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The association between earnings forecast in IPO prospectuses and earnings management: An empirical analysis

Abstract

This paper examines the level of earnings management for large IPOs that provide earnings forecasts and those that do not provide forecasts in the IPO prospectus. Using a sample of 368 IPO firms listed on the London Stock Exchange between 1985 and 2012, we find that the level of earnings management is lower for IPOs that provided earnings forecasts, than for those which did not provide a forecast. This evidence is robust, controlling for endogeneity and sample selection. Further tests reveal that IPOs that provide forecasts outperform their counterparts in the long run, using various long term performance measures. Overall, our results suggest that earnings forecasts at the time of listing convey useful information to investors on the quality of the company listing in the market.

***Keywords*:** Initial Public Offerings, Earnings Forecasts, Earnings Management, Long-run Performance.

JEL: G2, G28, G17, G1, G11

1. Introduction

Earnings management has received significant attention over the last few decades, due to its importance and impact on firms' stakeholders. For firms considering listing, this impact is exacerbated by asymmetric information between owner-managers and potential outside investors (Toeh et al. 1998a; DuCharme, Malatesta and Sefcik 2001). Recent evidence in the earnings management literature has focused on the complex relationships between earnings management and governance (Jaggi, Leung and Gul 2009), debt/diversification (Rodriguez and Hemmen 2010), compensation (Ibrahim and Lloyd 2011) and failure rates (Alhadab, Clacher and Keasey 2015).

In this paper, we investigated the relationships between provision of earnings forecasts at the time of listing and earnings management and more specifically, the motive of large Initial Public Offerings (IPOs) in providing earnings forecasts and the value of such information to IPO investors. In the UK, IPOs are not required to provide earnings forecasts at the time of their listing and such disclosure is voluntary. However, such voluntary information assists IPO investors in making informed investment decisions (Chong and Ho 2007). Disclosing earnings forecasts in an IPO's prospectus could be interpreted as a promise from the firm's management to potential investors following the official listing of the firm. An optimistic forecast could force managers to manipulate the level of earnings upward. Further, the risk of optimistic forecasts is that firms are likely to lose public trust and face difficulties when dealing with their suppliers and customers. Due to the risks associated with earnings forecasts and possible legal repercussions, US IPOs are not permitted to provide earnings forecasts at the time of listing (Teoh et al. 1998a). The motive for small IPOs in providing forecasts and subsequent earnings management is documented

in the literature (Cormier and Martinez 2006; Cormier, Pascale, and McConomy 2014). However, we are not aware of any study which examines why large IPOs provide forecasts at the time of their listing. Typically, large IPOs are known to the IPO investors and the market; hence the incentive to provide forecasts is weak. The UK market provides a good setting for investigating this issue, since most large IPOs in UK generally provide earnings forecast in their prospectuses. Investigating the relationship between earnings forecasts and earnings management is important from the IPO investors' perspectives.[1] The London Stock Exchange Listing Rules (Yellow Book) and the Financial Services Act 1986 stipulate the requirements for disclosure of earnings forecasts.[2]

IPO firms are associated with high information asymmetry and this could be mitigated by the disclosure of earnings forecasts at the time of listing. The issue of information asymmetry also applies to non-IPO firms. For instance, Shivakumar, Urcan, Vasvari & Zhang (2011) document that in the case of non-IPO firms, earnings forecast is an important source of information for market participants and reduces firms' asymmetric information. By implication, earnings forecasts provide valuable information to the investors and it is far more important that it is made available at the time of listing, due to limited information available about the firm prior to the IPO. However, using forecasts as a signal increases the risk of losing investors' trust, especially when the forecast error (i.e., the difference between actual and forecast earnings) is significant. A significant forecast error encourages investors to disinvest their holdings in the IPO firms concerned and could lead

[1] We thank the referee for pointing out that understanding the relationship between earnings forecasts and earnings management is more important for retail investors than institutional investors. Typically, institutional investors hold portfolios diversified across a number of stocks.

[2] There are no significant changes in the Financial Services Act of 2010, 2012 and 2013 regarding earnings forecasts.

to a poor long term performance. We investigated long run performance using two measures: (1) buy and hold market-adjusted returns over three-years, post-listing, and (2) the Fama and French three-factor model.

Using a sample of IPO firms listed on the LSE Main Market over the period 1985-2012, we find IPOs that provide earnings forecasts manage the level of their earnings less than those that do not provide forecasts at the time of listing.[3] This evidence is robust using (i) accrual and real earnings management measures, and (ii) controlling for sample selection and endogeneity. Further, we find that IPOs that provide earnings forecasts outperform those that don't, using buy and hold market-adjusted returns and the three-factor model. Taken together, our findings suggest that large IPOs that provide forecasts do not manipulate the level of their earnings upwards; instead, they use forecasts as a reliable signal of their quality.

Past studies in the UK on earnings forecasts examine the forecast error and its determinants, ignoring the implication of earnings management for these IPOs (Dev and Webb 1972; Ferris and Hayes 1977; Keasey and McGuinness 1991). In Canada, Cormier, Pascale, and McConomy (2014) find that IPOs with better corporate governance are less likely to provide earnings forecasts at the time of listing. In France, Cormier and Martinez (2006) document that IPOs which provide earnings forecasts manage the level of their earnings much more than those that do not provide forecasts. Our study differs from the above studies, in that IPOs in these markets are relatively smaller than UK IPOs. Further, listing requirements are different in these markets, relative to the UK Main Market. Hence,

[3] Firms listed on a sub-market of the London Stock Exchange (i.e., Alternative Investment Market (AIM)) do not provide earnings forecasts at the time of listing and hence are excluded from our IPOs sample.

small IPOs have stronger incentives than large IPOs, to provide earnings forecasts. The question of why large IPOs provide earnings forecasts at the time of listing remained unexplored hitherto. This study aims to fill this gap in the literature. In addition, we aim to investigate the long-term implications of providing earnings forecasts to investors, an issue that has not been addressed in the previous studies (e.g. Cormier and Martinez 2006; Cormier et al 2014). Large IPOs are known to the market, attract retail and institutional investors at the time of listing and hence understanding the motive of providing forecasts is important for these investors, especially the retailers.

Our study contributes to the existing literature on earnings management, earning forecasts, and long-run performance. It extends prior research on the relationship between IPOs and earnings management (Teoh et al. 1998a) by showing that large IPOs providing earnings forecasts manage the level of their earnings less than those that do not provide forecasts. In addition, we show that these IPOs have a better long-run performance, using various performance measures. Our results are important to short term and long term investors, and provide insights into the information conveyed in the earnings forecasts at the time of listing. Taken together, our results show that managers of large IPO firms that provide forecasts, do not behave opportunistically to manage the level of their earnings upward and they use it to communicate with outsiders on the firm's quality.

The paper is organised as follows: in Section 2, we review the literature related to earnings management; in Section 3, we discuss hypotheses, data and methodology; the study's empirical findings are discussed in Section 4 and Extension in Section 5, while the conclusion is presented in Section 6.

2. Motivation and Past Literature

2.1 *Motivation*

IPO firms that provide earnings forecasts are more likely to have a stronger motive of managing earnings, when they are small (Cormier and Martinez 2006). Announcement of earnings forecasts could put such firms under the compulsion of having to meet the target and failure to do so would have severe consequences for future capital raising. The costs of inaccurate forecasts include costs associated with loss of reputation, and they are significant for the IPO firms, since they have a tendency to go to the market for raising additional funds (Clarkson, Dontoh, Richardson and Sefcik 1992). It is also possible that IPO firms might voluntarily disclose information about future earnings prospects, whenever the perceived benefits exceed the costs (Dye 1985; Donotoh 1989). Therefore, IPO firms are likely to voluntarily disclose only credible information, in order to avoid legal penalties for misrepresentation (Teoh et al. 1998a). However, those firms that do not possess sufficient information will not disclose earnings forecasts, due to possible adverse effects on their valuations. Providing earnings forecasts at the time of listing could serve as a credible signal for large IPOs and they use the forecasts to share their private information with the investors and thereby receive a high valuation (Hertnett 2010).

