-to-Market</i>	-0.0061 **	-2.12	-0.0123 **	-2.55
<i>ROA</i>	0.0459 ***	7.29	0.0658 ***	5.92
<i>Quarter 1</i>	-0.0015	-0.60	-0.0012	-0.47
<i>Quarter 2</i>	-0.0018	-0.75	-0.0024	-1.03
<i>Quarter 4</i>	-0.0080 ***	-3.71	-0.0078 ***	-3.19
<i>Proceeds</i>	0.0044 **	2.16		
<i>Pre-IPO Year Financing CF</i>	0.0107 *	1.87		
<i>VC-Backed</i>	-0.0087 ***	-4.71		
<i>Officer Only Sales</i>	-0.0010	-0.34		
<i>Ben. Own. &amp; Non-Exec. Dir. Only Sales</i>	-0.0085 *	-1.72		
<i>Officer and Ben. Own. &amp; Non-Exec. Dir. Sales</i>	-0.0073 **	-2.30		
<i>Intercept</i>	0.0698 **	2.01	0.0103	0.88
Fixed Effects		Industry		Firm
N		10,630		10,630
Adjusted R <sup>2</sup>		7.23%		
Within R <sup>2</sup>				2.39%

**Table 7 Abnormal Accruals in the Quarter of Lockup Expiration**

Table 7 reports results from an OLS estimation of equation (1) modified to examine abnormal accruals in  $Quarter_{Lockup}$ . In Panel A we interact  $Quarter_{Lockup}$  with two mutually exclusive indicators *High Lag Accruals* and *Low Lag Accruals*. In Panel B, we interact both  $Quarter_{Lockup-1}$  and  $Quarter_{Lockup}$  with mutually exclusive indicators *Trading Not Restricted/ Trading Restricted*. The dependent variable is *Abnormal Accruals*, quarterly abnormal accruals from the modified cross-sectional Jones model. Accruals are obtained from the statement of cash flows and the model is further modified to deflate by average total assets in quarter  $t$ , rather than total assets at the end of quarter  $t-1$ . \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Industry and firm fixed effects are not reported. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

**Panel A Role of Abnormal Accruals in in the Quarter before Lockup Expiration**

	Dependent Variable = <i>Abnormal Accruals</i>					
	Coeff.		t-statistic	Coeff.		t-statistic
$Quarter_{Lockup-1}$	0.0074	***	3.29	0.0070	***	2.83
$Quarter_{Lockup} \times High\ Lag\ Accruals$	-0.0096	*	-1.79	-0.0113	**	-2.08
$Quarter_{Lockup} \times Low\ Lag\ Accruals$	0.0109	***	4.47	0.0102	***	4.08
<i>Size</i>	-0.0032	***	-3.80	0.0027		0.97
<i>Book-to-Market</i>	-0.0069	**	-2.32	-0.0149	***	-2.95
<i>ROA</i>	0.0411	***	7.45	0.0588	***	5.22
<i>Quarter 1</i>	-0.0017		-0.66	-0.0013		-0.50
<i>Quarter 2</i>	-0.0018		-0.76	-0.0021		-0.88
<i>Quarter 4</i>	-0.0069	***	-2.90	-0.0074	***	-2.91
<i>Proceeds</i>	0.0046	**	2.27			
<i>Pre-IPO Year Financing CF</i>	0.0141	***	2.63			
<i>VC-Backed</i>	-0.0089	***	-4.71			
<i>High Lag Accruals</i>	0.0319	***	13.13			
<i>Intercept</i>	0.0444	*	1.80	0.0049		0.40
Fixed effects	Industry			Firm		
N	8,556			8,556		
Adjusted R <sup>2</sup>	9.47%					
Within R <sup>2</sup>				2.30%		
<b>Wald Tests</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>	<b>Coeff.</b>	<b><math>\chi^2</math></b>	<b>p-value</b>
$Quarter_{Lockup} \times High\ Lag\ Accruals$						
vs. $Quarter_{Lockup} \times Low\ Lag\ Accruals$	-0.0205	12.55	0.000	-0.0215	13.48	0.0002

