Good News Early – Bad News Late: Evidence from the Alternative Investment Market (AIM)

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Abstract

We examine whether early/late reporting firms are characterized by variables such as size, liquidity, bankruptcy risk and reporting lag history. The most important predictor of the reporting lag is the lag ranking observed in the previous year. Early firms have a lower bid-ask spread than late firms and early announcements are more likely to contain unexpected good news. There is also evidence that pre-disclosure information asymmetry is higher in early rather than late firms. Conversely, late announcements are characterised by bad news and the stock returns of late firms underperform early and control firms both before and after the announcement.

Key Words: Alternative Investment Market (AIM), Earnings Announcement Timing, Good News Early – Bad News Late, Reporting Lag, Information Asymmetry.

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1 Introduction

Using a sample of firms listed on the Alternative Investment Market (AIM) section of the London Stock Exchange (LSE), we examine the relationship between firm specific characteristics and the time lag between the end of a firm's financial reporting period and the publication of the financial results (reporting lag). We also examine the relationship between firms' stock market performance, liquidity and reporting lags. Specifically, we test the hypothesis that the announcements of early reporting firms are characterised by unexpected good news and that those of late firms are characterised by unexpected bad news. After controlling for market, size, style, liquidity and industry risk factors we find evidence in support of this hypothesis for both early and late reporting firms. However, we find little evidence of differences in the absolute magnitude of returns between the three groups of firms: early, middle and late, although we do find evidence that good news, inferred from price reactions around the announcements is on average more surprising than bad news. We also find that the abnormal trading volume is depressed prior to early announcements but not late announcements, indicating that information asymmetry is greater prior to early announcements. Late reporting firms have a higher bid-ask spread than early reporting firms and their stock returns underperform both early reporting firms and control firms before and after their announcements. We also find evidence that size, free-float, bid-ask spread and financial year-end month are all associated with reporting lag. However, firms' reporting lags in the previous financial year explain more of the cross sectional variation in reporting lags than any of the other variables combined.

In a pioneering study of US firms Beaver (1968: 72) observed that *"[a] possible avenue for future research would be to study the information content of the time lag itself (e.g., is "bad" news reported less rapidly than "good" news?)."* The 'good news early bad news late' phenomenon has since been documented in a number of markets and time periods around the

world (for example in the US market: Kross, 1981; Kross, 1982; Kross and Schroeder, 1984; Chambers and Penman, 1984; Chai and Tung, 2002; Kothari, Shu and Wysocki, 2009; and in China: Haw, Qi and Wu, 2000; Chen, Cheng and Gao, 2005).

Managers of firms listed on the Chinese stock market between 1995 and 2002 who announce early are more likely to be releasing news that is both positive and unanticipated by investors than managers who announce late (Chen et al. 2005). Likewise, managers of firms listed on the US markets between 1962 and 2004 tend to delay the announcement of bad news. However, unlike the Chinese firms observed by Chen et al. (2005), the US market reaction to late negative news announcements is greater than that for early positive news announcements; thus indicating that late announcements of US firms contain more surprising information than early announcements (Kothari et al. 2009).

Given the extensive analysis of the good news early bad news late phenomenon, one might expect investors and regulators to apply a robust policy to discourage firms from delaying the release of bad news. For example, Skinner (1994) argues that managerial fear of litigation results in the early disclosure of bad news. Thus managers have increased incentives for early voluntary disclosures of bad news and would require additional time to verify good news before its release. Later, Begley and Fischer (1998: 347) suggest that *"[r]ecent anecdotal and empirical evidence indicates that the benefits and costs of delay are likely to have changed since the 1970s. This change, in turn, raises the possibility that the good news early, bad news late phenomenon may no longer exist."* More recently in the US market, Kothari et al. (2009: 267) report that "*in the post–Reg FD period the tendency (or ability) to delay bad news significantly declines."* Yet in many other markets, such as the AIM, firms still have considerable discretion regarding the duration of their reporting lag and we document that many firms exercise this discretion by extending their reporting lag to the regulatory limit.

In addition to investigating the information content of the reporting lag some studies have also investigated the determinants of reporting lag. For example, Kothari et al. (2009: 257) state that *"[g]iven that additional bad news increases the likelihood of both financial distress and management turnover, managers have strong incentives to delay bad news in the hope of an eventual turnaround. Therefore, we expect the asymmetry in the disclosure of bad versus good news to be exacerbated in financially distressed firms."* Reporting lag determinants are also investigated by Bowen, Johnson, Shevlin and Shores (1992) who find evidence of firms opportunistically burying bad news in the weeks following the 1987 stock market crash.

We extend the above research into the causes and characteristics of early/late reporting firms. Specifically we identify persistence in reporting lag from year to year within firms and a positive relationship between reporting lag and bid-ask spread. Free-float is an inverse measure of ownership concentration and we find some evidence that reporting lag is longer in firms with a higher free-float and thus lower ownership concentration. Firms whose financial year-ends are in the most common months of December, March, June and September also exhibit a longer reporting lag on average, perhaps due to competition for audit services during busy months. We find a modest negative relationship between firm size and reporting lags, perhaps indicating that larger firms are able to receive priority among audit firms, or have access to greater internal resources when preparing financial statements.

To our knowledge, not a single study in this area has been conducted for the UK market, despite its size and international importance. Although there is UK-based research that considers market reactions to earnings and other announcements (for example, Brookfield and Morris, 1992; Pope and Inyangete, (1992)) neither study examines the timing issue studied here. Like Kothari et al. (2009) and Chen et al. (2005) we investigate whether early or late announcements contain more unanticipated information. Although both early and late announcements contain unanticipated information we find little evidence of a difference in

the absolute magnitude or surprise between the two groups. However, unlike the observations of Kothari et al. with respect to the US market, we find that good news announcements of AIM firms, grouped irrespective of reporting lag, contain more unanticipated news than bad news announcements. Furthermore, contrary to the arguments advanced by Skinner (1994) and Begley and Fischer (1998) but consistent with much of the empirical research, including that of Kothari et al. and Chen et al. above, we find that early announcements are more likely to contain good news than bad news and that late announcing firms underperform relative to other groups of firms. Therefore, despite the widespread awareness of the good news early bad news late phenomenon among investors and accounting researchers, as well as regulatory reforms enacted during the period since the phenomenon was first documented, we demonstrate its continued existence in the UK market. Thus, we provide recent out-of-sample evidence extending previous research, while the choice of the AIM market provides a rich data sample for our analysis because managers of AIM listed firms are allowed considerable discretion with regards to the duration of the reporting lag.

The following section (2) establishes the theoretical background and presents our research hypothesis. Section (3) describes our data before the hypothesis tests are evaluated in section (4). Section (5) presents the summary and conclusions.

2 Theoretical background and research hypothesis

This section is divided into two parts. First we hypothesise upon the characteristics of early/late reporting firms and outline possible determinants of reporting lags. We then provide motivation for our second group of hypothesis examining the relationship between the timing and information content of announcements.

2.1 Hypotheses on the characteristics of early/late reporting firms

2.1.1 Managerial entrenchment and other agency problems

Some firms may have management that are entrenched or otherwise indifferent to shareholders' desires for information on a timely basis. If shareholders are unable to influence managers to release information in a timely manner in one period there is no reason to suppose that managers will be any more likely to improve their timeliness in subsequent periods. This leads to our hypothesis:

> *Hypothesis 1: Reporting lag in year t has a positive relationship with reporting lag in year t_{-1}, after controlling for other factors.*

Minority shareholders of firms with a dispersed ownership may be more capable of holding firm management to account than minority investors in firms with a concentrated share ownership of owner managers (see for example, La Porta et al., 1999 and La Porta et al., 2000). Firms with concentrated ownership, particularly those managed by large block-holders, may exhibit greater information asymmetry between the management and the minority shareholders. Thus controlling shareholders may engage in behaviours that are detrimental to the welfare of minority shareholders if their interests diverge (Attig et al. 2006). Furthermore, given the greater managerial entrenchment of owner-managed firms, there is likely to be less incentive to report on a timely basis unless the managers wish to divest some of their holdings, or issue new equity. In fact, if managers wish to take the firm private, or to increase their stakes in the firm's stock, they actually have an incentive to report as late as possible if this results in a depressed the stock price. On the other hand it is conceivable that large block-holders and founder-shareholders' interests are aligned with those of minority shareholders, and that because of their substantial holdings these owners are able to exert greater control over the timing of financial reporting to the benefit of all

shareholders (Coffee, 1991 and Bhide, 1993). For example, if large shareholders, including owner managers, believe that timely reporting increases the value of their investment they are likely to exert greater effort to ensure that results are published on time than managers of firms with more dispersed ownership. This leads to our two-tailed hypothesis:

Hypothesis 2: Null: reporting lag is unrelated to ownership concentration

Alternative (a): Reporting lag has a positive relationship with ownership concentration and thus a negative relationship with free-float.

Alternative (b): Reporting lag has a negative relationship with ownership concentration and thus a positive relationship with free-float.

Information asymmetry between insiders (managers) and outsiders (minority shareholders) is likely to be greater in firms with entrenched management. According to Glosten and Milgrom (1985) market-makers increase the bid-ask spread as a protection mechanism in the face of perceived information asymmetry. If entrenchment enables firm managers to exploit information asymmetry by withholding information, without redress from minority investors then the average bid-ask-spread will be higher in firms where the entrenchment is recognised by the market. Such firms are also likely to have a longer reporting lag on average; hence our hypothesis:

Hypothesis 3: Firms exhibiting the longest reporting lag will have a higher average bid-ask spread and this will be observable even at the financial year-end preceding the announcement.

2.2 Hypotheses on the information content of early/late announcements

2.2.1 Good news early – bad news late

If a company has received particularly bad news or if it has performed badly managers may decide to delay publication in the hope that they will receive good news to counteract it (Lurie and Pastena, 1975: 59). Conversely, Begley and Fischer (1998) suggest that greater litigation risk in the years leading up to their study may have encouraged managers to release bad news earlier than in prior periods. In fact, Skinner (1994) argues that the threat of litigation has led firms to make disclosures, such as trading announcements, on any potential bad earnings news even before it is confirmed. There is clearly some inconsistency among these competing arguments as well as a possibility that early research in this area may now be out of date. In fact, tighter regulations prompted by accounting scandals such as Enron may have changed the way firms manage their earnings announcements, particularly if the threat of litigation against firms that delay bad news has increased. This could result in late announcements no longer being characterised by bad news. Nonetheless, much of the more recent literature, including Chen et al. (2005) and Kothari et al. (2009), is consistent with earlier studies (for example, Kross and Schroeder, 1984; Chambers and Penman, 1984; Penman 1987) to the effect that firms tend to release good news early and bad news late. A different approach is adopted by Chen and Mohan (1994) who survey the Chief Financial Officers of a large sample of US firms. They find that while half of all firms maintained a fixed timing, those that varied their announcement dates did so primarily as a result of unexpectedly low earnings. We investigate whether the good news early bad news late phenomenon still exists for a recent sample of UK AIM listed firms hence:

> *Hypothesis 4: Firms reporting early will have positive abnormal returns on the announcement date.*

and

Hypothesis 5: Firms reporting late will have negative abnormal returns on the announcement date.