DuCharme et al. (2001) and Chang et al. (2010) documented that earnings management leads to a negative performance. Teoh et al. (1998a) find poor long run performance for IPOs in the US associated with high level of earnings management, as measured by discretionary accruals. This is because IPOs cannot maintain the facade of good quality for a long period and hence must disappoint their investors. We investigate the

long-run performance of UK IPOs that provide earnings forecasts and those that do not. Unlike the US, UK IPOs can provide forecasts at the time of listing.

2.2 *Earnings Management and IPO*

Earnings management is a natural and corporate phenomenon in the market place (Liang 2004). Information asymmetry between managers and existing or potential shareholders contributes to the earnings management. Teoh et al. (1998a) find that IPO firms in the US use accrual earnings management to manipulate reported earnings during the IPO year. They also report that this practice leads to a decline in stock prices, post-IPO. Similarly, Roosenboom, Van der Goot and Mertens (2003) found in Netherlands that IPOs that manage the level of accrual earnings experience a decline in stock returns for the year following the IPO. Darrough and Rangan (2005) have documented that firms taken public by reputable underwriters are less likely to engage in earning management, because of their reputation. An earlier study (Ball and Shivakumar 2008) does not find evidence of earnings management in UK, prior to the IPO year. Alhadab, Clacher and Keasey (2012) find that firms listed on the UK Main Market had a lower level of accrual earnings management, than those listed on the AIM (Alternative Investments Market). Previous studies provide evidence suggesting that managers of IPO firms have strong incentives to manipulate earnings for the year preceding the IPO. Possibly, they do so to improve the likelihood of a successful IPO, *inter alia*.

2.3 *Earnings Forecasts Decision*

Earlier studies have examined factors that influence the decision to provide earnings forecasts. Generally, owners/managers of a firm considering an IPO, have more information on possible success post-IPO, than potential investors or IPO investors (Leland and Pyle 1977). Hughes (1986) provided a signalling model and suggested that retained ownership and disclosure about future cash flow are needed to convey managers' private information. Titman and Trueman (1986) report that the choice of an investment banker and auditor could be used to signal the value of the IPO firm. Managers provide earnings forecasts to reduce information asymmetry (Verrecchia 2001). Hirst, Koonce and Venkataraman (2008) provide a summary of management's motives for providing earnings forecasts and the characteristics of forecasters versus non-forecasters. Furthermore, managers with equity-based compensation are known to provide earnings forecasts to avoid equity mispricing (Hirst et al 2008). Hertnett (2010) documented that forecasts could be perceived as credible information by market participants. Firms with an earnings history may find it easier to provide forecasts at the time of listing, while firms with less earnings history could benefit from providing forecasts, because of the higher information asymmetry associated with such firms. Cormier et al. (2014) examined the decision to provide earnings forecasts for small IPOs in Canada. The authors find that corporate governance determines the likelihood of firms providing forecasts at the time of listing. Our study investigates the reasons for large IPOs providing earnings forecasts at the time of listing.

3. Hypotheses, Data and Methodology

3.1. Hypotheses

Earlier studies (Zang 2012) document that managers engage in real earnings management activities throughout the fiscal year. Generally, accrual earnings management is used at the end of the fiscal year for adjusting earnings to meet the desired threshold. Graham et al. (2005) find that IPO firms conduct extensive accrual-based earnings management in the year prior to the IPO. Based on the previous evidence, we examine whether large IPOs that provide forecasts in their prospectuses and engage in real and accrual earnings management. Given that IPOs providing forecasts at the time of listing are seen as managements' promise to investors, such IPOs are unlikely to overestimate their future earnings. However, an optimistic forecast could result in significant litigation and reputational costs to the IPO firm. Arguably, large IPOs provide forecasts to signal their quality and not necessarily engage in managing the earnings. We test the following:

H1: *All else being equal, large IPOs that voluntarily disclose earnings forecasts in their prospectuses are less likely to engage in accrual and real earnings management, post IPO.*

Our second hypothesis is related to the long-run performance. Previous studies (Penman 1980; Clarkson et al. 1992) find that voluntary earnings forecast disclosures are likely to be optimistic. Hence, it is possible that IPOs which provide forecasts underperform those that do not, in the long run. Possibly, IPOs that provide forecasts are likely to be conservative in their forecasts and hence unlikely to overestimate their future earnings. Ball and Shivakumar (2008) document in UK that firms have a tendency toward conservative reporting. Further, overestimating future earnings may damage a firm's reputation and lead to significant litigation costs (Chong and Ho 2007). Therefore, IPOs that provide earnings forecasts are expected to out-perform the others in the long-run, if and only if, providing

earnings forecasts conveys information about the quality of the issuing firm. Hence, we test the following:

H2: *When earnings forecasts disclosed in prospectuses are conservative, the long-run performance of IPOs that provide forecasts should be better than that those that do not provide forecasts.*

3.2 *Data Description and Methodology*

Our initial sample consisted of 417 firms that went public on the Main Market of the LSE between 1985 and 2012. Financial and utilities firms were excluded due to differences in their reporting and disclosure requirements (see Teoh et al. 1998 a&b; Chang, Chung and Lin 2010; Chen, Lin and Zhou 2005; Lee and Masulis 2011; Wongsunwai 2012). We also excluded IPOs listed on AIM. This is because AIM IPOs are small and have easier listing requirements than firms seeking listing on the Main Market. Further, firms incorporated abroad are also excluded from the sample. To be included in the sample, we required the prospectuses and accounting data to be available. These criteria led to a final sample size of 368 firms with full data.[4] For the control sample of non-IPO firms, we included firms that had at least six observations in each IPO year for each industry group. Our approach in selecting the control sample of non-IPO firms is similar to those of Rosner (2003), Iqbal, Espenalub and Strong (2009) and Athanasakou, Strong and Walker (2011).

We estimated accrual earnings management using a cash flow, following the approach of, Hribar and Collins (2002) and Alhadab et al. (2015). The cash flow approach has

[4] See Appendix 1 for the distribution of the full sample and final sample.

minimal measurement errors, compared to the balance sheet approach. Information on issue price, IPO date, market capitalisation, and gross proceeds, among others, were manually collected from the prospectuses, as was the Accounting data from the prospectuses during the year of the IPO, while data for non-IPO firms were collected from Datastream. We measured earnings management during the year of IPO instead of post-IPO, due to the problems associated with earnings management post-IPO (see Ball and Shivakumar 2008). Measuring earnings management post-IPO is likely to be biased, because of the capital raised during the IPO, which has an impact on the firm's size.[5] However, due to the data limitation, we did not control for production cost manipulations.[6]

To examine the association between earnings forecasts and earnings management, we used the following logistic model:

$$\begin{aligned} \text{Earnings\_forecasts} = {} & \beta_0 + \beta_1 \text{EM\_index}_i + \beta_2 \text{Size}_i + \beta_3 \text{Leverage}_i + \beta_4 \text{ROA}_i + \beta_5 \text{Cash}_i \\ & + \beta_6 \text{Underpricing}_i + \beta_7 \text{Underwriter}_i + \beta_8 \text{Placing}_i + \beta_9 \text{BigN}_i + \\ & \beta_{10} \text{Retainedownership}_i + \text{Year} + \text{Ind} + \varepsilon_i \end{aligned} \quad (1)$$

Earnings forecast is a dummy variable taking the value of one, if the IPO firm has provided earnings forecast in the prospectus and zero otherwise. *EM_index* is one of the following measures of earnings management: (1) discretionary accruals, (2) abnormal cash flows from operations, or (3) abnormal discretionary expenses[7]. Size is measured by the total value of assets during the IPO year. *Leverage* is the ratio of total debt to the total value of assets. *ROA* is the operating income divided by the average total assets. *Cash* is cash flow from

[5] See figure 1 Appendix 2, the earnings managements over -3 and +3 window relative to the IPO year.

[6] See Appendix 3, the discussion on how earnings management is calculated.

[7] Our measures of earnings management are similar to those of Alhadab et al. (2015).

operations. *Under-pricing* is measured as the difference between the first day's closing market price and the offer price, divided by the offer price. *Underwriter* is a dummy variable taking the value of 1, if the IPO is underwritten by a reputable underwriter and is zero otherwise. *Placing* is a dummy variable that takes the value of 1 if the offering is a placing and is zero otherwise. *Big N* is a dummy variable equal to 1, if an audit firm is one of the big four audit firms (i.e., PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst & Young and KPMG).[8] Lastly, *Retained ownership* is the percentage of shares retained by the existing shareholders at the time of the IPO. We use clustered standard errors to control for the effect of industry clustering.

