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Abstract

Until 2001 companies making initial public offerings in Greece were obliged to include a forecast of next year's profit in the new issue prospectuses; however in 2001 the regulations changed and made the inclusion of earnings forecasts in the prospectuses voluntary. This study takes advantage of these two regulatory regimes and compares the accuracy of earnings forecasts under both mandatory and voluntary disclosure environments. Findings indicate a change in the properties of the earnings forecasts, as pessimistic earnings forecasts during the mandatory era turn optimistic in the voluntary period. The comparison of these two regimes suggests that mandatory earnings forecasts may force firms to forecast that have neither the incentives nor the ability to do so. Furthermore, the results imply that regulations penalizing IPOs for providing highly inaccurate forecasts appear to be a more appropriate regulatory strategy. Accuracy of earnings improves after the introduction of voluntary disclosures where firms that provide forecasts are characterized as mature, with high demand multiple and low retained ownership.

Keywords: Earnings management, Mandatory and Voluntary disclosure environments, Forecast accuracy, IPOs

JEL classification: G24 G30 M41

1. Introduction

In Greece initial public offerings (hereafter IPOs) need approval from the Securities Commission before going public. The Securities Commission, in considering the proposal for entering the stock exchange, takes into account the overall suitability of the company undertaking the IPO. Once approved, the company is required to issue a prospectus outlining the history, operations and the accounts of the firm and how it has fared and expects to perform in the future. The amount of information that can be found in a prospectus is immense but one aspect that has attracted the attention of academic researchers is the inclusion of a management earnings forecast figure (see, e.g., Jaggi (1997); Chan, (1996); Chen et al. (2001); Cheng & Firth (2000); and McGuinness (2005), Ciconte et al., (2014)).

The disclosure of an earnings forecast in the prospectuses is either voluntary or mandatory, depending on the institutional framework of every country, so the relevant empirical literature does not provide results on both regulatory regimes (see, e.g., Firth et al, (1995); Jaggi, (1997); Pedwell *et al.* (1994); Chan et al, (1996); Chen and Firth, (1999); Chen *et al.* (2001); Baginski et al. (2004); Baber et al. (2006); Dechow et al. (2010) and Horton et al. (2013)). However, Greece offers an opportunity to study both regimes due to its unique regulatory switch from mandatory to voluntary earnings forecast disclosure in 2001, a time when most developed markets only followed voluntary disclosure. This alteration in regulation allows us to answer several interesting questions, including whether or not the properties of the earnings forecasts change after the switch in the disclosure environment from mandatory to voluntary? How many firms chose not to publish an earnings forecast under the voluntary regime? What are the determinants of the firms that voluntarily choose to disclose earnings forecasts? Do other governance reforms (i.e. price cap, bookbuilding) affect the earnings forecast? And finally is the level of underpricing lower after the switch to voluntary disclosure?

The literature proposes several theoretical arguments to understand the relation between earnings forecast, information retrieval and firm performance. Voluntary disclosure theory (VDT) claims that disclosure is used as a tool for reducing information asymmetry between managers and investors (see, e.g., Scott (1994); Clarkson et al, (2008); Aerts and Cormier (2009); Guidry and Patten, (2012)). Specifically, providing an earnings forecast under a voluntary disclosure environment can reduce uncertainty by signaling IPO quality through various mechanisms such as retaining a large proportion of ownership by insiders (owners and managers) in the post IPO period (Hughes (1986),

Datar et al., (1991), Trezevant (1992) and Li and McConomy (2004))[2], by appointing high quality auditors (Beatty (1989), Ritter (2002), Ghikas et al., (2008) and using highly reputable investment bankers as underwriters (Beatty and Ritter (1986), Clarkson et al. (1992), Jo et al. (2007)). To mitigate the costs caused by information uncertainty, market participants[3], and regulatory bodies' desire the disclosure of additional material information such as the voluntary[4] earnings forecast during the IPO process.