2.2.2 Silent signal and uncertainty

It is likely that delaying the release of negative information will exacerbate its impact since shareholders are offered a "silent signal" of bad news to come. When investors are provided with information uncertainty-risk is removed, even if the information does not contain 'good-news'. On the other hand, when no information is provided investors are likely to assume the worst and may sell their shares (Fama and Laffer, 1971). The information void increases the risk, and hence, the required return, with an inverse effect on the stock price. Therefore, it is anticipated that firms who report quickly after the end of the accounting period, or provide clear guidance as to when investors can expect publication of the results, will have higher returns in the period following the accounting year-end than firms that delay publication substantially longer than average. This leads us to the following:

Hypothesis 6: Firms reporting early/late will have higher/lower pre-announcement day cumulative abnormal returns than firms reporting late/early.

2.3 Hypothesis on pre-disclosure information asymmetry and surprise

Firm managers may have an incentive to release good news early but in stages thus spreading the benefit over time in a way that optimizes their personal benefits. Conversely bad news may be withheld in the hope that mitigating good news or a suitable excuse can be identified, thus increasing the surprise when the bad news is eventually released (Kothari et al. 2009: 246). Counterarguments to these hypotheses are proposed by Chen et al. (2005) who suggest that unexpectedly early good news has less time for pre-disclosure leakage than late bad news. Managers may also trail bad news in advance by guiding down analysts' profit

forecasts as a form of expectations management thus softening the shock when the bad news is eventually released in full; perhaps reducing the litigation risk highlighted by Skinner (1994), Begley and Fischer (1998) and others. In addition, as the reporting lag increases, investors begin to get suspicious and either: (a) assume that the late news will be bad, or (b) start to obtain clues as to its content, either from discussions with management or other sources such as the results of competing firms (Chambers and Penman 1984). Hence, Chen et al. (2005) argue that both the amount of unanticipated information and the perceived pre-disclosure information asymmetry is greater in firms reporting early. The inconsistency between the arguments of Chen et al. and those of Kothari et al., form the basis of our final hypothesis:

> *Hypothesis 7: Null: there is no significant difference between early and late announcements regarding the absolute quantity of unanticipated information and the level of pre-disclosure information asymmetry.*
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> *Alternative (a) Early announcements contain more unanticipated information than late announcements and pre-disclosure information asymmetry is higher than in late announcements*
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> *Alternative (b) Late announcements contain more unanticipated information than early announcements and pre-disclosure information asymmetry is higher than in early announcements.*

3 Data selection and time period of analysis

Previous studies of announcement timing have focused upon markets where the regulatory maximum reporting lag for annual financial statements is 3 – 4 months from the end of the reporting period. One unique feature of the present study is the focus on the AIM where firms

have a maximum time limit of six months from the end of their financial year to the publication of their annual results to shareholders.[2]

There are several characteristics of the AIM which make it an attractive data source for this study. First, the high dispersion in reporting lag length resulting from the discretion managers are allowed under the AIM rules provides an ideal opportunity to determine whether existing results are valid outside of the US and Chinese markets. Second, the wide range of firm sizes, including many relatively low market capitalisation stocks, and their consequent lack of liquidity, imply that market reactions to bad news (or no news interpreted as signalling future bad news) are likely to be magnified. This is also likely to be exacerbated by the paucity of information relative to the main market, given the significantly reduced interest from analysts in providing research for such stocks. Third, the equity of many AIM firms is often tightly held by founder shareholders who exercise varying degrees of executive control, meaning that the ability of minority shareholders to exercise their control rights is likely to exhibit greater variation between firms than on a more tightly regulated market such as the main section of the LSE where the minimum free-float is 25%. The richness resulting

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[2] The AIM replaced the Unlisted Securities Market (USM) on 19 June 1995, and is the junior section of the London Stock Exchange (LSE). It is regulated by the London Stock Exchange, which means that AIM listings are not subject to the UK Listing Authority rules that apply to firms listed on the main section of the LSE. The result is that AIM listed firms have to meet less stringent financial and reporting standards than those quoted on the main section of the LSE. The lower reporting threshold is intended to facilitate firms seeking to raise equity capital in their early stages of development before they have achieved a long trading history, or a stable record of profitability.

If fiscal incentives to investors are interpreted as a measure of perceived importance to future economic growth and prosperity, then Her Majesty's Treasury apparently viewed the AIM as important in this respect, because individual AIM investors qualified for business asset taper relief against capital gains tax, enterprise investment scheme tax relief, inheritance tax business property relief and loss relief, if investments are held for the qualifying minimum periods. These fiscal incentives were not available to investors in firms quoted on the main section. Despite the importance of AIM implied by these fiscal incentives, surprisingly little academic research has been conducted to examine the efficiency of this market in channelling funds into the UK economy, or the disclosure risks to investors.

from these data characteristics offers insights into the reporting behaviour of firms that are not available in more tightly regulated markets.

3.1 Sample and time period selection within the AIM universe

We base our financial years for data analysis upon the UK fiscal year, which runs from April to March. Our first year of data includes firms with financial year-ends from April 2006 to March 2007, followed by three additional years to the end of March 2010.

The firms used in this study are selected from the Thomson-Reuters-Datastream (DS) list of UK domestic firms which are part of the London Stock Exchange AIM section represented by the DS list code (UKAIM) which contains both live and dead firms. Firms with non UK ISIN numbers were removed because, although categorised by DS as being UK domestic firms, they may originate from a jurisdiction with different company law and corporate governance standards to the UK. In addition, the following categories of firms were excluded from our study: (1) financial firms including investment entities; (2) firms that had a market capitalization of less than £5m on the 1st January 2006; (3) firms whose announcement data was either missing, or otherwise found to be unreliable because the data conflicted with data from other sources; (4) firms suspended in the year before the 2006/2007 financial year-end, and (5) firms whose initial listing on the AIM took place after the 1st January 2006. The final sample comprised 464 firms and 1,856 firm years.

The reporting lag is defined as the number of calendar days between the financial year-end and the reporting date. In the final year of the sample (2009/2010), no reporting date exists for firms suspended as a result of failing to make the six month deadline and not reinstated by the end of the study period. These firms are given a default reporting lag of 190 days. For the sample as a whole, it is assumed that any firm that does not report within 183 calendar days of the year-end is suspended, even if the firm eventually reports and is reinstated.

Two methods are used to define early and late firms. The first method sorts firms into quintiles based upon their reporting lag. Early firms comprise the first quintile with the shortest reporting lag. On-time firms are those from the middle quintile and late firms comprise the fifth quintile. The second method, only applies to the most recent three years of data as firms are sorted based upon the change in their reporting lag relative to the previous year. As with the first method, early and late firms comprise the first and fifth quintiles respectively. However, on-time firms are those firms that report within plus or minus three calendar days of the previous year's reporting date.

Market data relating to the AIM, the UK market, and individual firms within the sample is summarised in Table 1. Daily total (dividend adjusted) returns are computed for UK market and industry benchmark indices and for each firm in the sample. In order to assess firms' bankruptcy risk at the financial year-end, firm interim financial statements are used to generate z-scores following the method applied by Argarwal and Taffler (2007) and Taffler (1983).[3] The z-scores are then ranked into percentiles across firms.

4 Data analysis

4.1 Summary statistics

The basic distribution characteristics of firm reporting lags, industry groups and firm financial year-ends are reported in Table 2. Most of the sample firms are in the industrials, consumer services, technology, and basic materials industry groups, while the most frequent year-end is December followed by March, June and September. The minimum reporting lag observed is 31 calendar days and the maximum is 410 calendar days. Within this range the 25th percentile for the whole sample is 78 days, the median is 94 days and the 75th percentile is 142 days. The distribution of firms within different reporting lag ranges can also be observed in Figure 1 for individual years and for all years combined. The distribution is

[3] Interim income statement variables are annualised in order to compute z-scores.

slightly bimodal, as around 15% report in the few weeks immediately preceding the 6 month deadline, while a further group of firms report after six months and have their listings temporarily suspended as a result. The data presented in Table 2 and in Figure 1 indicate that apart from an increase in the proportion of suspended firms in the financial year 2009/10, there is little variation in the distribution between each of the years studied.

The distribution of early/late reporting firms in different size categories is illustrated in Figure 2. Nearly 50% of suspended firms had a market capitalization of < £5m at the preceding financial year-end, while around 70% of suspended firms had a market capitalisation of < £15m. More of the firms with a market capitalisation < £5m at the preceding financial year are late or suspended firms, than firms in the middle or early reporting lag quintile. However, in the population of firms > £5m at the preceding financial year-end, and firms which report before the 6 month deadline, there seems to be relatively little difference in the distribution of early, middle and late quintiles throughout the different size categories.

For each firm in the study the trailing 3-month average of the logarithmic percentage spread was recorded at the financial year-end date preceding the announcement. The distributions of the early-reporting quintile, middle quintile, late-reporting quintile and suspended firms among different bid-ask spread ranges are illustrated in Figure 3. It is clear that the distribution of suspended firms and late firms is weighted toward higher bid-ask spread categories compared to the early and middle reporting quintiles of firms and that the early reporting quintile also appears to have a greater proportion of firms in the lower bid-ask spread categories than the middle quintile, thus providing support for hypothesis 3.

The cross-sectional sample means of individual firms' bid-ask spreads during the 2-year observation period for the early and late reporting portfolios are illustrated in Figure 4. It is evident that firms in the early reporting portfolio have an average bid-ask-spread that is

around 3% lower than those in the late reporting portfolio over the whole observation period. Both portfolios contain firms of similar size; therefore, the difference in average bid-ask-spreads is not due to a firm size effect. The observed pattern is strongly consistent with hypothesis 3 and implies that late firms are perceived by the market to be characterized by high levels of information asymmetry between insiders and outsiders as early as the financial year-end preceding the announcement.