3.3 *Endogeneity and sample selection*

IPOs firms that provide earnings forecasts could manage reported earnings (upward/downward) to meet their forecasts (Cormier and Martinez 2006). If earnings forecast and earnings management are jointly determined, it is important to address the endogeneity between the two.

The univariate results in Table 3 shows that IPOs providing earnings forecasts are fundamentally different from those that do not. Further, only a small number of IPOs provide earnings forecasts at the time of listing. This indicates a sample selection problem and possible endogeneity between earnings forecasts and earnings management. To address the issue of endogeneity and sample selection, we used Heckman and Instrumental Variable (IV) regression. The following outlines how we addressed the selection and endogeneity concerns: In step I, we estimated the probability of providing profit forecasts

[8] We manually searched the auditing firm for each IPO and assigned one if the auditing firm is one of the big four auditing firms.

using equation (2). The predicted value from equation (2) is converted into a ratio of probability density function to cumulative distribution function (i.e., Inverse Mills) and used to correct for sample selection in the IV regression.

Step I:

$$\text{Profit\_forecast} = \beta_0 + \beta_1 \text{Retained\_ownership}_i + \beta_2 \text{Size}_i + \beta_3 \text{Age}_i + + \beta_4 \text{Leverage}_i e_i \quad (2)$$

In Step II, we used IV regressions to address endogeneity concerns related to the sample of IPOs that provide earnings forecast. In the IV regression, the earnings forecast is the predicted value from stage I. The determinants of providing earnings forecasts are similar to those of Cormier and Martinez (2006). Further, we included inverse Mills ratio from step I to correct for sample selection and predicted value to address the endogeneity. Equation (3) specification corrects for sample selection and endogeneity concerns.

Step II:

$$\begin{aligned} \text{EM\_index} = {} & \beta_0 + \beta_1 \text{Earnings\_forecasts}_i + \beta_2 \text{Retained\_ownership}_i + \beta_3 \text{Age}_i + \beta_4 \text{ROA}_i + \beta_5 \text{Cash}_i \\ & + \beta_6 \text{Underpricing}_i + \beta_7 \text{Underwrier}_i + \beta_8 \text{BigN} + \beta_9 \text{Inverse\_mills} \\ & \text{Year} + \text{Ind} + \varepsilon_i \end{aligned} \quad (3)$$

The coefficient estimates in equation (3) are unbiased estimates. We used the Sargan-Hansen Test for over identification and the Cragg-Donald test for weak instrument. The null hypothesis for the Sargan test is that the instruments are valid, while for the Cragg-Donald test, the null hypothesis suggests that the instruments are weak. Since the latter test requires a tolerable bias, we used a 10% threshold.

3.4 *Long-run performance*

To investigate the long-run performance, we used two performance measures: (1) market-adjusted buy-and-hold returns (BHAR) and (2) the Fama and French three-factor model.[9] The first method computes BHAR over the three years' post-IPO, using monthly data, starting four months after the first fiscal year end adjusted for market returns over the same time horizon— similar to the method used by Teoh et al. (1998 a & b). As a measure of robustness, we examined the impact of earnings management and earnings forecasts on BHAR calculated over one year, two years and three years respectively. We estimated the following model specification:

$$BHAR_i = \lambda_0 + \lambda_1 EM\_index_i + \lambda_2 forecast_i + \lambda_3 forecast\_error_i + \lambda_4 Size_i + \lambda_5 ROA_i + \lambda_6 Lage_i + \lambda_7 OWN + \lambda_8 Underwrite r + \lambda_9 Underprice_i + \lambda_{10} BigN + {}_i\upsilon_i \quad (4)$$

A positive and significant λ_1 would suggest better long-run performance for forecasters than non-forecasters. A positive insignificant λ_1 would indicate comparable long-run performance between forecasters and non-forecasters.[10] The second measure is the Fama and French (1993) three-factor model. We computed monthly portfolio returns for IPOs that provide earnings forecasts and those that do not and ran separate regressions, as follows:

$$R_{pt} - R_f = \alpha + b_{it}(R_{mt} - R_f) + s_{it}.SMB + h_{it}.HML + \varepsilon_{it} \quad (5)$$

A significant and positive α would suggest abnormal returns on the portfolios of forecasters/non-forecasters, while negative and significant α indicates poor long-run performance for forecasters and non-forecasters.

[9] We are grateful to Alan Gregory for providing us with the data on these three factors: risk premium, SMB and HML.

[10] Table A2 in the Appendix shows that the correlation between earnings management and earnings forecast is not high and therefore there are no concerns over multicollinearity problem.

4. Results and Analysis

4.1. *Descriptive Statistics*

Table 1 reports the distribution of IPO firms by industry, using the Fama and French industry classification. The table shows the distribution for the full sample, followed by the sub-samples of IPOs that provide and those do not provide earnings forecasts at the time of the listing. The figures reported in Table 1 exhibit a large variation in sectors across the sample of IPO firms. Durable consumer, energy (oil and gas), chemical, and allied products were the least represented sectors for the full sample and sub-samples, whereas wholesale and business equipment are the two best represented, followed by the sector labelled others. This sector includes construction, building materials, transport, hotels, bus service, and entertainment. This distribution is consistent for all IPOs, regardless of the forecasts. It is evident from Table 1 that IPO firms are clustered in some sectors, while other sectors attract only a few IPOs. We include industry dummies in our multivariate analysis to minimise the clustering effect and or over-representation.

[Please insert Table 1 here]

Table 2 provides descriptive statistics for the full sample of IPOs. The table shows that, on an average, earnings management varies between -0.020 and 0.042, based on our three measures. The highest earnings management measure is discretionary accrual earnings management, whilst the lowest is abnormal discretionary expenses. This is comparable with the findings of Alhadab et al. (2015). In our sample of IPO firms, 27.4% provided earnings forecasts at the time of IPO, while 72.6% did not. The fact that only a small number of IPOs provide forecasts is consistent with the previous studies (e.g. Cormier

and Martinez 2006). It is evident from the table that the forecast error is minimal, with mean and median values of less than 1 %. Clearly, IPO firms are not optimistic in their earnings forecasts at the time of listing. The median (mean) size as measured by the total assets is £43.25 (£254.26) million, while the median (mean) leverage is 37.58% (41.75%). These figures are comparable with the previous studies of UK IPOs listed on the Main Market (Ahmad and Jelic 2014; Alhadab et al. 2015). The median ROA is 6.57%, while the mean is 4%. This suggests that ROA is generally high for a few IPO firms, but for most IPOs the ROA is low. It is evident from the table that, on an average, an IPO firm listed on the Main Market has a positive cash flow of £11.8 million and a minimum negative cash flow of about £30.92 million. On an average, the IPO firms are mature, as measured by age (average of 8.8 years), and sell 43.7% of their shares on an average at the time of listing, while retaining 56.3%. The median (mean) under-pricing in our sample is 10.71% (7.28%). This is in line with a previous UK study (Espenlaub, Khurshed and Mohamed 2012). Only 17.8% of our sample of IPO firms is underwritten by reputable underwriters. Approximately 40% of the IPO firms are backed by reputed auditors, compared to 60% backed by less reputable ones. 51% of the IPO firms in our sample are placing, implying that their shares are placed with institutional and high-net-worth investors. In the case of non-placing, the shares are sold to all investors including the retail category.

[Please insert Table 2 here]

The results presented in Table 3 show the difference in medians between IPOs that provide and those that do not provide forecasts at the time of listing. It is clear from the table IPOs that the firms which provide earnings forecasts tend to manipulate the level of

earnings downward, compared to those that do not provide forecasts. The difference in the medians' is statistically significant at 1% using accrual or real earnings management. It is possible that IPO firms that have provided earnings forecasts were not optimistic in their forecasts and hence the incentive to an upward earnings manipulation is weak. The table also shows that the characteristics of the two sub-samples of IPOs are different in terms of ROA, cash richness, maturity, and the level of underpricing at the time of listing. In addition, IPOs that provide earnings forecasts tend to sell more shares at the time of listing with positive market adjusted buy and hold returns, while those that do not provide forecasts, sell fewer shares at the time of listing and experience negative market adjusted BHAR. The difference in the median characteristics between the two sub-samples of IPOs is statistically significant at the 5% level. Overall, the results show that the characteristics of IPO firms that provide earnings forecasts are large and different from those that do not provide forecasts at the time of listing.