Motivated by the importance of management earnings forecasts (Hutton et al. (2003), Baginski et al. (2004), Karamanou and Vafeas (2005), Hirst et al. (2007), Ciconte et al., (2014)) and inspired by the credibility puzzle, we argue that an alteration of a regulation is a potential channel through which earnings forecast improvement (i.e. decrease of forecast error measured as the difference between the annual report and prospectus figures) should enhance the credibility of management. Indeed, the regulatory change to a voluntary regime increases the management's freedom to make decisions whether to include a forecast. We expect that under the voluntary regime, management will chose to provide a forecast when the have the ability to provide an accurate forecast, partly because they wish to enhance their credibility. We therefore expect *a positive relationship between the improvement in communication among management and investors with earnings forecast accuracy.*

We believe the results for IPO studies are of interest for two reasons. First, because IPO firms undergo a transition from private to public status, they offer a unique insight into the enhanced market as well as regulatory standards expected of reports from public firms (Ball and Shivakumar (2008)). Our objective is to understand the determinants of forecast credibility and evaluate the usefulness of earnings forecast disclosures to investors. The previous literature on the disclosures included in the offering prospectus has focused on managerial earnings forecasts alone (Clarkson et al., (1992), Jog and McConomy, (2003)), on the number of risk factors listed and discussed, Clarkson (1994), on the use of the IPO proceeds without providing proprietary information to competitors (Beatty and Ritter (1986), Leone *et al.* (2007)) or in relation with other forecasts such as detailed revenues and expense estimates, planned capital expenditure and multi period forecasts earnings.

Second, as investors understand that managers benefit from higher stock prices, they are naturally skeptical about good news earnings forecasts. Hutton et al. (2003) document that if

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[2] The substitution effect hypothesis, (Trezevant, 1992) also indicates that retained ownership and the provision of management earnings forecasts are credible value-relevant signal.

[3] Baber et al (2006) suggest that market participants are aware of incentives to manage reported earnings, and accordingly, they adjust for earnings management when they are provided the information required to do so.

[4] Within the context of contracting theory and in line with Cormier and Martinez (2006) we characterize voluntary forecast disclosure as a reporting environment where managers may be pressured to engage in earnings management in the year following the IPO.

managers decide to release good news forecasts to increase their firms' stock prices, those forecasts must be credible to investors. We investigate whether the forecast error, i.e. the difference between actual reported earnings (after the IPO) and the forecasted earnings, is affected by the details of forecast information in the financial statements under the mandatory and voluntary disclosure regimes. Overall the incremental contribution of this study in the IPO and management earnings forecasts literature is the examination of the informational content of the regulatory change and the quality signal by newly listed firms to multiple user groups including market makers and investors, within an international driven framework. Our findings also have important implications for future empirical studies. Specifically, we provide justification that when managers jointly apply multiple options, it is important to consider the interaction of these options. Ignoring these interactions may lead to overstatement of the marginal impact of individual signals. In sum, our results may be of interest to managers, securities regulators, investors and IPO researchers, by providing evidence of which variables and firm-specific factors affect managers' choices among the two mechanisms.

Furthermore, understanding the determinants of forecast credibility is important for a number of reasons. First, it helps managers to choose forecast characteristics that optimize the value of their voluntary disclosures. Managers and investor relation professionals tasked with managing the disclosure process should be interested in how they can enhance the credibility of their forecasts to reap cost of capital benefits (Coller and Yohn (1997)), mitigate the cost of information asymmetry (Verrecchia (2001)), and enhance stock liquidity (Healy, Hutton, and Palepu (1999)). Second, an improved understanding makes researchers more aware of the reasons for cross-sectional variation in market reactions to management's earnings forecasts. This issue is of concern to those studying voluntary disclosure as well as those who use these forecasts as control variables. Finally, standard setters and regulators often struggle with how to make financial reports more reliable. Understanding the link between disaggregation and credibility offers them insight into how to strengthen financial disclosures.