4.2 Characteristics of early/late reporting firms: hypotheses 1 – 3

Following data collection and the preliminary analysis described in section 4.1, the sample of 1,856 firm years was further edited to remove firms with a market capitalization of < £5m at the financial year-end date preceding the announcement and firms which were suspended due to their having a reporting lag greater than 183 calendar days (approximately 6 months). The results reported in subsequent sections are thus based upon a final edited sample of 1,515 firm years for firms sorted based upon reporting lag quintile and 1,064 firm years for firms sorted based upon the change in their reporting lag relative to the previous year. Additional unreported analysis indicates that our conclusions are robust to the editing process.

When testing hypotheses 1 – 3, it is necessary to control for factors in addition to our variables of interest that are also likely to influence the duration of the reporting lag. For example, if timely reporting reduces agency costs, and hence, capital costs, scale economies resulting from bigger fund raisings will enable larger firms to justify greater investor relations (IR) budgets and more determined efforts to meet reporting deadlines than smaller firms, where the cost of timely disclosure may exceed the benefits derived from reduced capital costs. In addition, larger firms are more likely to be run by professional managers whereas the management of smaller firms, and start-ups, perhaps controlled by their founding entrepreneurs, are more likely to be naive to the importance of IR and to fail to appreciate

that shareholders, in the absence of information, are likely to assume the worst and apply a higher risk premium to firms that delay their results. Large audit firms are likely to have the resources available to complete audits in a timely manner, but may be more costly than smaller audit firms. Equally, larger client firms are more likely to be able to afford large auditing firms and to receive priority with regards to the timing of audits, whereas smaller firms may be competing with higher value audit clients for the auditor's services and find it harder to have their accounts audited in a timely manner as a result. In addition, many small firms have relatively few employees therefore, given that the rules allow for considerable delays, senior managers may feel that they have more urgent operational priorities than the timely publication of results. It is thus conceivable that smaller firms are unable to afford both the management time and the requisite audit fees to publish their financial results within a timeframe that would be considered normal for a larger firm. In addition, firms with financial year-ends in the most popular months of December, March, June and September may face greater competition for audit services than firms with financial year-ends in quieter months. Therefore, we control for firm size and predict that the reporting lag will be shorter in larger firms and shorter in firms with financial years that end in less crowded months than December, March, June and September.

Managers of firms at risk of financial distress are likely to be reluctant to report bad news, or news that could be interpreted negatively by creditors, investors, competitors, customers and suppliers, for fear that the information may result in a credit downgrade, withdrawal of credit, or other impediments to continuation as a going concern. As such, managers have an incentive to delay publication of bad news in the hope that later they will be able to combine it with some offsetting positive development, such as a new contract, or improved trading conditions that either mitigate the bad news or eliminate it altogether. Even if they are unable to find offsetting good news to mitigate the bad news, delaying its release may allow its

effect to be reflected in stock prices slowly, thereby buying crucial time for the renegotiation of debt, or trade contracts, the issue of new shares, or simply the vesting of managerial compensation arrangements. There may also be delays while the management negotiate with the auditors over the presentation of a firm's accounts, perhaps pending a request for more information or evidence that the client firm is a going concern before agreeing to sign off its accounts (for example, Francis et al., 1994; Leventis et al., 2005). Therefore, we also control for symptoms of financial distress, including the book-to-market ratio and the z-score ranking of Taffler (1983) and Argarwal and Taffler (2007). We predict that, the reporting lag will be longer in firms with a high book to market ratio and also in firms with a lower Taffler z-score ranking.

In order to test hypotheses 1 – 3 and control for the additional variables we use the least squares procedure to estimate the coefficients of a general cross-sectional regression model Ia for the whole sample:

$$Lag_i = \alpha_0 + b_1\, RL\ rank_{i,t-1} + b_2\, FF_i + b_3\, BAS_i + b_4\, MV_i + b_5\, busy\ month + b_6\, BM_i + b_7\, Taffz_i + b_8\, 2009/10\ year + \varepsilon.$$

Model Ia.

The variable, Lag_i is the reporting lag in days for firm *i* and $RL\ rank_{i,t-1}$ is the reporting lag percentile rank of firm, *i,* in the previous financial year (only available for 2007/8, 2008/9 and 2009/10). Hypothesis 1 predicts that the coefficient b_1 will be positive. The variable FF_i is the percentage free-float of each firm, *i,* at the respective firm's financial year-end preceding the respective annual results announcement. Free-float is an inverse measure of ownership concentration and, being two-tailed, our second hypothesis is agnostic about the predicted sign of the coefficient b_2. Hypothesis 3 predicts that the coefficient b_3 on the bid-ask-spread variable, BAS_i, will be positive. The BAS_i variable is the percentile rank for each firm, *i,* of

the three month trailing average log % spread at the financial year-end that precedes each firms respective results announcement. The control variables, MV_i, BM_i, *and* $Taffz_i$ are the percentile ranks of market capitalisation, book to market ratio, free-float, and Taffler z-score respectively of each firm, *i,* at the respective firm's financial year-end prior to the announcement.[4] The variable *busy month* is a dummy equal to one if the firm's financial year-end is in any of December, March, June or September, which are the months when the greatest number of firms have their financial year-ends. An additional control is a dummy variable for the year 2009/10 which is the first financial year following the financial crisis.[5] With the exception of the 2009/10 year dummy, all of the variables are publically available at the time of each firm's financial year-end and before the publication of the results for that year. Coefficients are also estimated for: (a) an additional model Ib which is identical to model Ia in every respect apart from the dependent variable, which is percentile rank reporting lag rather than raw reporting lag, and (b) a parsimonious variation of both models, which includes only the intercept coefficient and $RL\ rank_{i,t-1}$ variables.

Coefficients, t-statistics and other summary statistics for the two models are reported in Table 3. Consistent with hypotheses 1, 2b and 3 we find positive coefficients on the variables: previous year's reporting lag, free-float and the bid-ask-spread for model Ia, although free float is not significant for model Ib. Coefficient signs on the control variables, size, busy year-ends are also as predicted for model Ia. However, we do not find significant coefficients on the control variables book-to-market or bankruptcy risk as measured by the Taffler z-score for either model Ia or model Ib.

[4] Raw market capitalization percentile rank is collinear with *BAS* percentile rank, so to address this problem, *MV* percentile rank was regressed as the dependent variable on the *BAS* percentile, rank together with an intercept coefficient. The residuals of this regression, which are orthogonal to *BAS* percentile rank, are substituted for the raw *MV* percentile rank in model I.

[5] An alternative version of the model also included industry dummy variables. Although available from the authors, these results are not reported in detail because the importance of industry group in determining reporting lag turns out to be minimal.

What is striking about the results reported in Table 3 is that parsimonious versions of both models Ia and Ib, which only include an intercept and coefficient upon the lagged dependent variables, still explain much of the variation in reporting lag, as evidenced by the adjusted R^2. Given the relatively low explanatory power of the other variables, including control variables, this indicates that reporting lag may be as much determined by firm specific characteristics including management attitudes to shareholder communications as by external factors outside the control of individual firms' managers. This raises the possibility that the reporting lag may be a symptom of a firm manager's approach to shareholder communications with serial late reporting being symptomatic of governance problems and entrenched management. The findings in support of hypothesis 1, 2b and 3 support this idea and, as our results provide, albeit limited, evidence that ownership concentration is negatively associated with reporting lag, perhaps shareholders in AIM firms with dispersed ownership are unable to bring entrenched firm managers to account.

4.3 Information content of early/late announcements: hypotheses 4 – 6

Any study which attempts to attribute firm performance to specific events or firm characteristics by using total stock returns as a proxy for performance has to first determine what returns would have been considered normal (expected) in the absence of the characteristics/events under scrutiny. This is usually done by specifying a return-generating model such as the capital asset pricing model (CAPM), the market model (MM) or a multifactor model such as the three-factor model of Fama and French (1993). When studies such as this examine the returns of small firms, the analysis is further complicated by the existence of thin-trading bias, which can result in the under-estimation of return generating model coefficients (Dimson, 1979; Dimson and Marsh, 1983; Scholes and Williams, 1977).

In our initial analysis we follow Kothari et al. (2009) and apply a modified version of the zero-one model in which individual firms are all assumed to have abnormal returns of zero and sensitivity to the market return (beta) of one. Our proxy for the market portfolio is the capitalization weighted average of the FTSE AIM Allshare Index and the FTSE Allshare Index. Individual firm abnormal returns are calculated by taking the geometric difference between the daily total returns of individual firms and our benchmark portfolio. Firms are then sorted into quintiles based upon reporting lag. Buy and hold returns of early and late quintile portfolios are then calculated as the returns that would have been achieved by an investor if an equal amount had been invested in each firm 250 trading days before the announcement and then held without re-balancing until 250 trading days after the announcement. The returns achieved by these early and late reporting quintile portfolios are illustrated in Figure 5. The 95% confidence intervals are based upon the cross-sectional standard errors of individual firm cumulative buy and hold returns over the observation period. It is clear from Figure 5, that the early portfolio outperforms the late portfolio by a substantial margin over the two-year observation period. Furthermore, there is a positive announcement day abnormal return for the early firms. Although the overall performance of the late portfolio is poor relative to the early portfolio, late firms appear to earn positive abnormal returns, in the period immediately preceding the announcement. However, in the late portfolio, there is no obvious announcement day abnormal return, and following the announcement the positive returns achieved in the immediate pre-announcement period are quickly reversed. In fact, the late portfolio continues to exhibit a negative return trend more or less until the end of the observation period. These observations are consistent with hypothesis 4 & 6. The statistical significance of the announcement day abnormal returns in the early and late firms is tested using the non-parametric ranking method of Corrado (1989). The positive announcement day average abnormal returns for the early firm quintile are

significant at the $p < 0.01$ level in each individual year and for the whole period combined which is strongly supportive of hypothesis 4. In contrast, the negative announcement day average abnormal returns of the late firm portfolio are not significant, so the evidence in support of hypothesis 5 from the zero-one model is weak. Therefore, these findings are more consistent our hypothesis 7a and with Chen et al. (2005) than with Kothari et al. (2009) because our early-positive announcement day abnormal returns are more pronounced than the late-negative announcement day abnormal returns, implying that more of the information in the late announcements has already been anticipated by the market. However, our findings are consistent with both Chen et al. and Kothari et al. in that early news tends to be well received by the market while the stocks of late announcing firms underperform the market.