[Please insert Table 3 here]

4.2. *Earnings Management and Profit Forecasts*

Table 4 reports the main test of hypothesis 1, which focuses on the relationship between the likelihood of providing earnings forecasts and earnings management. Unlike US IPOs, UK IPOs can provide earnings forecasts in their prospectuses. Hughes (1986) found that firms can mitigate information asymmetry by communicating private information to investors and disclosing of their firm's value. The results in Table 4 show that IPOs that provide forecast are less likely to engage in earnings management, as compared to IPOs that

do not provide forecasts. This evidence is statistically significant at the 5% level, using discretionary accrual earnings management or abnormal cash flows from operations. However, there is no evidence to suggest a relationship between the probabilities of providing forecast and earning managements, when earnings managements are measured as abnormal discretionary expenses. Overall, the results are consistent with our first hypothesis, which suggests that firms that provide earnings forecast are unlikely to manipulate the level of earnings. It is also possible that IPOs use forecasts as a signal of their quality and to distinguish themselves from other IPOs. Our results show that there is strong evidence that large companies, as measured by the logarithm of total assets, have a high probability of providing forecasts to signal their quality. However, highly leveraged firms are unlikely to provide a forecast at the time of the IPO. This is consistent with Healy and Palepu's (2001) evidence that risky firms, which includes IPOs, are reluctant to provide forecasts due to litigation concerns.

Our results show that mature firms, as measured by age, are likely to provide earnings forecasts and experience lower under-pricing. However, IPO firms that are underwritten by reputable underwriters are less likely to provide earnings forecasts. This result is consistent with the findings of Titman and Trueman (1986). Interestingly, the probability of providing a forecast is high, when the IPO firms use placing as a listing method. This evidence indirectly suggests that earnings forecasts are used to signal the quality of the IPO. Such a signal would enable the IPO firm and its underwriter(s) to attract institutional investors, whose involvement into the IPO process is critical to the issuing firm.

[Please insert Table 4 here]

4.3. Endogeneity and sample selection

We assume that the relationship between earnings management and providing forecasts are exogenous. Nonetheless, Kasznik (1999) reported that earnings management is likely to prevail among firms that provide forecasts, compared to those that do not. Furthermore, the author argues that providing forecasts motivates firms to manage earnings to meet their forecasts. Cormier and Martinez (2006) document a similar issue in the context of French IPOs. These evidences suggest possible endogeneity between providing earnings forecasts at the time of listing and earnings management. Another related issue is that our study examines the implication of providing earnings forecasts, while most IPOs in our sample did not provide forecast at the time of listing. Together, the above evidences indicate possible sample selection and endogeneity concerns. We address the issue of endogeneity and selection effect in the Methodology section (Section 3.3). Model1 in Table 5 shows that the probability of providing earnings forecasts at the time of listing decrease by 33.5% for a unit increase in the retained ownership. High leverage decreases the probability of providing forecasts by 6.1%, while the size of the IPO at the time of listing increases the probability of providing earnings forecasts by 2.9%. Model 2 through Model 4 show the IV regression results, where the dependent variable is earnings management and proxied by discretionary accrual, abnormal cash flow and discretionary expenses respectively. Following Cormier and Martinez (2006), we excluded leverage and size from the second stage of IV regression, as these variables are more likely to determine the probability of providing forecasts than managing earnings. It is evident in Model 2

through Model 4 that high retained ownership reduces the level of earnings management significantly. In addition, the level of earnings management is less for IPOs that provide earnings forecasts than those which do not. This evidence is statistically significant, supports our hypothesis and is consistent across various measures of earnings management.

The level of underpricing at the time of listing does not explain any earnings management during the IPO year. The level of earnings management is less for IPOs characterised by high ROA at the time of listing and/or backed by reputable underwriters. The inverse Mills ratio is significant in Model 2 through Model 4, suggesting a sample selection effect. We do not reject the null hypothesis that the instruments are valid using the Sargan-Hansen test, but we reject the null that the instruments are weak instruments, using the Cragg-Donald test. Taken together, the results of Tables 5 indicate that IPOs providing forecasts at the time of listing manage their earnings less than those that do not, controlling for sample selection and endogeneity. We control for industry and year of listing to avoid possible year or industry effects.[11]

[Please insert Table 5 here]

5. Extension Long-run Performance

To investigate the implication of providing earnings forecasts to the long term investors, we compared the long-run performance of IPOs that provide forecasts with those that do not. Table 6 shows the results of long run performance as measured by BHAR and the effect of earnings management for the three measures is examined separately due to

[11] Table 2 in the appendix shows that our variables are not highly correlated, suggesting that our models do not suffer from multicollinearity.

high correlations (please see Table 1A in the appendix). Panel A Model 1, shows that BHAR is lower for firms with higher upward level of earnings management at the time of listing. This evidence is significant at the 1% level, using accrual and real earnings management. The results are consistent with those of Teoh et al. (1998b), who reported a similar effect for the US IPOs. Model 2 includes a dummy variable that takes the value of 1 for IPOs that provide forecast at the time of listing and zero otherwise. The results show that firms that provide earnings forecasts at the time of listing outperform those that do not provide forecasts. Difference in the performance is statistically significant at the 5% level. However, a dummy variable does not reflect the quality of earnings forecast provided by the IPO firms, while the forecast errors measure the reliability of earnings forecast. To address this issue, we used forecasting error instead of forecast dummy, measured as the difference between actual earnings reported immediately after the IPO and earnings forecasts reported in the prospectuses. It is evident in Model 3 that higher earnings management leads to lower long-run performance. Moreover, the results show that high forecast errors lead to poor long-run performance. This is because long-term investors become disappointed when the forecast error is high and hence sell their holdings. Such behaviour would drive the price down and lead to poor long-run performance. Panel B, shows the impact of providing earnings forecasts on one year, two years and three years BHAR, controlling for additional IPO characteristics such as size, ROA, retained ownership, underwriter's reputation, under-pricing and auditor's reputation. BHAR measured over three years might overstate the impact of providing forecasts. Hence, we examined the relationship between earnings forecasts and BHAR over one year, two years and three years respectively. The results are robust and show that an upward level of earnings management leads to negative

performance as measured by one year, two year and three years BHAR. These results are consistent with those of previous studies (DuCharme et al. 2001; Chang et al. 2010). Although providing profit forecasts leads to a positive performance, significant forecasting errors lead to a negative performance. Stated differently, better long-run performance for the IPO firms is not determined by provision or non-provision of earnings forecast, but rather by the quality of forecast earnings. In fact, IPO firms with high ROA and maturity perform better, on an average, than their counterparts. However, highly underpriced IPOs underperform (generate negative returns) in the long run, consistent with the findings of Ritter (1991). IPOs that retained more shares at the time of listing do not seem to perform well in the long run, while those backed by reputed auditors tend to perform better. The evidence is significant, statistically but not economically. The intercepts in all models are negative, suggesting poor performance for IPO firms on an average. Overall, our results show poor performance for IPO firms, but IPOs that provide forecasts with minimum forecast errors, tend to perform well in the long run.

[Please insert Table 6 here]

Table 7 shows comparison of the long-run performance of IPOs that provide and those that do not provide earnings forecasts, using the Fama and French (1993) three-factor model. We calculated monthly portfolio returns for all IPOs from 1985 to 2012. We then matched each portfolio return with excess market returns, SMB and HML to assess the long-run performance. Model 1 shows the results for IPOs that provide forecasts, while Model 2 shows the results for those do not provide forecasts. The intercepts from Models 1 and 2 measure the long-run abnormal performance. The estimated coefficients for alpha measure

the abnormal performance; it is positive for the firms which provide forecast and negative for those do not. IPOs that provide earnings forecasts at the time of listing have a positive alpha of 0.007 compared to a negative alpha of 0.0012 per month for firms that do not provide. This is equivalent to 0.7% when controlling for market risk premium, size, and growth. Overall, these results suggest that IPO firms that provide forecasts experience post abnormal returns, while those that do not provide forecast are associated with negative performance of 0.12%. Nonetheless, the positive and negative performance are weak and only significant at the conventional 10% level. Tables 6 & 7 both support hypothesis 2 that IPOs use earnings forecasts to signal the quality of the firm and not to exploit short term or long term investors.