## Panel B Role of Trading Restrictions in the Lockup Expiration Quarter

	Dependent Variable = <i>Abnormal Accruals</i>					
	Coeff.		t-stat.	Coeff.		t-stat.
<i>Quarter</i> <sub>Lockup-1</sub> × <i>Trading Not Restricted</i>	0.0110	***	4.26	0.0094	***	3.44
<i>Quarter</i> <sub>Lockup-1</sub> × <i>Trading Restricted</i>	0.0014		0.34	0.0017		0.37
<i>Quarter</i> <sub>Lockup</sub> × <i>Trading Not Restricted</i>	0.0042		1.54	0.0044		1.57
<i>Quarter</i> <sub>Lockup</sub> × <i>Trading Restricted</i>	0.0111	***	3.30	0.0094	***	2.62
<i>Size</i>	-0.0050	***	-6.38	0.0005		0.18
<i>Book-to-Market</i>	-0.0053	*	-1.87	-0.0118	**	-2.44
<i>ROA</i>	0.0460	***	7.35	0.0668	***	5.99
<i>Quarter 1</i>	-0.0017		-0.70	-0.0015		-0.58
<i>Quarter 2</i>	-0.0016		-0.69	-0.0024		-1.03
<i>Quarter 4</i>	-0.0080	***	-3.70	-0.0079	***	-3.21
<i>Proceeds</i>	0.0106	*	1.86			
<i>Pre-IPO Year Financing CF</i>	0.0046	**	2.22			
<i>VC-Backed</i>	-0.0092	***	-5.06			
<i>Trading Not Restricted</i>	-0.0007		-0.36			
<i>Intercept</i>	0.0711	**	2.05	0.0135		1.12
Fixed effects	Industry			Firm		
N	10,726			10,726		
Adjusted R <sup>2</sup>	7.24%					
Within R <sup>2</sup>				2.43%		
<b>Wald Tests</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>	<b>Coeff.</b>	<b>χ<sup>2</sup></b>	<b>p-value</b>
<i>Quarter</i> <sub>Lockup-1</sub> × <i>Trading Not Restricted</i>						
vs. <i>Quarter</i> <sub>Lockup-1</sub> × <i>Trading Restricted</i>	0.0096	4.06	0.044	0.0077	2.15	0.143
<i>Quarter</i> <sub>Lockup</sub> × <i>Trading Not Restricted</i>						
vs. <i>Quarter</i> <sub>Lockup</sub> × <i>Trading Restricted</i>	-0.0069	2.61	0.106	-0.005	1.23	0.268

## Table 8 Abnormal Accruals and Earnings Announcement Returns

Table 8 reports results from an OLS estimation of returns around the earnings announcement in  $Quarter_{Lockup-1}$ . The dependent variable is  $CAR$  around  $EA$   $Quarter_{Lockup-1}$ , the market-adjusted cumulative abnormal returns over the  $[-1,+1]$  window around the earnings announcement in  $Quarter_{Lockup-1}$ . \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Standard errors are clustered by firm. All explanatory variables are defined in Appendix A.

	Dependent Variable = $CAR$ around $EA$ $Quarter_{Lockup-1}$	
	Coefficient	t-statistic
<i>Earnings Surprise</i>	0.0221 ***	2.93
<i>High Accruals</i>	0.0044	0.45
<i>Earnings Surprise x High Accruals</i>	0.0231	1.37
<i>Size</i>	0.0021	0.57
<i>Book-to-Market</i>	-0.0216	-1.07
<i>Number of Analysts</i>	0.0005	0.23
<i>Quarter 1</i>	-0.0051	-0.43
<i>Quarter 2</i>	-0.0070	-0.57
<i>Quarter 4</i>	-0.0269 **	-2.51
<i>Intercept</i>	0.0043	0.29
N	737	
Adjusted R <sup>2</sup>	3.55%	

## Table 9 Long-Run Underperformance

Table 9 reports buy and hold abnormal returns over 12, 24 and 36 months starting in the month following the lockup expiration. The abnormal returns are computed as the value-weighted average monthly size- and B/M-adjusted buy-and-hold returns. We calculate the boot-strapped p-values using an empirical distribution of average buy-and-hold returns from 1000 control samples matched on year and size-, and book-to-market to each of our lockup quarter observations. The bootstrapped one-sided p-value represents the proportion of buy-and-hold returns from the control samples that are larger in magnitude, but of the same sign, as the buy-and-hold returns of the event sample. In Panel A, we compute and report buy and hold abnormal returns for two sub-samples based on whether the abnormal accruals in  $Quarter_{Lockup-1}$  are above or below the median. In Panel B, we compute and report buy and hold abnormal returns for the two sub-samples of firms based on median *Abnormal Accruals* in  $Quarter_{Lockup-1}$ , further splitting it into sub-samples with cash flow from operations (CFO) above and below the median in  $Quarter_{Lockup-1}$ .

### Panel A Abnormal Accruals and Long-Run Underperformance

Window		Buy-and-Hold Abnormal Returns	Standard p-value	Bootstrap p-value
12 Months	Above Median <i>Abnormal Accruals</i>	-12.04	<.0001	0.0080
	Below Median <i>Abnormal Accruals</i>	6.23	0.0127	0.6230
	Difference	-18.27	<.0001	0.0450
24 Months	Above Median <i>Abnormal Accruals</i>	-18.50	<.0001	0.0080
	Below Median <i>Abnormal Accruals</i>	3.69	0.3112	0.7070
	Difference	-22.19	<.0001	0.0030
36 Months	Above Median <i>Abnormal Accruals</i>	-21.08	0.0000	0.0020
	Below Median <i>Abnormal Accruals</i>	7.05	0.3752	0.6140
	Difference	-28.13	0.0015	<.0001