4.3.1 Robustness tests of hypotheses 4 – 6

The zero-one model results presented in Figure 5 may fail to capture the characteristics of individual firms. For example, AIM firms are often small relative to the average size of firms listed on the LSE; they may be in high growth sectors; they may have higher or lower sensitivity to market risk than average; or they may have a higher or lower trading volume relative to similar firms. Therefore, taking inspiration from Salinger (1992) least squares coefficients for model II are estimated for each firm, with individual firm excess returns used as the dependent variable. The independent variables of model II are identified in the left hand column of Table 4 and in the model specification below:

$$r_{i,t} = a + b_1 ID + b_2 D_{t,-1} + b_3 D_0 + b_4 D_{t+1} + b_4 R_{m,t} + b_5 R_{m,t-1} + b_6 SMB_t + b_7 SMB_{t-1} + b_8 VMG_t + b_9 VMG_{t-1} + b_{10} I_{i,t} + b_{11} I_{i,t-1} + b_{12} \Delta BAS_{i,t} + b_{13} \Delta BAS_{i,t-1} + b_{14} Vol_{i,t} + b_{15} Vol_{i,t-1} + b_{16} r_{i,t-1} + \varepsilon_t \quad \text{(II)}.$$

The abbreviation, $r_{i,t}$ is the excess total return on security i on day t and the intercept term a is the firm's daily abnormal return. The variable ID is an intercept dummy equal to zero before the announcement and one thereafter, while D_{t-1} through D_{t+1} are dummy variables

whose coefficients capture abnormal returns on the day before the announcement, the announcement day and the day after the announcement respectively. The abbreviations: R_m, SMB_i, VMG_i, I_i, ΔBAS_i and Vol_i, represent the excess return on the market, the size premium, the value premium, the residual of the Thomson Reuters Datastream level 2 industry group return regressed on the benchmark portfolio, the daily change in the logarithmic percentage spread and the trading volume respectively for each firm, *i.*[6]

The specification of model II is designed to control for the effects of firm size, firm style and changes in liquidity on the return generating process. It also allows for the possibility that the intercept coefficient may differ before and after the announcement date. In addition to the inclusion of lagged firm returns as an independent variable, our model specification also includes coefficients on lagged market excess returns and lagged size and style factors to mitigate against thin-trading biases (Dimson, 1979). Both groups of firms frequently experience days when no trading occurs. Therefore, to provide further mitigation for thin trading bias, we substitute market excess returns for firm excess returns on days when both of the following two conditions are met simultaneously: (a) a firm's stock price does not change and (b) its trading volume is zero. We call such events no-price-days (NPDs). Time-series data from 250 days prior to the announcement through to 200 days after, the end of the study period (i.e. a 451 day event window), or the firm death date, whichever is first, are used to estimate the least squares coefficients in model II for each firm in the sample individually.

[6] Taking inspiration from Fama and French (1993) the size factor, small minus large (SMB) is derived by taking the geometric difference between the total returns of the FTSE UK Small Cap Style Index (WSUTDK£) and those of the FTSE UK Large Cap Style Index (WLUTDK£). Likewise, the style factor value minus growth (VMG) is derived from the geometric difference between the total returns of the FTSE UK Growth Style Index (WGUTDK£) and the FTSE UK Value Style Index (WVUTDK). Firms listed on the AIM are also often small firms in 'hot' or recently hot sectors. Thus, industry returns may have a greater influence on the normal returns at any given time than the market return used in traditional event studies. Therefore, coefficients are estimated for the residual, *I,* of each firms' lagged and contemporaneous DataStream level-two industry residual returns. Industry residuals are obtained by running a regression of each industry total return on the market total return to mitigate co-linearity between the market and industry excess returns.

The cross-sectional sample means of the individual firm coefficients estimated for model II are reported in Table 4 for the early reporting quintile, the middle quintile and the late reporting quintile of firms. The intercept coefficients are negative and significant at the $p < 0.01$ level for the early reporting quintile, the middle quintile and the late quintile indicating that all the AIM firms in our study underperform the benchmark after controlling for the risk factors in model II. However, the t – statistic of the late firms is sufficiently more negative than that of the other two groups to allow us to conclude that late firms underperform both early firms, firms in the middle reporting lag quintile (i.e. control firms) as well as the market, by an amount that is significant at the $p < 0.01$ level, thus providing further support for hypothesis 6 and also indicating that the poor performance of late reporters continues post announcement. The announcement day returns are positive for the early quintile portfolio and significant at the $p < 0.01$ level, confirming the pattern observed in Figure 4 and supporting hypothesis 4. Announcement day abnormal returns are negative for the late reporting quintile, but they are not significantly different from zero, and thus fail to support hypothesis 5.

Examination of the control variable coefficients reported in Table 4 shows that all three portfolios have coefficients on the market excess return that are positive and significant at the $p < 0.01$ level. Likewise, coefficients on the small firm premium (SMB) are positive and significant, at the $p < 0.01$ level. Conversely, sensitivity to the value firm style premium (VMG) is not significant in the early and control portfolio, although it is positive and significant at the $p < 0.05$ level in the late reporting quintile. Coefficients on industry residual returns are only significant in the late reporting quintile of firms, and here only at the $p < 0.05$ level. All firm categories exhibit coefficients on the bid-ask spread variable that are negative and significant at the $p < 0.01$ level. The early and late reporting quintiles have positive coefficients on daily trading volume, which is significant at the $p < 0.10$ and $p < 0.05$ levels respectively.

In panels A and B of Table 5, we present further analysis of the abnormal returns for firms reporting early, on time and late respectively. In Table 5, we formally test the significance of the difference in coefficient sizes between the three groups, for each of the following variables: (1) average daily abnormal return over the whole 451 day pre and post event period (intercept coefficient); (2) average announcement day abnormal returns; (3) cumulative abnormal returns over the three day event window t_{-1} - t_{+1}; (4) cumulative abnormal returns over the two day event window t_{-0}, - t_{+1},.

Unlike panel A, in panel B of Table 5, we sort firms based upon their change in reporting lag from the previous year, i.e. reporting lag in year t, minus reporting lag in year t_{-1}. This means that a firm that may have ranked in the late quintile 5 in panel A, could conceivably rank as an early firm in panel B, if it was still reporting much earlier than in the previous year. As a robustness check against this possibility we repeat the calculations used to derive the Figures in panel B after excluding firms in which the previous year's reporting lag was > 183 days, and excluding firms in which the two ranking systems produced differences in ranking that were greater than 3 quintiles. Both methods of editing the data produced consistent results.

The differences between the average daily abnormal returns of late firms and early firms and between early firms and middle (control) firms are formally tested in Table 5. The results confirm hypothesis 6 to the effect that overall, late firms underperform their peers both before and after reporting their results and this difference is significant at the $p < 0.01$ level. In addition, for early firms, announcement day average abnormal returns as well as cumulative average abnormal returns (CAARs) over the two and three day event windows are positive and significantly different from zero at the $p < 0.01$ level. One and two day average abnormal returns of early firms are also higher than the control group and the difference is significant at the $p < 0.05$ level. Finally, corresponding abnormal returns of the late firms are negative and

lower than those of the middle (control) group with the difference significant at the $p < 0.05$, 0.10 and 0.05 levels for the one, two and three day windows respectively, thus providing support for hypothesis 5.

Unlike in panel A of Table 5, in panel B firms are defined as late and early based upon their reporting lag in previous years. Under this definition of timeliness, firms that report on time have announcement day average and cumulative average abnormal returns that are higher than both early and late firms, although the difference between early and on time firms is not significant. The event window abnormal returns of the early group are higher than those of the late group and the difference is significant at the $p < 0.05$ level. The late firms' returns, are significantly lower than the middle group of firms and this difference is significant at the $p < 0.01$ level. Hence, like the results presented in panel A, the results presented in panel B of Table 5 are supportive of hypothesis 5.

4.4 Pre-disclosure information asymmetry and surprise: hypothesis 7

4.4.1 Analysis of bid-ask spreads

The amount of unanticipated information (surprise) in announcements is positively correlated with the degree of pre-disclosure information asymmetry according to Chen et al. (2005) who cite Atiase and Bamber (1994), Kim and Verrecchia (1994) and Lobo and Tung (1997). Information asymmetry is positively associated with bid-ask spread and negatively associated with abnormal trading volume, which is used as a proxy for pre-disclosure information asymmetry by Chen et al. In this study we extend the analysis of Chen et al. by examining both abnormal bid-ask spreads and abnormal trading volume in the 3-months prior to and following the announcements of early and late firms. To measure abnormal bid-ask spreads and abnormal trading volume we undertake the multistep process detailed below.

For abnormal bid-ask spreads we first standardize the logarithmic percentage spreads by dividing by their standard deviation estimated over the entire data sample. Then for each firm, coefficients are estimated using observations spanning 250 trading days prior to and 60 trading days after the announcement date for the following regression model:

$$LnBAS_{i,t} = a + b_1 D_{t,-6} + b_2 D_{t,-5} + b_3 D_{t,-4} + b_4 D_{t-3} + b_5 D_{t-2} + b_6 D_{t-1} + b_7 D_{t-0} + b_8 D_{t+1} + b_9 D_{t+2} + b_{10} D_{t+3} + b_{11} D_{t+4} + b_{12} D_{t+5} + b_{13} \sigma_{m,t} + b_{16} \sigma_{m,t-1} + b_{14} A\sigma_{m,t} + b_{15} A\sigma_{m,t-1} + b_{16} LnBAS_{i,t-1} + \varepsilon_{t,t} \quad \text{(III)}.$$

The $LnBAS_{i,t}$ is the standardized logarithmic percentage spread for each firm i at time t. The dummy variables $D_{t-6,}$ through D_{t+5} control for abnormal bid-ask spreads in the 6 days prior to the announcement day, the announcement day and the 5 days following the announcement day. In order to control for the tendency of all firm bid-ask spreads to increase on days when the market volatility is high and in particular when market volatility is associated with negative market returns, the model includes a proxy variable for market volatility $\sigma_{m,t}$ in the form of the absolute return on the market on day t and the proxy variable for asymmetric volatility $A\sigma_{m,t}$, which is the absolute return on the market on days when the market return is negative and zero on all other days. The lagged dependent variable mitigates possible biases resulting from serial correlation in the bid-ask spread variable.