[Please insert Table 7 here]

6. Conclusion

In this study, we examined whether (and to what extent) UK IPO firms providing earnings forecasts are likely to manage the level of their earnings. Our results show that forecasters do not manipulate the level of earnings upward, regardless of the measures of earnings management. We find that large-sized IPOs and those backed by reputed auditors are less likely to manage the level of their earnings at the time of listing. Further analysis revealed that poor long-run performance, using market adjusted buy and hold returns and the Fama and French three-factor model, is restricted to IPOs that do not provide forecasts.

Our study contributes to the existing literature on earnings forecasts, earnings management, and long-run performance. It extends prior research on the relationship between IPOs and earnings management (Teoh et al. 1998a), by demonstrating that large IPOs providing earnings forecasts do not manage the level of their earnings upwards. Further, poor long-run performance of IPO firms is attributable to issuer's quality. Our results are important for IPO investors, who typically invest in IPO firms over a long period, and provide insight into the information conveyed in earnings forecasts at the time of listing. Overall, our results show that large IPOs that provide forecasts do not behave opportunistically to manage the level of their earnings upward; they rather use the forecasts to communicate the firm's quality to outsiders.

REFERENCES

Ahmad, W. and Jelic, R. (2014). Lockup agreements and survival of UK IPOs. Journal of Business Finance &Accounting, *41,717-742.*

Alhadab, M., Clacher, I., & Keasey, K. (2012). Real and accrual earning management around initial public offerings under different regulatory environments. Working Paper.

Alhadab, M., Clacher, I., & Keasey, K. (2015). Real and accrual earning management and IPO failure risk. Accounting and Business Research*, 45, 55-92*.

Armstrong, C.S., Foster, G., & Taylor, D.J. (2009). Earnings management around initial public offerings: A re-examination. SSRN eLibrary.

Athanasakou, V.E., Strong, N.C. & Walker, M. (2011). The market reward for achieving analyst earnings expectations: Does managing expectations or earnings matter? Journal of Business Finance & Accounting*, 38, 58-94.*

Ball, R., & Shivakumar, L. (2008). Earnings quality at initial public offerings. Journal of Accounting and Economics*, 45, 324-349.*

Chang, S.C., Chung, T.Y. & Lin, W.C. (2010). Underwriter reputation, earnings management and the long-run performance of initial public offerings. Accounting & Finance*, 50, 53-78.*

Chen, K.Y., Lin, K.L. & Zhou, J. (2005). Audit quality and earnings management for Taiwan IPO firms. Managerial Auditing Journal, 20, 86-104.

Chong, B.S., & Ho, K.W. (2007). Lockup and voluntary earnings forecast disclosure in IPOs. Financial Management*, 36, 63-80.*

Clarkson,P.M., Dontoh A., Richardson, G., & Sefcik, S.E. (1992). The voluntary inclusion of earnings forecasts in IPO prospectuses. Contemporary Accounting Research*, 8, 601-616.*

Cohen, D.A., Dey, A. & Lys, T.Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. The Accounting Review*, 83, 757-787.*

Cohen, D.A. & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. Journal of Accounting and Economics*, 50, 2-19.*

Cormier, D. and Martinez, I. (2006). The association between management earnings forecasts, earnings management, and stock market valuation: Evidence from French IPOs. The International Journal of Accounting, *41, 209-236.*

Cormier, D., Pascale, L.A., & McConomy, B.J. (2014). Forecasts in IPO prospectuses: The effect of corporate governance on earnings management. Journal of Business Finance and Accounting, *1, 100-127.*

Darrough, M.N., & Rangan, S. (2005). Do insiders manipulate earnings when they sell their shares in an initial public offering? Journal of Accounting Research*, 34, 1-33.*

Dechow, P.M., Kothari, S.P., & Watts, R.L. (1998). The relation between earnings and cash flows. Journal of Accounting and Economics,*25, 133-168.*

Dechow, P.M., Sloan, R.G., & Sweeney, A.P. (1995). Detecting earnings management. The Accounting Review *70, 193-225.*

Dev, S., & Webb, M. (1972). The accuracy of company Profit Forecasts. Journal of Business Finance *4, 26-39.*

Donotoh, A. (1989). Voluntary disclosure. Journal of Accounting Auditing and Finance*. 4, 480-511.*

DuCharme, L.L., Malatesta, P.H., & Sefcik, S.E. (2001). Earnings management: IPO valuation and subsequent performance. Journal of Accounting, Auditing & Finance*, 16, 369-396.*

Dye, R. (1985).Proprietary and non-proprietary disclosure. Journal of Business*, 59, 331-366.*

Espenlaub, S., Khurshed, A., & Mohamed, A. (2012). IPO survival in a reputational market. Journal of Business Finance and Accounting*, 39, 427-463.*

Fama, E. F., & French, K.R. (1993). Common risk factors in the returns on stocks and bonds. Journal of Financial Economics*, 33, 3-56.*

Ferris, K. R., & Hayes, D. C. (1977). Some evidence on the determinants of profit forecast accuracy in the United Kingdom. The international Journal of Accounting Education and Research*, 12, 27-36.*

Graham, J.R., Harvey, C.R., & Rajgopal, S. (2005). 'The economic implications of corporate financial reporting. Journal of Accounting and Economics*, 40, 3-73.*

Healy, P.M., & Palepu, K.G. (2001 . Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of Accounting and Economics*, 31, 405-440.*

Hirst, E.D., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. Accounting Horizons*, 22, 315-338.*

Hribar, P., & Collins, D.W. (2002). Errors in estimating accruals: Implications for empirical research. Journal of Accounting Research*, 40, 105-134.*

Hughes, P.J. (1986). Signalling by direct disclosure under asymmetric information. Journal of Accounting and Economics, 8, 119-142.

Ibrahim, S., and Lloyd, C. (2011). The association between non-financial performance measures in executive compensation contracts and earnings management. Journal of Accounting and Public Policy, *30, 256-274.*

Iqbal, A., Espenlaub, S., & Strong, N.C. (2009). Earnings management around UK open offers. The European Journal of Finance*, 15, 29-51.*

Jaggi, B., Leung, S., & Gul, F. (2009). Family control, board independency and earnings management: Evidence based on Hong Kong firms. Journal of Accounting and Public Policy*, 28, 281-300.*

Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. Journal of Accounting Research*, 37, 57-81.*

Kothari, S.P., Leone, A.J., & Wasley, C.E. (2005). Performance matched discretionary accrual measures. Journal of Accounting and Economics*, 39, 163-197.*

Lee, G., & Masulis, R.W. (2011). Do more reputable financial institutions reduce earnings management by IPO issuers? Journal of Corporate Finance*, 17, 982-1000.*

Leland, H.E., & Pyle, D.H. (1977). Information asymmetries, financial structures and financial intermediations. Journal of Finance*. 19, 371-87.*

Liang, P.J. (2004). Equilibrium earnings management, incentive contacts and accounting standards. Contemporary Accounting Research*, 21, 685-717.*

Ritter, J.R. (1991). The long-run performance of Initial Public Offerings. Journal of Finance*, 46, 3-27.*

Rodriguez, P.G., & Hemmen, S.V. (2010). Debt, diversification and earnings management. Journal of Accounting and Public Policy*. 29, 138-159.*

Roosenboom, P., van der Goot, T., & Mertens, G. (2003). Earnings management and initial public offerings: Evidence from the Netherlands. The International Journal of Accounting*, 38, 243-266.*

Rosner, R.L. (2003). Earnings manipulation in failing firms. Contemporary Accounting Research*, 20, 361-408.*

Roychowdhury, S. (2006). Earnings management through real activities manipulation. Journal of Accounting and Economics*, 42, 335-370.*

Shivakumar, L., Urcan, O., Vasvari, F. & Zhang, L. (2011). The Debt Market Relevance of Management Earnings Forecasts: Evidence from Before and During the Credit Crisis. Review of Accounting Studies*, 16, 464-486*.