## Panel B Abnormal Accruals, CFO and Long-Run Underperformance

Window		Buy-and-Hold Abnormal Returns	Standard p-value	Bootstrap p-value
<b>Above Median <i>Abnormal Accruals</i></b>				
12 Months	Above Median <i>CFO</i>	-8.27	0.0035	0.0880
	Below Median <i>CFO</i>	-18.26	0.0000	0.0010
	Difference	9.99	0.0250	0.1870
24 Months	Above Median <i>CFO</i>	-15.36	0.0003	0.0170
	Below Median <i>CFO</i>	-23.69	0.0000	<.0001
	Difference	8.33	0.1810	0.1140
36 Months	Above Median <i>CFO</i>	-18.58	0.0004	0.0220
	Below Median <i>CFO</i>	-25.20	0.0000	<.0001
	Difference	6.62	0.4039	0.3180
<b>Below Median <i>Abnormal Accruals</i></b>				
12 Months	Above Median <i>CFO</i>	7.33	0.0340	0.5830
	Below Median <i>CFO</i>	5.16	0.1537	0.5790
	Difference	2.17	0.6644	0.5020
24 Months	Above Median <i>CFO</i>	1.59	0.7438	0.7390
	Below Median <i>CFO</i>	5.73	0.2914	0.2500
	Difference	-4.14	0.5699	0.2980
36 Months	Above Median <i>CFO</i>	6.25	0.3751	0.6260
	Below Median <i>CFO</i>	7.83	0.5813	0.5020
	Difference	-1.58	0.9208	0.4270

**Table 10 Special Items and Restructuring Charges around the Lockup Expiration Date**

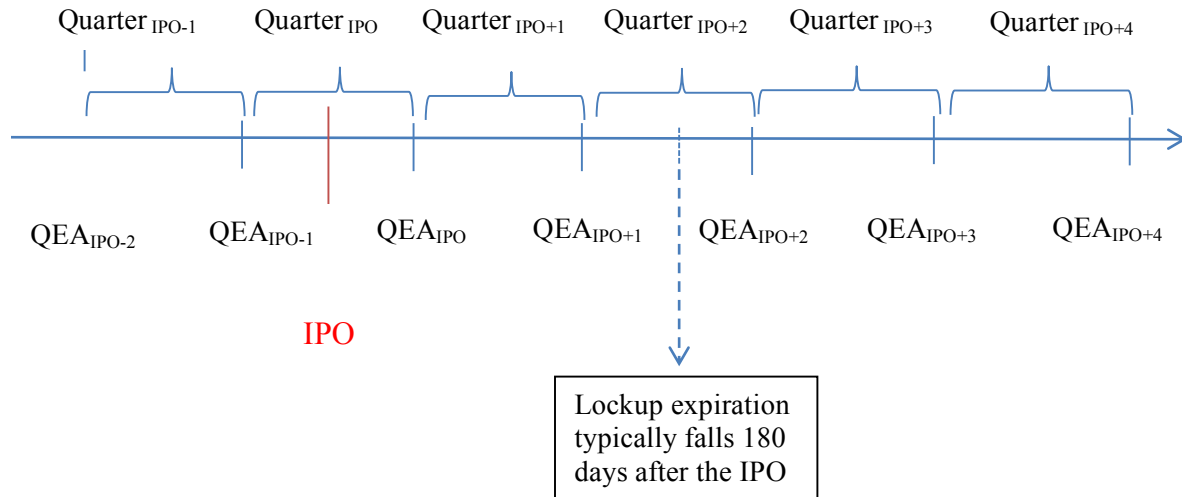
Table 10 reports the mean special items and restructuring charges by quarter relative to the lockup expiration. \*\*\*, \*\*, and \* denote p-values less than 0.01, 0.05 and 0.1, respectively. Quarters relative to the lockup expiration are outlined in Figure 2. *Special Items & Rst. Charges* are defined in Appendix A.

	N	Mean Special Items and Restructuring Charges	t-statistic
<i>Quarter</i> <sub>Lockup-2</sub>	1,080	-0.0108 **	-2.50
<i>Quarter</i> <sub>Lockup-1</sub>	1,571	-0.0053	-1.47
<i>Quarter</i> <sub>Lockup</sub>	1,783	-0.0102 ***	-3.02
<i>Quarter</i> <sub>Lockup+1</sub>	1,667	-0.0112 ***	-3.21
<i>Quarter</i> <sub>Lockup+2</sub>	1,578	-0.0148 ***	-4.15
<i>Quarter</i> <sub>Lockup+3</sub>	1,500	-0.0264 ***	-7.19
<i>Quarter</i> <sub>Lockup+4</sub>	1,547	-0.0235 ***	-6.51



### Figure 1 – Timeline of Announcement Quarters Relative to IPO

Figure 1 depicts how announcement quarters relate to the Initial Public Offering (IPO). QEA stands for quarterly earnings announcement.



### Figure 2 – Timeline of Announcement Quarters Relative to Lockup Expiration

Figure 2 depicts how announcement quarters relate to lockup expiration. QEA stands for quarterly earnings announcement.