Abnormal bid ask spreads are then derived for each firm by calculating predicted values for the dependent variable using the intercept and coefficients b_{13} through b_{16} in the above model but excluding coefficients b_1 through b_{12}. These predicted values are then subtracted from the observed values. The resulting prediction errors are standardized by dividing by the standard error of each firms regression estimate in model (III) to give a standardized estimate of the abnormal bid-ask spread for each firm on each day of the observation period.

Sample mean cumulative abnormal bid-ask spreads for early and late reporting firms defined by reporting lag quintiles are plotted in figure 6 over a period spanning 60 trading days prior to and 60 trading days after the announcement. It is evident from the 2 standard error bands that cumulative abnormal bid-ask spreads of early and late firms defined in this way are not significantly different from zero or from each other. Cumulative abnormal bid-ask spreads for firms categorized as early or late based upon the timing of their announcement relative to their previous year's announcement, instead of by their reporting lag quintile are also plotted in figure 7. As in figure 6, early firms do not exhibit any significant cumulative abnormal bid-ask spread prior to, during or following the announcement. However, in contrast to early firms and late firms defined by their reporting lag quintile, firms defined as late relative to their reporting lag in the previous year exhibit a steady increase in abnormal bid-ask spreads over the whole observation period, and this increase becomes significantly different from zero around the announcement date. This would seem to provide modest evidence in support of hypothesis 7b for firms which are unexpectedly late in reporting results, but not for firms that are simply late relative to their peers.

4.4.2 Analysis of trading volume

Trading volume is very noisy, particularly in AIM firms that tend to be smaller and less liquid than firms on the main market. Furthermore, trading volume as a percentage of shares outstanding is highly right-skewed and leptokurtic, with the result that extreme values have the potential to bias the results of OLS estimates of normal and abnormal volume. In order to address this problem, we undertook the following transformation of all volume data during the event window.

$$TVol_{i,t} = Ln(Vol_{i,t} + 1)^{1/4} \quad (1)$$

Where $TVol_{i,t}$ is the transformed trading volume as a percentage of shares outstanding for firm i on day t, $Vol_{i,t}$ is the same but prior to transformation while Ln is the natural logarithm. Abnormal daily volume is then estimated for each firm by first estimating least squares coefficients for the following regression model using observations spanning 250 trading days prior to and 60 trading days after the announcement date:

$$TVol_{i,t} = a + b_1 D_{t,-6} + b_2 D_{t,-5} + b_3 D_{t,-4} + b_4 D_{t-3} + b_5 D_{t-2} + b_6 D_{t-1} + b_7 D_{t-0} + b_8 D_{t+1} + b_9 D_{t+2} + b_{10} D_{t+3} + b_{11} D_{t+4} + b_{12} D_{t+5} + b_{13} Vol_{m,t} + b_{16} Vol_{m,t-1} + b_{14} A\sigma_{m,t} + b_{15} A\sigma_{m,t-1} + b_{16} TVol_{i,t} + \varepsilon_{t,t} \quad \text{(IV)}.$$

Independent variables for model IV are as for model III apart from $Vol_{m,t}$, which is the total volume of shares traded on the FTSE 100 Index as a percentage of shares outstanding. This is less noisy than the volume for individual firms so this is standardized by dividing each daily observation by the standard deviation for all days. Using model IV, we then follow the same procedure as that adopted for bid-ask spread above, in order to estimate abnormal trading volume for each firm.

The sample means of cumulative abnormal trading volume for early and late firms defined by reporting lag quintile are plotted in figure 8. It is clear from figure 8 that cumulative abnormal trading volume declines prior to the announcement for early reporting firms and that this decline is significantly different from zero and significantly different from the cumulative abnormal trading volume of the late reporting firms. In fact the cumulative abnormal return of late reporting firms increases prior to the announcement. In figure 9 the equivalent sample means are also reported for early and late firms defined according to their change in reporting lag from the previous year. Broadly speaking figure 9 confirms the pattern observed in figure 8, in that early firms exhibit significantly negative cumulative abnormal trading volume prior to the announcement and this trading volume is also

significantly lower than that of late firms. However, cumulative abnormal trading volume of late firms is not significantly different from zero prior to the announcement.

The findings of Atiase and Bamber (1994) and Lobo and Tung (1997) indicate that abnormal trading volume prior to earnings announcements is lower and the trading volume during the announcement is higher when the level of pre-disclosure information asymmetry is greatest. Our evidence from figures 8 and 9, indicate that pre-disclosure abnormal trading volume is lowest in early reporting firms indicating that early announcements contain more unanticipated information than late announcements. Furthermore, pre-disclosure abnormal trading volume in firms with the longest reporting lags is positive and increasing prior to the late announcement indicating that firms which report late relative to their peers leak information prior to the announcement. In contrast, firms which report late relative to previous years do not exhibit abnormal trading volume prior to the announcement, suggesting that firms which are unexpectedly late exhibit different information asymmetry characteristics to firms which report late consistently over multiple years. This finding is supported by the increasing abnormal bid-ask spread evident in this category of firms by examination of figure 7. Overall, the volume results are supportive of hypothesis 7a to the effect that pre-disclosure information asymmetry is greatest in early firms.

4.4.3 Analysis of unanticipated information content

In panel A of Table 6, cumulative absolute abnormal returns over the event window $t_{0,}\ t_{+1}$ are ranked according to the announcement day abnormal return rather than the early/late criterion, so that the lowest quintile of announcement day abnormal returns are defined as bad news and the highest good news. It is evident from this ranking that the average cumulative absolute abnormal return (surprise) in the good news quintile is higher than that of the bad news quintile and that the difference is significant at the $p < 0.01$ level. We also find the same

result if we remove the most extreme 10% of the good and bad news returns from our sample. Thus, contrary to the findings of Kothari et al. (2009) for the US market but in line with the findings of Chen et al. (2005) for the Chinese market, we find that good news announcements contain more unanticipated information than bad news announcements. However, in panels B and C of Table 6 the difference in average absolute magnitude of abnormal returns in early and late firms is tested with the result that there is little evidence of any difference in the cumulative absolute magnitude of abnormal returns between early, middle and late groups. The differences in abnormal trading volume and abnormal bid-ask spread on the announcement date between early and late firms are also reported in panel D of table 6. When firms are defined as early/late based upon their reporting lag rank quintile, announcement day average abnormal trading volume is higher in early firms, but the difference in abnormal bid-ask spread is not significantly different from zero. Hence analysis of abnormal trading volume on and around the announcement day provides evidence in support of hypothesis 7a to the effect that early announcements contain more unanticipated information than late announcements.

4.5 Synopsis

We carried out a number of robustness checks including: (1) not substituting market returns for firm returns on days when no trading or price change occurred; (2) varying the model specification to include additional lags on the control variables; (3) varying the winsorization criteria from 0% to 10% in each tail; (4) partitioning the data into different financial years, different quartiles of market capitalization and quartiles of average bid-ask spread. In all of our robustness checks we obtained qualitatively similar results with consistent coefficient signs on the key variables of interest.

Overall the results confirm that after taking into account all of the control variables in model II, the market price of a firm's stock reacts positively to early announcements and

negatively to late announcements of annual results, while late announcing firms underperform their control groups before and after the announcements. Furthermore, it seems that firms that announce late relative to their peers underperform, early firms and the control group and are more likely to report negative news, while firms which are consistent from year to year in terms of their reporting lag, are more likely to be reporting positive news than firms which dramatically vary their reporting lag in either direction. In their study of the US market, Kothari et al. (2009) argue that firm managers have an incentive to release good news slowly, while Chen et al. (2005) argue the reverse. We find limited evidence that the average surprise contained in both good news and early announcements is greater than in bad news and late announcements. We also find evidence consistent with that of Chen et al. to the effect that the level of pre-disclosure information asymmetry is greater in early firms than in late firms. A possible explanation for the differences and similarities between the findings of the three studies is that our results, like those of Chen et al., are based upon the observed timeliness in the reporting of mandatory annual financial results in the UK and China respectively. In contrast, Kothari et al. (2009) examine dividend changes and voluntarily disclosed earnings forecasts in US market. They infer timeliness based upon the absolute magnitude of market price reactions following the announcements.

In addition to previous studies, we use the theory of Glosten and Milgrom (1985) as a basis to conclude that serial late reporting firms are perceived by the market to have greater information asymmetry. However, given the persistently negative average daily abnormal returns observed in late announcing firms, investors apparently take time to adjust the cost of capital and hence firm value to compensate for the greater information asymmetry of late firms, and the generally worse than average information released in late announcements.

5 Summary and conclusions

Our study provides clear evidence that when firms report earlier than their peers they are more likely to be reporting good news and that the good news has not been anticipated by investors prior to the report. The risk adjusted returns of late firms are also negative both before and after the announcements. We also find evidence that late reporting firms are more likely to be reporting bad news than early or on time firms. In addition, we find evidence that unexpected information is greater in good news announcements than in bad news announcements and evidence that the pre-disclosure information asymmetry is greater for early announcements than for late announcements. The average bid-ask-spreads of late firms are 3% higher than early firms of a similar size, and a firm's reporting lag in the previous year contains more information about the firm's likely reporting lag in the current year than other firm characteristics combined including: industry, size, free-float or bid-ask-spread. Our findings extend prior research that has focused primarily upon the US market and support Chen et al. (2005) who find that good news announcements of firms listed on the Chinese market are more likely to contain unanticipated information than bad news announcements.

The AIM is important as both a domestic and an international capital market for young and growing firms and it has sometimes exceeded rivals such as the NASDAQ in its ability to attract new listings and foreign listings (Gerakos, Lang and Maffett, 2011). Our results from a sample comprising 1,856 firm-years with a combined year-end market capitalization > £70bn are economically significant and have practical relevance to financial regulators, accounting standard setters, stock exchanges, firm managers who are in possession of undisclosed bad news, and also to investors contemplating the implications of variations in reporting lags within and between firms.