We use a sample of 306 hand collected IPOs from 1993 to 2014 to assess the effect of earning forecast disclosure under different regulatory environments. Those firms listing prior to January 1, 2001 are listing during the mandatory regime and after that date firms are listing under the voluntary regime. We find that 100% of firms in the mandatory forecast regime issue forecasts, compared with 70.9% of firms in the voluntary regime. Next we measure the effect of the change in regulations from mandatory to voluntary earnings forecast disclosure on earnings forecast accuracy. Surprisingly, our results indicate that earnings forecasts during the mandatory disclosure era are on average pessimistic while the average earnings forecast during voluntary disclosure period is optimistic. Specifically, on average forecasts in the mandatory regime were conservative as the

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average forecast was 8.65% below actual earnings whereas during the voluntary regime forecasts were more optimistic being 9.58% above actual earnings. One theoretical justification for the pessimistic forecast during the mandatory disclosure environment is due to the lack of confidence of management as many of the IPOs that were forced to provide forecasts did not have the ability or the knowledge to provide an accurate forecast.

We also document that under the mandatory disclosure environment, large IPOs are associated with high forecast error. This appears to change in the voluntary period as large companies provide more accurate earnings forecast. Given this change in the behavior of management, the natural question to ask is why large firms have not been able to provide accurate earnings during the mandatory period? Moreover, an increase in the quantity of forecasts does not guarantee an improvement in shareholders' informational environment if forecasts are untimely, imprecise, and inaccurate. Therefore, the usefulness of mandatory forecasts is an empirical issue. We find that investors react to the news in mandatory forecasts as if they are useful. When financial reports are subsequently released, investors also respond to the earnings surprise benchmarked to the previous forecast, suggesting that mandatory forecasts do not fully pre-empt the information contained in the financial reports.

In order to explore the determinants of forecast credibility we include several control variables. We uncover a positive relation between firm age and forecast accuracy. However, this positive association is driven by listed firms during voluntary disclosure environment. This provides robust evidence that IPOs with short operating history are unable to provide accurate earnings forecast. For firms classified as industrial the management forecast error is statistically significant at conventional levels. This indicates that industries subject to cyclical earnings are less willing or able to provide an accurate earnings forecast.

Following our exploration of the factors related to forecast error, we investigate how IPOs react under a different disclosure conditions. The switch from mandatory to voluntary disclosure means that newly listed companies have more flexibility to decide whether to provide earnings forecast. We find a strong association between the demand for shares, as measured by the demand multiple, and more accurate earnings forecasts during the voluntary regime. Finally, more closely held firms provide more accurate forecasts.

After documenting an improvement in the accuracy of the earnings forecast for firms going public during the voluntary disclosure period, we investigate the channel through which improvements in the earnings forecasts translates into IPO underpricing. We find that IPOs with accurate forecasts experience lower levels of underpricing. A further implication is that firms unable to provide an accurate earnings forecast also underprice their issue – possibly in order to attract

investors. Collectively, our results support the view that the method by which management discloses earnings forecast affects the properties of management earnings forecasts, because pessimism in the mandatory regime is replaced by optimism during the voluntary regime. Moreover, the disclosure of an earnings forecast during voluntary period allows firms to signal their quality. Our study implies that an accurate management provided earnings forecast is highly valuable, particularly for firms who aim to reduce information asymmetry with investors.

We further perform three complementary tests in order to provide evidence on the role of increasing regulatory disclosure as a channel through which governmental intervention does not translate into a superior or more accurate management earnings forecast. We first study the effect of stock exchange imposed price limits on forecast accuracy. Daily limits on price variation were imposed by the Athens Stock Exchange for the first time in 1992 and lasted until the end of the decade. Although targeted at achieving general market stability, price limits had collateral consequences for the early IPO aftermarket. Loughran, Ritter and Rydqvist (1994) have advanced the conjecture that regulatory intervention appears to distort market function. In line with this, evidence from the important process of market liberalization in China has also furnished clear signs that early overregulation caused very serious market imperfections which abated as regulations were phased out. We therefore expect that *the accuracy of management provided earnings forecasts are inversely related to excess regulatory interference for IPOs,* as it does not allow IPOs to reach their equilibrium price. This is exactly what we find using the price cap and cumulative limits on price increases as measurements of regulatory intervention. More precisely, we report that the price cap phenomenon across time is associated with increasing management forecast error.