Teoh, S.H., Welch, I., & Wong, T.J. (1998a). Earnings management and the long-run market performance of initial public offerings. The Journal of Finance*, 53, 1935-1974.*

Teoh, S.H., Wong, T.J., & Rao, G.R. (1998b). Are accruals during initial public offerings opportunistic? Review of Accounting Studies*, 3, 175-208.*

Titman, S., & Trueman, B. (1986). Information quality and the valuation of new issues. Journal of Accounting and Economics*, 8, 159-172.*

Verrecchia, R.E. (2001). Essay on disclosure. Journal of Accounting and Economics. *32, 97-180*

Wongsunwai, W. (2012). The effect of external monitoring on accrual-based and real earnings management: Evidence from venture-backed initial public offerings. Contemporary Accounting Research*, 30, 296-324.*

Zang, A.Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. The Accounting Review*, 87, 675-703.*

Table 1: Industry distribution

Table 1 presents the distribution of the IPO firms by industry using the Fama and French industry classification. The data is tabulated by full sample, forecaster and non-forecaster sub-samples at the time of IPO.

	Full sample		***Forecast=1***		***Forecast=0***	
Distribution by industry	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*
	(#)	(%)	(#)	%)	(#)	(%)
Non-durable Consumer	30	8	8	2	22	6
Durable consumer	6	2	1	0	6	2
Manufacturing	26	7	7	2	18	5
Energy oil and gas	7	2	2	1	5	1
Chemicals and allied products	11	3	2	1	10	3
Business equipment	52	14	14	4	38	10
Telecom	14	4	5	1	10	3
Wholesale	64	17	12	3	52	14
Health care	16	4	2	1	14	4
Others	140	38	47	13	93	25
Total	***368***	***100***	***101***	***27***	***267***	***73***

Table 2: Summary statistics of the main variables

Table 2 shows the descriptive statistics for the full sample during 1985-2012. *EM_discretion* is earnings management measured by discretionary accruals. *EM_cash flow abr* is earnings management measured by abnormal cash flows from operations. *EM_discretion exp* is earnings management measured by abnormal discretionary expenses. *Forecast dum* is a dummy variable taking a value of 1 if an IPO firm provides a forecast at the time listing and zero otherwise. *Forecast_error* is the difference between actual profit reported immediately after the IPO and profit forecasts reported in the prospectuses. *Total assets* are the total value of assets (£ 1000s) at the beginning of the year. *Leverage* is the ratio of total debt to the total value of assets. *ROA* is the operating income divided by the total assets. *Cash flow* is cash flow from operations in thousands. *Age* is measured as the difference between the IPO date and the date of incorporation in years. *Underpricing* is measured as the difference between the first day's market price and the offer price, divided by the offer price. *Retained ownership* is the percentage of shares retained by the existing shareholders at the time of the IPO. *Underwriter* is a dummy variable taking the value of 1 if the underwriter is reputable and zero otherwise. *Big N* is a dummy variable equal to 1 if an audit firm is one of the big 4 audit firms (i.e. PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst & Young and KPMG). *Placing* is a dummy variable taking a value of 1 if the offer is a placing and zero otherwise.

Variables	***Mean***	***Median***	***STD***	***Min***	***Max***
EM_discretion	0.0426	0.0403	0.2055	-0.4339	0.6421
EM_cash flow abr	0.0205	0.0300	0.2886	-0.7999	0.8346
EM_discretion exp	0.0271	0.0301	0.0421	-0.0884	0.0961
Forecast dum	0.2744	0.0000	0.4368	0.0000	1.0000
Forecast_error	0.0014	0.002	0.002	-0.002	0.045
Total asset	254261.70	43248.00	730131.10	2365.000	5197800.0
Leverage	0.4175	0.3758	0.2901	0.0092	0.8704
ROA	0.0404	0.0657	0.1400	-0.4334	0.3838
Cash flow	11844.56	1646.00	38206.31	-30916.00	270000.00
Age	8.8813	6.9600	8.2817	3.5000	37.0120
Underpricing	0.0728	0.1071	2.9137	-0.0826	0.2957
Retained ownership	0.563	0.6100	0.2117	0.0500	0.7500
Underwriter	0.1786	0.0000	0.3835	0.0000	1.0000
Big N	0.398	0.000	0.4114	0.0000	1.0000
Placing	0.5163	1.0000	0.5002	0.0000	1.0000
N	***368***				

Table 3: Median test forecasters vs. non-forecasters.

Table 3 reports the difference-in-median test results for the variables defined in Table 1. The sample is divided into forecasting and non-forecasting IPOs. Z-test is the test of the difference in median between the two sub-samples. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.

Variables	***Median values***		***Diff***
	Forecast=1	Forecast=0	Z-test
EM_discretion	-0.0160	0.0967	4.64***
EM_cash flow abr	-0.0755	0.0152	-4.64***
EM_discretion exp	0.0197	0.0406	1.99**
Total asset	47014.5	39338.0	-0.590
Leverage	0.4000	0.3700	-1.15
ROA	0.0884	0.0519	-4.58***
Cash flow	1901.0	1518.0	-1.71*
Age	10.1200	6.3200	-4.49***
Underpricing	0.0881	0.1304	2.870***
Retained ownership	0.4812	0.7210	2.17***
BHAR	0.021	-0.0781	-1.99**
N	***101***	***267***	

Table 4: Multivariate results

Table 4 provides the results of the logistic regression analysis for the full sample. *EM_index* is a measure of earnings management and it is discretionary accruals in Model 1, Abnormal cash flow in Model 2 and Discretionary expenses in Model 3. *Size* is the logarithm of total assets. *Leverage* is the ratio of total debt to total assets. *ROA* is the operating income divided by the total assets. *Cash flow abs* is the logarithm of absolute value of cash flow from operations. *LAge* is the logarithm of age. *Underwriter* is a dummy variable taking the value of 1 if the underwriter is reputable and zero otherwise. *Placing* is a dummy variable taking the value of 1 if the IPO is a placing and zero otherwise. *Retained ownership* is the percentage of shares retained by the firm at the time of listing. *Big N* is a dummy variable equal to 1 if an audit firm is one of the big 4 audit firms in Model 3. The dependent variable is a dummy variable taking the value of one if the IPO provides earning forecast and zero otherwise. Reported coefficients are the marginal effects from the logit model. The values in brackets are the *p*-values. ***, **, and * indicate significance at 1%, 5% and 10%, respectively.

Variables	**Model1**	**Model2**	**Model 3**
EM_index	-0.4489***	-0.3282**	-0.3297
	(0.001)	(0.037)	(0.357)
Size	0.1064***	0.0797**	0.0466***
	(0.000)	(0.025)	(0.006)
Leverage	-0.2948**	-0.2639**	-0.0042
	(0.033)	(0.047)	(0.513)
ROA	0.2869	0.1787*	0.0509
	(0.169)	(0.086)	(0.895)
Cash flow (abs)	-0.0381***	-0.0182*	-0.0283*
	(0.006)	(0.093)	(0.0923)
LAge	0.0948***	0.0972**	0.0897***
	(0.003)	(0.030)	(0.001)
Underpricing	-0.0073***	-0.0059*	-0.0083**
	(0.049)	(0.073)	(0.030)
Lead-underwriter	-0.1971***	-0.2053***	-0.2219***
	(0.000)	(0.007)	(0.000)
Placing	0.5139***	0.4958****	0.4133***
	(0.000)	(0.000)	(0.000)
Retained ownership	-0.0412*	-0.0654**	-0.0023*
	(0.083)	(0.039)	(0.088)
Big N	-0.0028	-0.0112	-0.0017
	(0.187)	(0.312)	(0.557)
Constant	-8.1543	-0.8730	-2.5183**
	(0.371)	(0.476)	(0.047)
Industry & year	Y	Y	Y
No of obs	***368***	***368***	***368***
Wal chi2	20.7	23.7	39.89

Table 5: Instrumental Variable two-stage.

Table 5 provides the regression analysis for the full sample, controlling for endogeneity. *Size* is the logarithm of total assets. *Leverage* is the ratio of total debt to total assets. *ROA* is the operating income divided by the total assets. *Cash flow abs* is the logarithm of the absolute value of cash flow from operations. *Placing* is a dummy variable taking the value of 1 if the IPO is a placing and zero otherwise. *Big N* is a dummy variable equal to 1 if an audit firm is one of the big 4 audit firms. ***, **, and * indicate significance at 1%, 5% and 10%, respectively.