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Table 1

Market and firm data from Thomson Reuters Datastream (DS)

Index series name	DS Code	Datatype names	DS Codes
Benchmark 10 year gilt YTM	UKMBRYD	Closing Mid-Price	P
FTSE 100	FTSE100	Closing Ask-Price	PA
FTSE Allshare	FTALLSH	Closing Bid-Price	PB
FTSE Aim Allshare	FTSEAIM	Total Return Index including dividends	RI
FTSE UK Growth Style	WGUTDK£	Volume of Securities Traded	VO
FTSE UK Value Style	WVUTDK£	Equity Market Capitalization	MV
FTSE UK Large Cap Style	WLUTDK£	Free-float %	NOSHFF
		Number of shares	NOSH
FTSE UK Small Cap Style	WSUTDK£	Price-to Book-Ratio	PTBV
D.S. Level 2 UK Financials	FINANUK	Interim Pretax Income	WC01401A
D.S. Level 2 UK Basic Materials	BMATRUK	Interim Current Liabilities	WC03101A
D.S. Level 2 UK Consumer Goods	CNSMGUK	Interim Current Assets	WC02201A
D.S. Level 2 UK Consumer Services	CNSMSUK	Interim Total Assets	WC02999A
D.S. Level 2 UK Healthcare	HLTHCUK	Interim Total Liabilities	WC03351A
D.S. Level 2 UK Industrials	INDUSUK	Interim Total Inventories	WC02101A
D.S. Level 2 UK Oil and Gas	OILGSUK	Interim Depreciation and Depletion	WC04049A
D.S. Level 2 UK Technology	TECNOUK	Interim Sales	WC01001A
D.S. Level 2 UK Telecommunications	TELCMUK	Interim Pretax Income	WC01401A
D.S. Level 2 UK Utilities	UTILSUK	Interim Current Liabilities	WC03101A

Notes:

Worldscope datatypes with the prefix "WC" need treating with care. This is because, once published, DS backfills each firm's financial year-end figures to the beginning of the financial year. For example, the total assets of Renewable Energy Holdings PLC at the financial year end 31st December 2009 is reported in the preliminary results released on the 8th March 2010 at £71.55m. However, DS returns this figure for every day after the 31st December 2008 even though the balance sheet figure relates to 31st December 2009, not 1st January 2009 and it was not publically available until the 8th March 2010. In order to mitigate this feature and to ensure that only figures in the public domain at the time of a stock price reaction are used as dependent variables accounting figures are not taken from the period to which any announcement relates, but from the period before that. Hence using Renewable Energy Holdings as an example, any model relating annual accounts variables to stock returns that occur before the 8th March 2010, must use DS accounting data matching dates prior to the beginning of the period to which it relates, i.e. prior to 1st January 2009 in the above example.

Table 2

Basic firm distribution characteristics

Panel A: Reporting lag distribution in days for all years combined and individual years					
Statistics	All years	06/07	07/08	08/09	09/10
Min	31	31	38	31	40
25th percentile	78	76	78	77	81
Median	94	89	94	97	104
75th Percentile	142	125	129	144	159
Max	410	209	410	333	259
Mean	111	104	110	112	119
Median exc. lags > 183	92	89	93	94	90
Mean exc. lags > 183	104	103	105	107	102
Panel B: Firm distribution between industry group and between financial year-end month					
Industry group	No.	%	Month	No.	%
Industrials	112	24%	December	203	44%
Consumer services	79	17%	March	91	20%
Technology	72	16%	June	61	13%
Basic materials	57	12%	September	34	7%
Oil and gas	48	10%	July	15	3%
Healthcare	43	9%	April	12	3%
Consumer goods	37	8%	May	10	2%
Telecomms	8	2%	October	10	2%
Utilities	8	2%	August	9	2%
			February	7	2%
			November	6	1%
			January	6	1%
Totals	464	100%	Totals	464	100%

Notes:

Industry groups are the Thomson Reuters Datastream level 2 industry groupings for the UK market detailed fully in Table 1.

Table 3

Analysis of variables associated with reporting lag.

	MIa		MIb	
Intercept	62.96	59.81	0.15	0.14
	(7.94)***	(42.45)***	(2.25)***	(10.94)***
Reporting lag rank previous year	77.85	84.75	0.69	0.73
	(24.60)***	(29.08)***	(27.77)***	(32.85)***
FF rank at year-end	6.41		0.03	
	(2.24)**		(1.42)	
BAS rank at year-end	11.27		0.06	
	(3.68)***		(2.28)**	
MV rank at year-end	-8.75		-0.06	
	(-2.03)**		(-1.63)	
Busy year-end dummy (Mar/Jun/Sept/Dec)	4.49		0.01	
	(2.52)**		(0.80)	
BM rank at year-end	-4.23		-0.01	
	(-1.39)		(-0.24)	
Taffler Z-score rank at year-end	-3.36		-0.00	
	(-1.18)		(-0.17)	
Year-end in 2009/10	-5.82		-0.05	
	(-3.53)***		(-3.85)***	
R-squared	0.54	0.49	0.56	0.52
Adjusted R-squared	0.53	0.49	0.56	0.52
S.E. of regression	24.04	25.26	0.19	0.20
Mean dependent variable	100.77	100.98	0.49	0.49
S.D. dependent variable	35.06	35.22	0.29	0.29
Schwarz criterion	9.30	9.31	-0.35	-0.36

Notes:

For models IIa and IIb respectively, the dependent variables are reporting lag in calendar days and the percentile reporting lag in calendar days. Independent variables are as detailed in the left hand column of the table with the following abbreviations: market value (MV), book to market (BM), free float (FF), bid-ask spread (BAS), percentile rank (rank), standard error (S.E.) and standard deviation (S.D.). The variable *'MV rank at year end'* is actually the residuals of a regression of market value rank on bid-ask spread rank plus an intercept to create orthogonal variables from two otherwise collinear series. Model coefficients are estimated using the least squares method and t-statistics are estimated using White's heteroskedasticity robust standard errors. The symbols ***, **, *, denote significance at the $p < 0.01$, 0.05 and 0.10 levels respectively.

Table 4

Model II variables, sample means of least squares coefficients and test statistics explaining the dependent variable (excess returns) in early, middle and late reporting quintiles.

	Q1: Early	Q3: Middle	Q5: Late
Independent Variables	Mean coeffs. & t – stat. *n = 317*	Mean coeffs. & t – stat. *n = 291*	Mean coeffs. & t – stat. *n = 301*
Intercept (firm daily ab. returns)	-0.001 (-7.64)***	-0.002 (-7.86)***	-0.003 (-11.11)***
Intercept dummy (change in daily ab. returns post ann.)	-0.000 (-0.67)	-0.001 (-3.40)***	0.000 (0.03)
Ab. return ann. day – 1	0.001 (0.49)	0.002 (0.63)	-0.005 (-1.53)
Ann. day ab. return	0.022 (5.57)***	0.003 (0.58)	-0.007 (-1.38)!
Ab. return ann. day + 1	0.002 (1.18)	0.005 (1.67)*	0.002 (0.91)
Market excess returns	0.448 (32.89)***	0.495 (27.29)***	0.542 (28.69)***
Market excess returns lagged	0.112 (13.73)***	0.132 (12.73)***	0.129 (10.91)***
SMB premium	0.177 (8.91)***	0.197 (8.44)***	0.257 (9.46)***
SMB premium lagged	0.082 (6.10)***	0.114 (5.90)***	0.121 (6.42)**
VMG premium	-0.006 (-0.36)	-0.004 (-0.20)	0.064 (2.29)**
VMG premium lagged	-0.027 (-1.45)	-0.010 (-0.54)	-0.020 (-0.91)
Industry residual	-0.007 (-0.48)	-0.000 (-0.03)	0.003 (0.20)
Industry residual lagged	-0.013 (-0.86)	-0.011 (-0.70)	0.048 (2.41)**
1st difference of log % BAS	-0.003 (-6.28)***	-0.002 (-4.12)***	-0.005 (-6.81)***
1st difference of log % BAS lagged	-0.005 (-5.88)***	-0.007 (-4.24)***	-0.011 (-6.51)***
Volume	1.106 (1.65)*	23.970 (1.26)	23.563 (3.21)***
Volume lagged	0.017 (0.03)	-29.437 (-1.06)	-19.744 (-2.56)**
Firm excess returns lagged	0.074 (13.64)***	0.055 (10.05)***	0.055 (7.98)***

Notes:

!A 1% winsorization of the sample based upon this variable makes the negative sample mean announcement day abnormal return for the late reporting firms marginally significant at the $p < 0.10$ level. The abbreviations are as follows: abnormal returns (ab.), announcement (ann.), bid-ask spread (BAS), coefficients (coeffs.), small minus big (SMB), value minus growth (VMG) and statistic (stat.). The symbols ***, **, *, denotes significance at the $p < 0.01$, 0.05 and 0.10 levels respectively for the t-statistics in parenthesis.

Table 5

Comparing key model II coefficients of early, on-time and late firms

Early (E.)	Middle (M.)	Late (L.)	Diff. E. - L.	Diff. E. - M.	Diff. L. - M.
Panel A: Sorting based upon reporting lag rank quintile					
Announcement day average Ab. returns, t – 0					
0.02	0.00	-0.01	0.03	0.02	-0.01
(5.51)***	(0.46)	(-1.41)	(4.56)***	(2.32)**	(-2.01)**
Cumulative average Ab. returns, t – 0, t + 1					
0.02	0.01	-0.01	0.03	0.02	-0.01
(5.45)***	(1.05)	(-1.03)	(4.10)***	(2.33)**	(-1.62)*
Cumulative average Ab. returns, t – 1, t + 1					
0.02	0.01	-0.01	0.03	0.02	-0.02
(5.04)***	(1.13)	(-1.66)*	(4.88)***	(1.50)	(-2.76)***
Model II intercept coefficient, i.e. daily average abnormal returns outside of event period					
-0.001	-0.002	-0.003	0.001	0.000	-0.001
(-7.82)***	(-7.87)***	(-10.80)***	(4.64)***	(1.17)	(-3.28)***
Panel B: Sorting based upon change in reporting lag from the previous year					
Announcement day average Ab. returns, t – 0					
0.02	0.02	-0.00	0.02	-0.00	-0.02
(2.78)***	(3.85)***	(-0.04)	(2.22)**	(-0.81)	-(2.98)***
Cumulative average Ab. returns, t – 0, t + 1					
0.019	0.024	0.001	0.019	-0.004	-0.023
(3.07)***	(3.99)***	(0.10)	(2.34)**	(-0.61)	-(2.88)***
Cumulative average Ab. returns, t – 1, t + 1					
0.017	0.022	-0.006	0.022	-0.005	-0.027
(2.44)**	(3.18)***	(-0.73)	(2.44)**	(-0.79)	-(3.15)***

Notes:

In panel A, early firms comprise the shortest reporting lag quintile, on-time firms comprise the middle quintile and late firms comprise the highest quintile. In panel B, early firms comprise the quintile with the greatest reduction in reporting lag compared to the previous year, on-time firms report within plus or minus 3-days of the previous year's reporting date, while late firms comprise the quintile with the greatest increase in reporting lag compared to the previous year. Abbreviations are as follows: degrees of freedom (d.f.), difference (diff.), announcement (Ann.) and abnormal (Ab.). The symbols ***, **, *, denote significance at the $p < 0.01$, 0.05 and 0.10 levels respectively. Significance levels are based upon a 2.Tailed T - test assuming unequal variances and t-statistics are in parenthesis.