Our second complementary test uses the change in regulations in the process of generating, capturing, and recording investor demand for shares from the fixed offer mechanism to the book building method as a shock to the management earnings forecast. Several papers have compared the two methods in a theoretical setting and found that book building requires, on average, a lower discount. Indeed, if information revelation is the key driver which will affect management's ability to provide an accurate forecast, then the reduction in information asymmetry will benefit earnings forecast accuracy. Our results fail to confirm this intuition as we find that management earnings forecasts deteriorate following the switch to the book building method of price discovery. A possible explanation is that despite the narrowing of information gaps, reflecting better regulation, and consistent with Chambers and Dimson (2009), any marginal benefit from better regulation, disclosure, and certification were outweighed by other developments in the IPO market. Among such developments are the deterioration of the level of trust between investors, issuers, and sponsors.

Consistent with the erosion of trust, investment banks have increased their market power and managerial incentives have been realigned as IPO investment became more institutionalized.

Our third complementary test assesses the effect of institutional allocation on earnings forecast accuracy as an excessively aggressive allocation policy might increase firm risk. In the US, Rock's (1986) winner's curse theory is indirectly tested by several papers under the assumption that institutional investors are better informed. Michaely and Shaw (1994) show that for IPOs with little participation by institutional investors, there is less underpricing as investors know they are not competing with informed investors. Aggrawal, Prabhala and Puri (2002) and Boehme, Boehme and Fishe (2006) use data on the proportion of the issue that is allocated to institutional investors and retail investors. They find that institutional investors receive a larger proportion of new issues in IPOs that are more underpriced and earn more than retail investors, thereby largely avoiding ''lemons'' in the IPO market. Amihud, Hauser and Kirsh (2003) document negative returns earned by uninformed investors which means that their demand for new issues is, on average, too high. To assess whether the institutional allocation drives our results, we regress earnings forecast errors on institutional allocation once the management earning forecast was announced. In line with our expectations, we uncover a positive relation between forecast error and excess institutional allocation. This provides robust evidence that institutional investors heavily participate in low quality IPOs (i.e. using management forecast error as a metric) as they expect they will be rewarded by underwriters for their participation.

Overall, this study provides a comprehensive analysis which develops our knowledge of management earnings forecast across diverse disclosure environments. Our findings shed light on a number of issues that have not been addressed in the past. We examine the improvement of the accuracy of earnings forecast following the introduction of a voluntary disclosure environment. In particular, we uncover a trend in the forecast from pessimistic to optimistic after the regime change. Additionally, we document the number of firms feeling confident to provide an earnings forecast in their prospectuses after the regulatory change, the comparative characteristics which appears after the creation of the mandatory and voluntary regime samples and the amendments IPOs have to make in order to provide crucial information to investors. Our empirical framework simultaneously controls for industry and year effects and unlike most previous studies which use contemporaneous variables, the study explores other regulatory changes which took place in the same period and control for the interconnections. The results have major implications on how financial market valuation affects corporate actions and managerial behavior, in particular the managerial incentive to make accurate forecasted earnings (see Teoh et al. (1998), Abarbanell and Lehavy, (2003), Fischer and Stocken (2004), Gupta et al. (2008), Chi and Gupta (2009)).

The rest of the paper is organized as follows: section 2 presents the related literature review. Section 3 provides the methodology and proceeds with the hypothesis development. Section 4 describes our sample while section 5 presents the findings of our empirical analysis. We present further robustness checks of our results in Section 6 while in section 7 we explain how our results fit in an international setting. Section 8 concludes the paper.

2. Theoretical Framework, Literature Implications and Institutional Background

There are few studies[5] that examine the issues concerning the mandatory provision of a forecast of earnings. The voluntary disclosure environment requires firms to weigh the costs and benefits of providing an earnings forecast and then for investors to interpret this decision; while in the mandatory disclosure environment all firm disclose an earnings forecast so it is up to the investor to determine the reliability of that forecast. Therefore, compared to voluntary supplied forecasts, one major distinction of mandatory disclosure is that it allows savvy investors to expose low quality IPOs and separate them from promising firms. In general, the mandatory period in Greece for new firms to provide management earnings forecasts provides a unique opportunity for the ongoing debate on the usefulness of the management earnings forecasts in the market valuation of IPOs.