	Probit Model		***IV Regressions***		
	Model1		***Model2***	***Model3***	***Model 4***
Variables	Coeff	Marginal Effect	Discretionary accruals	Abnormal cash flow	Discretionary expenses
Retained ownership	-0.8748***	-0.3351	-0.0372*	-0.1889***	-0.0263*
	(0.000)		(0.053)	(0.003)	(0.098)
Leverage	-0.1597*	-0.0611			
	(0.077)				
Size	0.0776**	0.0297			
	(0.033)				
LAge	0.0078	0.0030	-0.0167	-0.0930**	-0.0685*
	(0.297)		(0.175)	(0.049)	(0.088)
Forecaster			-0.1733**	-0.1477**	-0.1061**
			(0.029)	(0.011)	(0.041)
Underpricing			0.0067	-0.0122	0.0024
			(0.981)	(0.731)	(0.677)
ROA			-0.1442***	-0.1136***	-0.1163***
			(0.000)	(0.000)	(0.292)
Cash flow (abs)			0.0019	0.0024	0.0023
			(0.489)	(0.498)	(0.693)
Lead-underwriter			-0.1533**	-0.1112**	-0.1331***
			(0.036)	(0.048)	(0.006)
Big N			-0.0328	-0.0449	0.0032
			(0.248)	(0.217)	(0.380)
Inverse Mills ratio			0.2077***	-0.1557**	-0.2364**
			(0.000)	(0.037)	(0.047)
Constant			-0.3197***	0.5637**	0.1890*
			(0.001)	(0.020)	(0.061)
Industry & year	Y		Y	Y	Y
Sargan-Hansen Test			P (0.177)	P (0.187)	P (0.142)
Weak instrument: Cragg-Donald (10% Maximal IV Size)			15.22>13.44	14.78>12.55	13.12>11.59
No. of obs	368		368	368	368

Table 6: Long-term performance Buy and hold

Table 6 provides the results of the regression analysis for the full sample focusing on long-term performance, as measured by buy and hold returns. Panel A shows the impact of only earnings management and forecasting on BHAR measured over 3 years period. Panel B shows the impact of all variables on BHAR measured over 1 year, 2 years and 3 years respectively. *EM_discretion* is the earnings management measured by discretionary accruals. *EM_cash flow* is the earnings management measured by abnormal cash flows from operations. *EM_discretion exp* is the earnings management measured by abnormal discretionary expenses. *Forecast* is a dummy variable taking the value of 1 if the IPO firm provides a forecast and zero otherwise. *Forecast_error* is the difference between actual profit reported immediately after the IPO and profit forecasts reported in the prospectuses. *Size* is the logarithm of total assets. *Leverage* is the ratio of total debt to total assets. *ROA* is the operating income divided by the total assets. *LAge* is the logarithm of age. *Retained ownership* is the percentage of shares retained by the firm at the time of listing. *Underwriter* is a dummy variable taking the value of 1 if the underwriter is reputable and zero otherwise. *Underpricing* is measured as the difference between the first day's market price and the offer price, divided by the offer price. *Big N* is a dummy variable taking the value of 1 if the auditing company is reputable and zero otherwise. The dependent variable is buy-and-hold returns *BHAR* measured over three years post-IPO using monthly returns. The values in brackets are the *p*-values. ***, **, and * indicate significance at 1%, 5% and 10%, respectively.

Panel A	***Model1***		***Model2***		***Model 3***	
EM_discretionary	-0.1102***	(0.000)	-0.0999***	(0.000)	-0.1072****	(0.000)
EM_discretionary_exp	-0.3688***	(0.000)	-0.3647***	(0.000)	-0.3358***	(0.000)
Forecasting			0.0313**	(0.021)	—	
Forecast_error.					-0.0737***	(0.000)
Constant	-0.021	(0.252)	-0.0268	(0.352)	-0.0368*	(0.052)
Industry & year	Y		Y		Y	
No. of obs	367		367		367	
R-squared	0.124		0.134		0.144	
Panel B	***BHAR (1year)***		***BHAR (2year)***		***BHAR (3year)***	
EM_discretionary	-0.0431**	(0.028)	-0.0401**	(0.021)	-0.0368**	(0.024)
EM_discretionary_exp	-0.4679**	(0.013)	-0.4439**	(0.022)	-0.3999**	(0.011)
Forecasting	0.0106*	(0.096)	0.0112*	(0.088)	0.0158*	(0.081)
Forecast_error.	-0.0734***	(0.000)	-0.0703***	(0.000)	-0.0622***	0.000)
SIZE	0.0086*	(0.094)	0.0082*	(0.090)	0.0074*	(0.081)
ROA	0.1010**	(0.035)	0.0957**	(0.041)	0.0886**	(0.031)
LAge	0.0173**	(0.017)	0.0162*	(0.019)	0.0149***	(0.015)
Retained ownership	0.0130	(0.133)	0.0120	(0.123)	0.0112	(0.115)
Underwriter	-0.0249*	(0.096)	-0.0220*	(0.089)	-0.0200*	(0.084)
Underpricing	-0.0238**	(0.026)	-0.0236**	(0.034)	-0.0211**	(0.023)
Big N	0.0145	(0.110)	0.0137	(0.104)	0.0126*	(0.0953)
Constant	-0.0724*	(0.052)	-0.0674**	(0.049)	-0.0624**	(0.045)
Industry & year	Y		Y		Y	
No. of obs	367		367		367	
R-squared	0.148		0.151		0.157	

Table 7: Long-term performance of the Fama and French three-factor model

Table 7 provides the results of the regression analysis using the Fama and French three-factor model. *Risk premium* is the difference between the market return and risk-free rate. *SMB* is small minus large portfolios. *HML* is high minus low portfolios. The dependent variable is the portfolio returns of the IPO firms. Model 1 shows the results for the IPO firms that provide profit forecasts at the time of the IPO. Model 2 shows the results for the IPOs that did not provide profit forecasts. The values in brackets are the *p*-values. ***, **, and * indicate significance at 1%, 5% and 10%, respectively.

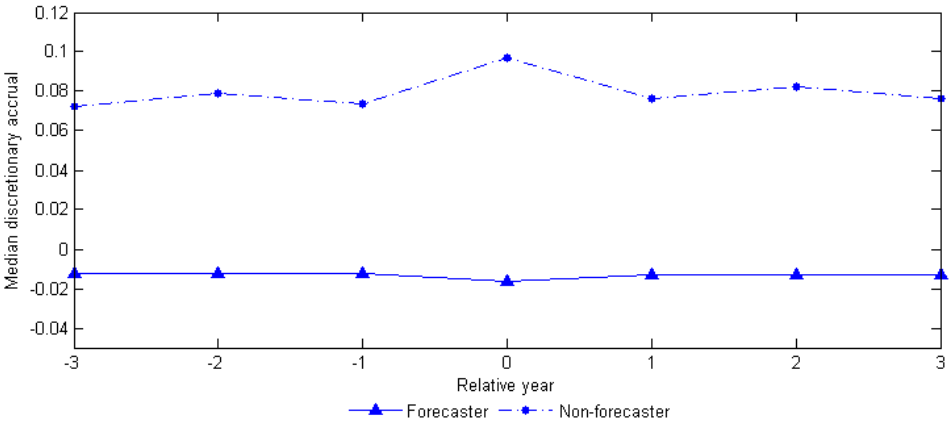
Variables	***Model 1***	***Model 2***
	Forecast=1	*Forecast=0*
Risk premium	0.7826***	0.6985***
	(0.000)	(0.000)
SMB	0.3934***	0.3993***
	(0.000)	(0.000)
HML	0.0284	-0.2409***
	(0.787)	(0.000)
Constant	0.0070*	-0.0012*
	(0.088)	(0.094)
No. of obs	101	266
R-squared	0.168	0.201