Table 6

Comparing the unanticipated information content of early and late announcements

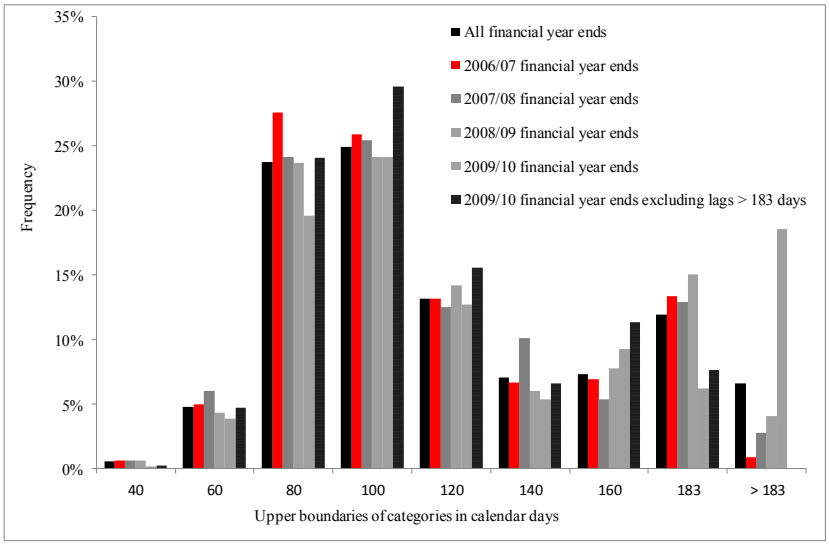
Panel A: Sorting based upon Ann. day abnormal return rank - cumulative average absolute Ab. returns t – 0, t + 1					
Bad (B.)	Middle (M.)	Good (G.)	Diff. B. - G.	Diff. B. - M.	Diff. G. - M.
0.12	0.02	0.14	-0.02	0.10	0.12
(23.12)***	(15.04)***	(23.70)***	(-2.47)**	(18.92)***	(20.26)***
Panel B: Sorting based upon reporting lag rank					
Early (E.)	M.	Late (L.)	Diff. E. - L.	Diff. E. - M.	Diff. L. - M.
Absolute average Ann. day Ab. returns, t – 0					
0.05	0.05	0.05	-0.00	0.00	0.00
(16.74)***	(12.37)***	(11.54)***	(-0.47)	(-0.61)	(-0.11)
Cumulative average absolute Ab. returns t – 0, t + 1					
0.07	0.07	0.07	-0.00	-0.00	-0.00
(19.96)***	(14.58)***	(14.96)***	(-0.87)	(-1.12)	(-0.24)
Cumulative average absolute Ab. returns t – 1, t + 1					
0.09	0.10	0.10	-0.01	-0.01	0.00
(22.36)***	(16.12)***	(16.11)***	(-1.85)*	(-1.75)*	(0.10)
Panel C: Sorting based upon change in reporting lag compared to previous year					
Absolute average Ann. day Ab. returns, t – 0					
0.052	0.048	0.059	-0.007	0.004	0.011
(11.64)***	(11.04)***	(11.25)***	(-1.15)	(0.47)	(1.58)
Cumulative average absolute Ab. returns t – 0, t + 1					
0.077	0.070	0.081	-0.004	0.007	0.011
(13.70)***	(13.81)***	(13.63)***	(-1.15)	(0.90)	(1.35)
Cumulative average absolute Ab. returns t – 1, t + 1					
0.11	0.10	0.11	-0.00	0.01	0.02
(15.78)***	(14.64)***	(15.93)***	(-0.38)	(1.05)	(1.40)
Panel D: Announcement day liquidity reaction					
Firms sorted by RL rank			Early/late defined by change in RL from previous year		
Diff. E. – L.			Diff. E. – L.		
Bid-Ask Spread			Bid-Ask Spread		
0.014			-0.14		
(0.250)			(-1.80)*		
Trading volume			Trading volume		
0.040			0.004		
(6.400)***			(0.555)		

Notes:

Abbreviations are as follows: degrees of freedom (d.f.), difference (diff.), reporting lag (RL) announcement (Ann.) and abnormal (Ab.). The symbols ***, **, *, denote significance at the p < 0.01, 0.05 and 0.10 levels respectively. Significance levels are based upon a 2 - tailed T - test unequal variances with t-statistics in parenthesis.

Figure 1

Frequency of different reporting lags for each year of study and all years combined.

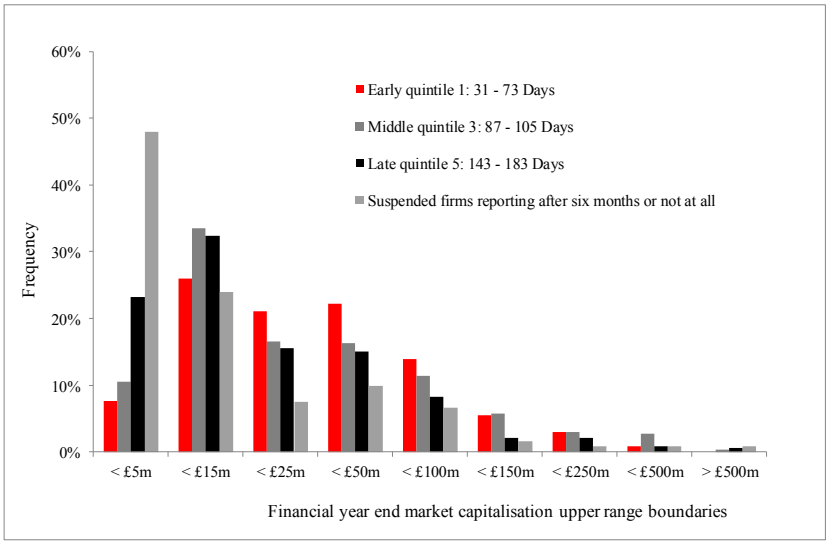


Notes:

Reporting lags are defined as the number of calendar days between a firm's financial year end and the announcement of the annual results. The category > 183 days includes the reporting lags of firms which are suspended for failing to report within six-months of the year end, but then subsequently have their listing reinstated following publication of the results.

Figure 2

Distribution of firm size among early, normal, late and suspended firm years

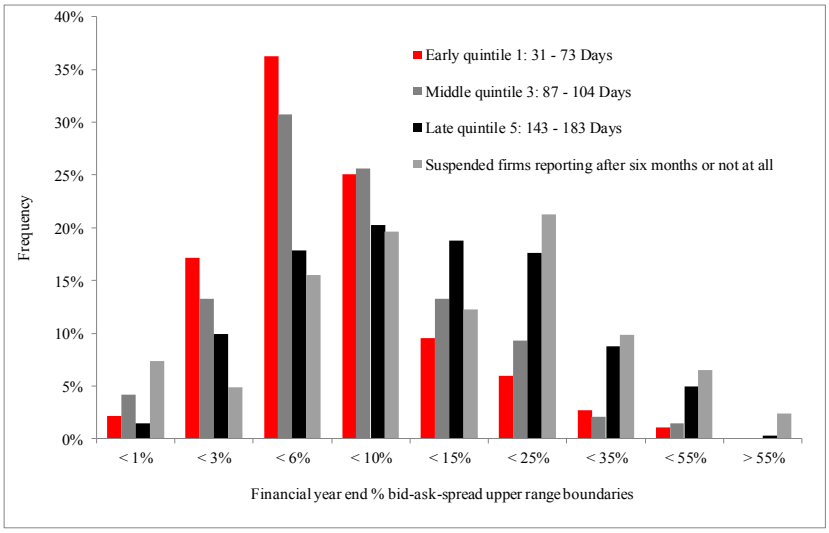


Notes:

The three categories: early, middle and late, exclude firms with a reporting lag > 183 days.

Figure 3

Distribution of bid-ask-spreads among early, middle, late and suspended firm years

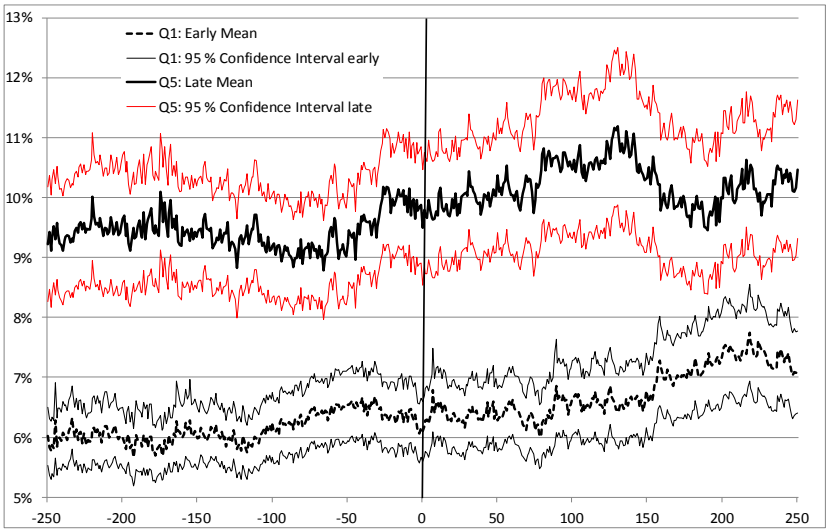


Notes:

The bid ask spreads are 3 month trailing averages of the logarithmic % spread observed at the financial year-end to which the reports relate. The three categories: early, middle and late, exclude firms with a reporting lag > 183 days.