2.1 Theoretical Framework

The research on earnings forecasts have generally focused on forecasts disclosed by already listed firms (e.g. Pownall and Waymire (1989), Ruland et al. (1990), Hutton et al. (2003)) while we concentrate on the management profit forecast included in the IPO prospectus.

There have been a number of theories that shed light on the inefficiencies that exist in the IPO market. Hughes (1986) notes the informational asymmetry between investors and the issuer of an initial public offering concerning the value of the security. To avoid market failure, Hughes (1986) suggests the issuer should make a disclosure about firm value that is verified by an investment banker. She sets up a bivariate signaling model and derives testable implications from comparative statics analysis. Consistent with Hughes (1986) bivariate signaling model, Li and McConomy (2004) empirically test the substitution effect hypothesis and show that retained ownership and the provision of management earnings forecasts are credible value-relevant signals. Their analysis indicates that the manager's choices of the earnings forecast and retained ownership signals are jointly determined after controlling for other factors that affect each decision independently and that a substitution effect exists among these managerial choices.

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[5] Jaggi (1993) document that in countries other than New Zealand, forecast information is disclosed in IPOs on a voluntary basis. Voluntary disclosure countries include the UK, Australia, Singapore, and Korea.

Regulatory authorities mainly worry about the accuracy of forecasts included in the IPO prospectuses. Accurate forecasting is a demanding task, especially when it is prepared by newly established companies that lack historical data and prior experience. Also, forecasts are affected by external factors that are out of the control of the firm such as currency exchange rates, political climate, oil prices and inflation. Brown et al. (1987) report that the ex-ante uncertainty of the forecast will increase by any sudden change in these external factors. Lee et al. (1993) report that managers claim that changes in the external factors explains their failure to achieve the forecasted targets.

There is an extensive literature on the determinants of management absolute forecast error at the time of IPOs but almost all of them are in commonwealth countries (Firth and Smith (1992); Jelic et al. (1998); Cheng and Firth (2000) among others).[6] Few prior studies have concentrated on the forecast/non-forecast dichotomy and its relationship to future performance (Jaggi and Grier, (1980)). Moreover, we are not aware of any existing study that investigates the association between mandatory vs voluntary forecast disclosure and their associated earnings forecast error.

2.2 Management Earnings Forecast in a Voluntary Environment

In some countries, firms are allowed to voluntarily disclose earnings forecasts in their IPO prospectuses. Karamanou and Vafeas (2005) report that the importance and usefulness of management forecasts as a disclosure tool is likely to be determined by the incentives managers have to protect shareholders. In deciding whether to issue a forecast, the management of every firm has to weight the forecast costs against the forecast benefits. Other studies suggest several reasons why earnings forecast can be beneficial to the firm.

Sami and Zhou (2004) reports that managers worry that inaccurate forecasts can lead to a negative stock market reaction because investors can then view the firm as unstable and risky. Trueman (1986) argues that accurate forecasts give investors a favorable assessment of the managers' ability to anticipate economic events and thus translate into higher market values. Frankel *et al.*(1995) provide evidence that management earnings forecasts aid the firm in eliciting funds from the capital markets. Skinner (1994) propose that managers most probably will make a forecast to deliver bad news to investors[7].

Kasznik and Lev (1995) find that managers will provide a voluntary earnings forecast mainly before a significant negative rather than a significant positive earnings surprise. Voluntary disclosure

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[6] Jaggi, (1997), Cheng and Firth, (2000), Hartnett and Romcke (2000) have examined the association between the forecast accuracy and the firm's characteristics such as the retained equity (REQ), auditor's reputation (AUD) and size (SZ). The results of these studies are mixed regarding the significance of some of the characteristics.

[7] Skinner (1994) suggests that a bad news warning protects management against the potential danger of litigation and reduces reputation costs.

theory[8] supports this especially because managers have incentives to provide voluntary disclosure of earnings forecast to reduce information asymmetry and the firm's cost of external financing. Coller and Yohn (1997) report that management forecasts are linked with information asymmetry among investors and management, as captured by bid-ask spreads, whereas Clement et al. (2003) find that uncertainty about future earnings decrease only when forecasts confirm market beliefs about the earnings.