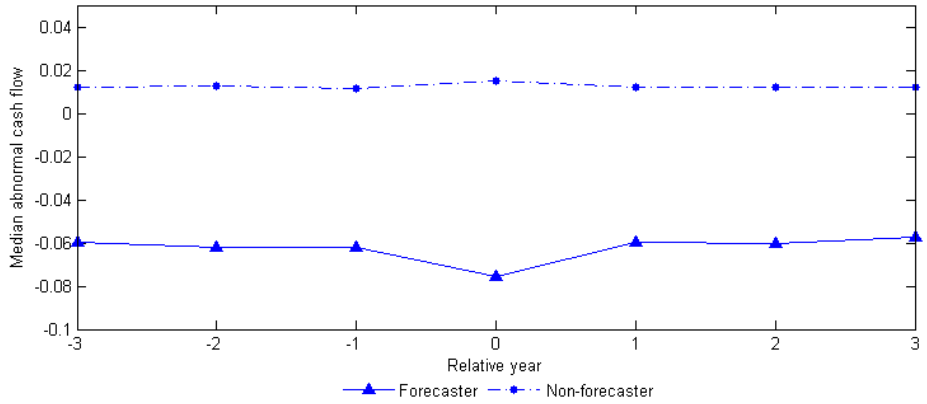
APPENDIX 1

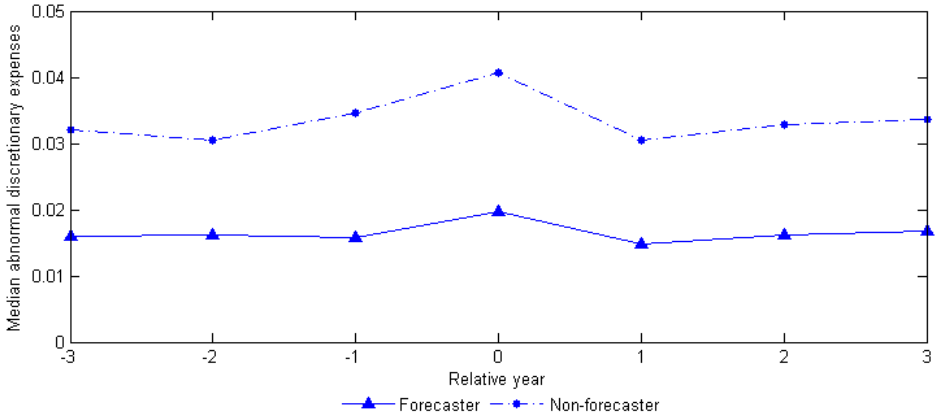
Table 1A: Correlation Matrix

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1)	EM_discretionary	1											
2)	EM_abnormal cash	-0.697	1										
3)	EM_discretionary_exp	-0.083	0.126	1									
4)	SIZE	-0.037	-0.011	0.096	1								
5)	Leverage	-0.355	0.127	0.159	0.257	1							
6)	ROA	-0.544	0.534	0.080	0.007	0.067	1						
7)	Cash flow abs	-0.289	0.230	0.005	0.431	0.197	0.197	1					
8)	Forecasting	-0.200	0.226	0.034	0.136	0.079	0.200	0.016	1				
9)	Age	-0.167	0.190	-0.066	0.000	0.032	0.198	-0.012	0.123	1			
10)	Retained ownership	-0.122	0.157	0.057	0.176	0.178	0.175	0.101	0.210	0.119	1		
11)	Underpricing	-0.052	-0.008	0.066	0.135	0.006	-0.014	0.103	0.003	-0.051	-0.105	1	
12)	Lead-underwriter	0.235	-0.200	-0.179	0.024	-0.024	-0.224	0.024	-0.302	-0.094	-0.074	0.158	1

Appendix 2: The figure below shows the median earnings management for different measures over -3 and +3 around the IPOs. The figures show the earnings management for IPOs that provide profit forecasts and those that do not.







Appendix 3

Measuring discretionary accruals earnings management.

To estimate discretionary accruals earning management (EM), we use the Dechow et al. (1995) cross-sectional adaptation of the modified Jones model. Following Armstrong et al. (2009), we scaled all variables by average total assets, rather than lagged total assets. This is due to the fact that for the IPO firms, lagged total assets are relatively smaller than total assets at the end of the IPO year and hence might inflate the measurement of accruals in the year of the IPO (see Ball and Shivakumar 2008). The coefficients used to estimate discretionary accruals for the IPO firms are estimated using year and industry cross-sectional regression for all non-IPO firms listed on the LSE in the years prior to and succeeding the IPO year. We included return on assets (ROA) in our model specification to control for extreme operating performance, as pointed out by Kothari et al. (2005). Normal accruals are estimated using the following:

$$\frac{\mathrm{TA}_{\mathrm{it}}}{\mathrm{AveTAsset}_{\mathrm{it}}} = \alpha_0 + \gamma_1 \frac{1}{\mathrm{AveTAsset}_{\mathrm{it}}} + \gamma_2 \frac{\Delta\mathrm{Sales}_{\mathrm{it}}}{\mathrm{AveTAsset}_{\mathrm{it}}} + \gamma_3 \frac{\mathrm{PPE}_{\mathrm{it}}}{\mathrm{AveTAsset}_{\mathrm{it}}} + \gamma_4 \mathrm{ROA}_{\mathrm{it}} + \xi_{\mathrm{it}} \qquad (1)$$

where TA_{it} is the total accruals and is defined as earnings before extraordinary items minus cash flows from operations. $AveTAssets_{it}$ is the average total assets. $\Delta Sales_{it}$ is the change in sales during a year scaled by average total assets. PPE_{it} is the gross value of property, plant and equipment scaled by average total assets. $\mathrm{ROA}_{\mathrm{it}}$ is the return on assets computed as operating income scaled by average total assets.

Normal accruals for the IPO firms in each year and industry are estimated using the following model, where the coefficients of the model are estimated from equation (1).

$$NA_{it} = \hat{\alpha}_0 + \hat{\gamma}_1 \frac{1}{AveTAsset_{it}} + \hat{\gamma}_2 \frac{\Delta Sales_{it} - \Delta REC_{it}}{AveTAsset_{it}} + \hat{\gamma}_3 \frac{PPE_{it}}{AveTAsset_{it}} + \hat{\gamma}_4 ROA_{it} \quad (2)$$

ΔREC_{it} is the change in receivables during the year scaled by average total assets. Discretionary accruals are defined as the difference between total accruals and normal accruals, as in the above equation.

Measuring abnormal cash flow.

Abnormal cash flow earnings management is estimated using the earnings management model developed by Dechow et al. (1998) and applied by Roychowdhury (2006), Cohen et al. (2008), Cohen and Zarowin (2010) and Zang (2012). We focus on two real earnings management activities: sales manipulation and reducing discretionary expenses. Sales manipulation leads to lower levels of cash flows from operations, and can be managed by offering more price discounts and/or more liberal credit terms (see Roychowdhury 2006). Discretionary expenses represent the sum of research and development expenses (R&D), advertising expenses, and selling, general and administrative expenses (SG&A). Reducing discretionary expenses in the current period will boost reported earnings in the current period. To maintain consistency, we scaled all variables by average total assets.

We estimated the normal level of cash flows from operations for the non-IPO sample using a cross-sectional industry year regression:

$$\frac{\mathrm{CFO}_{it}}{\mathrm{AveTAsset}_{it}} = \alpha_0 + \gamma_1 \frac{1}{\mathrm{AveTAsset}_{it}} + \gamma_2 \frac{\Delta\mathrm{Sales}_{it}}{\mathrm{AveTAsset}_{it}} + \gamma_3 \frac{\mathrm{PPE}_{it}}{\mathrm{AveTAsset}_{it}} + \gamma_4 \mathrm{ROA}_{it} + \xi_{it} \qquad (3)$$

where Cit_i is cash flow from operations for firm *if* in period t. The abnormal *CFO* for the IPO firms is calculated as the difference between actual *CFO* and the normal level of *CFO*. The normal level of *CFO* is computed using the coefficients from the above equation.

Measuring Discretionary expenses

Following Roychowdhury (2006), we estimate the normal level of discretionary expenses using the following model:

$$\frac{DisExp_{it}}{AveTAsset_{it}} = \alpha_0 + \gamma_1 \frac{1}{AveTAsset_{it}} + \gamma_2 \frac{Sales_{i,t-1}}{AveTAsset_{it}} + \xi_{it} \qquad (4)$$

where *Deepti* is calculated as the sum of SG&A, R&D and advertising expenses for firm *i* in period *t.* We use lagged sales to control for the fact that firms might manage sales upward to increase reported earnings during the year (Roychowdhury 2006). The abnormal discretionary expenses for the IPO firms are calculated as the difference between the actual and normal level of discretionary expenses.