Figure 4

Average log % bid ask spread of early versus late reporting firms

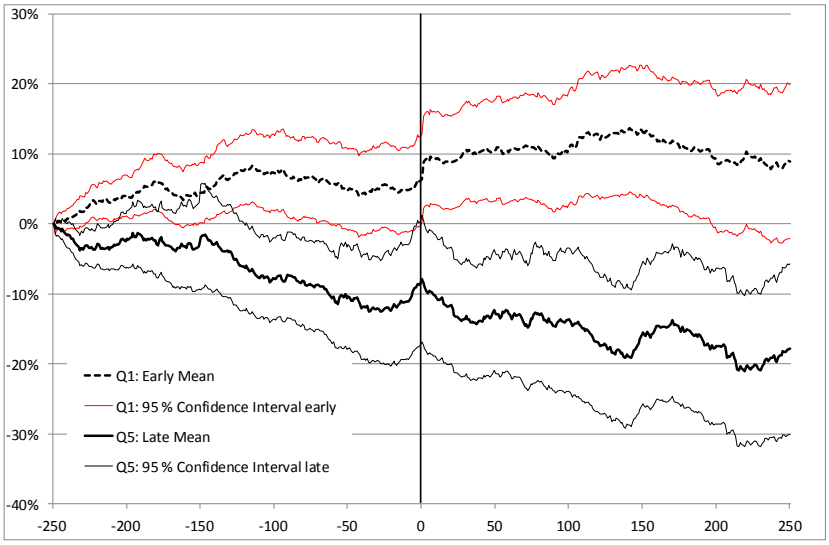


Notes:

In order to mitigate against the possibility that differences between bid ask spreads are a result of firm size rather than reporting lag quintiles, the two sample means plotted in the Figure have been derived from size matched samples each containing 300 firms. This is achieved by first removing all firms with a market capitalization at the financial year-end of less than £5m, then sorting the data on the basis of reporting lag. The top and bottom quintiles based upon reporting lags are themselves sorted based upon firm size at the financial year-end. Within the 2 extreme reporting lag quintiles, early and late samples each containing 300 firm years are assembled so that the smallest firm in each sample is £5m. This ensures that there is considerable overlap in firm size between the early and late reporting sample, although the largest firms in the late reporting sample are actually larger than those in the early reporting sample. For example, the range for the early sample is £5m - £145m and in the late sample it is £5m - £400m. This demonstrates that the larger average spread reported in the late sample is not due to the late sample containing smaller firms than the early sample.

Figure 5

Buy and hold abnormal returns 250 trading days before and after announcement

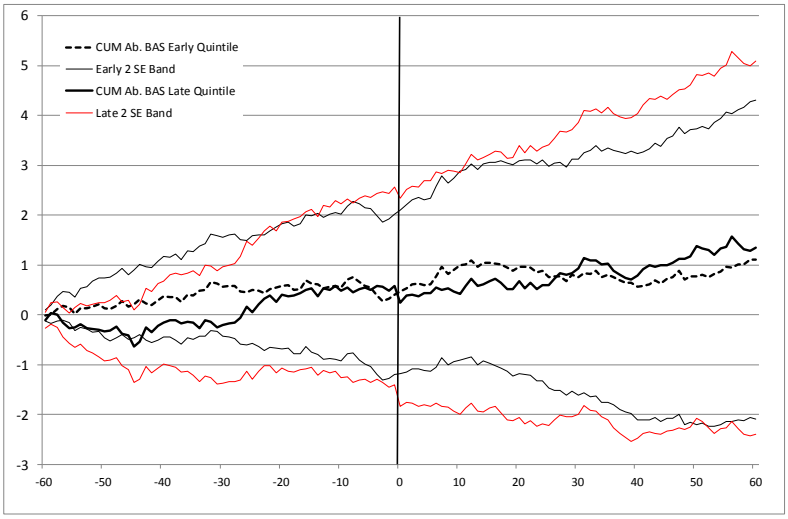


Notes:

Sample mean buy and hold abnormal returns (BHAR) are plotted as thick lines in the Figure together with the respective upper and lower 95% confidence intervals around the sample means (thin lines). The horizontal axis plots the event time in trading days. The thick hashed line represents the earliest reporting quintile of firms reporting between 1 month and 2.5 months of their financial year-ends, while the thick bold line represents BHARs in the late reporting quintile comprising firms reporting between 4.5 and 6 months of the year-end, but excluding the returns of firms suspended for reporting more than 6 months after the year-end. Geometric differences between daily firm returns and the daily returns of a capitalization weighted combination of the FTSE AIM Allshare Index and the FTSE Allshare Index are compounded over the study period, so that BHARs represent the abnormal return that would have been earned on a portfolio invested equally in all securities in the respective category on day – 250 and held without rebalancing to day + 250. Portfolio abnormal returns in each quintile have been winsorized by subtracting the 1% of firms with the highest and 1% with lowest ending values respectively. Firms with a market capitalization of less than £5m at the financial year-end before the announcement are excluded. Firms within the two groups span a comparable range of sizes based on market capitalisation at each financial year-end and there are 290 firm years in each group after winsorization and size matching.

Figure 6

Sample mean cumulative abnormal bid-ask spread with early and late firms defined by peer group.

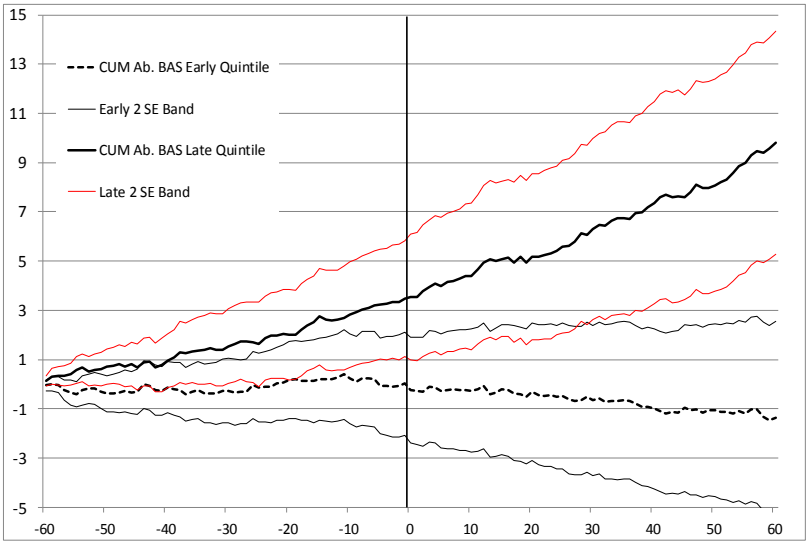


Notes:

Abnormal bid ask spreads for individual firms are derived by first calculating predicted values for each firm using the estimated intercept and coefficients b_{13} –b_{16} in model III. Daily abnormal bid-ask spreads for each firm comprise the prediction errors divided by each firm's the standard error of the regression.

Figure 7

Sample mean cumulative abnormal bid-ask spread with early and late firms defined by change in reporting lag compared to the previous year.

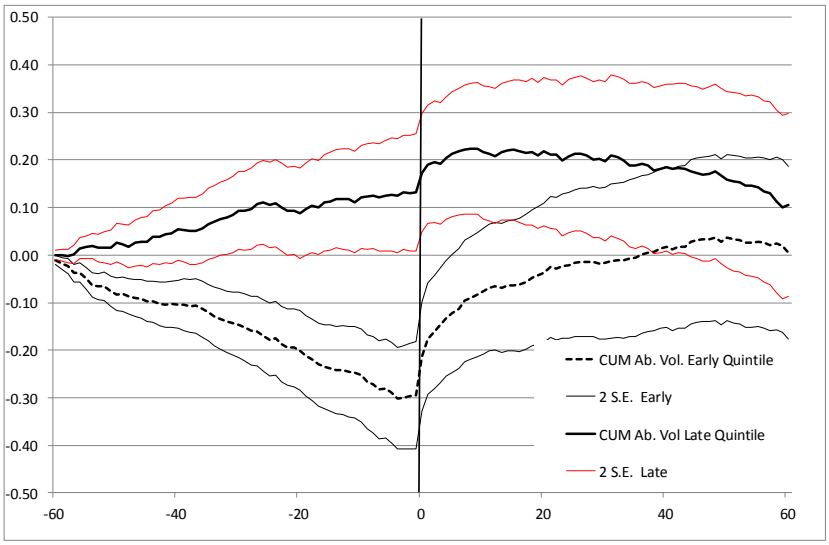


Notes:

Abnormal bid ask spreads for individual firms are derived by first calculating predicted values for each firm using the estimated intercept and coefficients b_{13} –b_{16} in model III. Daily abnormal bid-ask spreads for each firm comprise the prediction errors divided by each firm's the standard error of the regression.

Figure 8

Sample-mean cumulative abnormal trading-volume with early and late firms defined by peer group

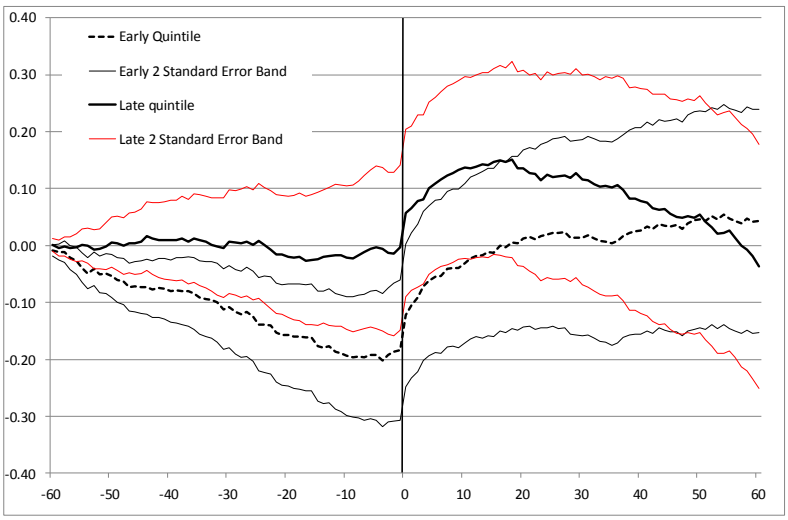


Notes:

Abnormal trading-volumes for individual firms are derived by first calculating predicted values for each firm using the estimated intercept and coefficients b_{13} –b_{16} in model IV. Daily abnormal trading-volumes for each firm comprise the prediction errors divided by each firm's the standard error of the regression.

Figure 9

Sample-mean cumulative abnormal trading volume with early and late defined by change in reporting lag compared to the previous year



Notes:

Abnormal trading-volumes for individual firms are derived by first calculating predicted values for each firm using the estimated intercept and coefficients b_{13} –b_{16} in model IV. Daily abnormal trading-volumes for each firm comprise the prediction errors divided by each firm's the standard error of the regression.