Kasznik (1999) and Gramlich and Sorensen (2004) indicate that managers who publish earnings forecasts in the IPO year manage earnings to meet their reported forecasts. Thus voluntary disclosure of earnings forecasts motivates managers to manipulate earnings during the year following the public offering. Teoh et al. (1998) describe this behavior as opportunistic management earnings forecast. Cormier and Martinez (2006) report that firms who voluntarily include earnings forecasts in their offering prospectuses are expected to differ from non-forecasters in their level of earnings management during the year following the public offering.

Dutta and Gigler (2002) and Call et al. (2009) model earnings forecasts as the manager's communication of the firm's future cash flows. Dutta and Gigler (2002) show that it is easier to prevent the manager from managing earnings if the earnings forecast is voluntary. They also show that management earnings forecasts are more likely to provide high earnings forecasts than low earnings forecasts. Similarly, Cormier and Martinez (2006) suggests that the magnitude of earnings management is much higher for forecasters than for non-forecasters in the year following an IPO.

Karamanou and Vafeas (2005) document that the great majority of firms do not issue forecasts because heightened disclosure entails costs as well as benefits. Costs mainly arise from the disclosure of proprietary information to competitors and a greater risk of litigation, Levi (2008)[9]. Francis et al. (1994) find that the risk of litigation is inversely related to the likelihood of issuing a forecast whereas Bamber and Chen (1998) and Baginski *et al.* (2004) find that lower forecast specificity is associated with litigation risk.

2.3 Regulatory Switch

By 2000, it was obvious that Greece would abandon the Drahma and join the Euro along with many other countries of the European Union. This provided an opportunity for the Hellenic Capital Market Commission to harmonize their regulations with other countries joining the new currency. One of those regulations was the mandatory vs voluntary disclosure basis for prospectus forecasts. In contrast to other countries in the Euro zone, Greece required disclosure of earnings forecasts in the

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[8] Voluntary disclosure theory mainly hypothesize that given the risk accompanying poor stocks and earnings performance, managers rely in corporate disclosure to reduce the likelihood of undervaluation.
[9] Levi (2008) report that voluntary disclosure in earnings is likely to follow higher investor demand for the information

IPO prospectus. Newly listed firms were complaining about compliance costs and about their inability to provide accurate management earnings forecasts.[10]

The regulatory switch from mandatory to voluntary management earnings forecasts was motivated by its supposed contribution to the efficient and cost-effective functioning of the capital market. The protection of investors and the maintenance of confidence in the Greek financial market were also important issues. This regulatory change was also intended to reinforce the freedom of movement of capital in the internal market and to help small family companies to go public.

It is clear that the regulatory switch from mandatory to voluntary disclosure of management earnings forecast was inspired by and looking forward to the introduction of the more strict international accounting standards (IAS). IAS require three tests of any regulation, firstly that it meets the basic requirement of the Council Directives, that is to say that its application results in a true and fair view of the financial position and performance of an enterprise, secondly that, in accordance with the conclusions of the Council of 17 July 2000, it is conducive to the European public good and thirdly that it meets basic criteria as to the quality of information required for financial statements, specifically that it is useful to users. It became clear that inaccurate forecasts under the mandatory forecast regime would be a major problem for the trustworthiness of Greek IPOs.

3 Methodology and Hypothesis Development

The forecast error measure reflects the difference between the actual and predicted figures for the same time period. The forecast error measures (FE) evaluates the *bias* in the forecasts, which mainly shows whether managers have been optimistic or pessimistic in their forecasts (see, e.g., Jaggi (1997); Chan, (1996); Chen et al. (2001); Cheng & Firth (2000); and McGuinness (2005) and can be calculated with or without the sign of the error. Self-selection theory addresses this issue and partially explains why earnings forecasts are generally overoptimistic. McNichols et al. (1997) investigate the relation between analysts' recommendations and earnings forecast and find that there is selectively in the analysts' recommendations depending on whether information about a firm is favorable or unfavorable. A positive value for the mean forecast error (MFE) implies that, on average, IPO companies have a pessimistic bias (actuals are higher than IPOs forecasts) while a negative value for MFE represents an optimistic bias (actuals are lower than IPOs forecasts).

The forecast error for the IPO's is calculated as follows:

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[10] See Cox (1992) for additional discussion of compliance cost complaints.

$$FE_{it} = (AP_{it} - FP_{it})/|FP_{it}| \qquad (1)$$

where FE_{it}, is the forecast error for company i at date t, AP stands for actual profit and FP is the forecast profit.

Because negative and positive errors cancel each other out, the mean forecast error does not provide credible information on the average size of the error. Therefore, in order to determine the accuracy of forecasts the Absolute Forecast Error AFE measure is considered appropriate. The AFE is taken using the absolute value of the forecast errors for each IPO. It provides an indication of how close the forecasts were to actual profits in absolute terms. The earnings are before tax and before extraordinary items. It is measured by:

$$AFE_{it} = |(AP_{it} - FP_{it})| / |FP_{it}| \qquad (2)$$

where AFE is the Absolute Forecast Error and all other terms are as defined previously.

The management forecast superiority SUP measures the ability of management to predict earnings more accurately than a random walk model. SUP is estimated in order to measure the superiority of the company's management. It is also used by researchers to measure forecast accuracy relative to forecasts derived from a simple random walk model. Brown *et al.* (1987) first developed the SUP measure that was subsequently used in many studies of IPO forecast accuracy such as Chen and Firth, (1999), Chen et al. (2001). The measure of superiority is applied here for the IPO market:

$$SUP = \ln[(AP_t - AP_{t-1})/(AP_t - FP_t)]^2 \qquad (3)$$

where SUP is the superiority in forecasting profits relative to the actual change in profits, AP is the actual profit and FP is the profit forecast as given in the IPOs prospectus. The numerator measures the actual change in profit from the end of the year prior to the IPO, t-1 to the end of the IPO year t and can be regarded as the forecast error from a simple time series forecast. A positive (negative) value for SUP means that the IPO profit forecast is more (less) accurate than a forecast based on the random walk model.

The modified version of the SUP measure MSUP is calculated as

$$MSUP = \ln[(AP_t - GMF)/(AP_t - FP_t)]^2 \qquad (4)$$

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where the growth model forecast GMF is measured as GM= $AP_{t-1}(AP_{t-1} - AP_{t-3})^{1/2.}$

3.1 Research Design and development of Hypothesis.

As outlined in the literature review, there are a variety of factors that affect earnings-forecast behavior. Accordingly, we select several variables and explain a number of influences to construct hypotheses concerning the behavioral response to the change in regulatory regime. A *central hypothesis* concerning the regulatory change from a mandatory to a voluntary disclosure regime is that *earnings forecasts in the prospectuses of IPOs improve*.

A. Comparability Effect

A major potential benefit of the global move towards the reform of public company accounting is the increase in accounting comparability. Prior studies suggest that adopting voluntary disclosure regulations leads to an improvement in the information environment (Ashbaugh and Pincus (2001); Bae et al. (2008)). In contrast, recent studies investigating the effect of mandatory adoption on the accuracy of forecasts have produced inconclusive results. More recent evidence, especially Byard et al. (2001), suggest that after IFRS was adopted, forecast accuracy for some European and Australian firms improved. (see, e.g., Byard et al. (2011); Tan et al. (2011)).

Daske et al. (2008) directly test comparability in the context of financial reporting adoption and report more pronounced capital market benefits for firms that voluntarily adopt financial reporting. Other studies (see, e.g., Beneish, Miller, and Yohn (2012); Cascino and Gassen (2013) and Brochet et al., (2013)) argue and find that cultural, political, and business differences continue to impose significant obstacles to increasing the comparability of accounting information. Specifically, earlier studies report that accounting comparability does not improve for those subject to mandatory adoption relative to a control group of non-adopters and conclude that there is little evidence that IFRS adoption increases comparability.

We expect the properties of the management forecast to differ under the mandatory and voluntary regime. Given the choice, a firm's disclosure decision is often a result of weighing the benefits of disclosure against the costs, including revealing proprietary information in a competitive market and providing a significant effort to generate accurate projections of future earnings, such as communicating clear strategies to divisional managers, carefully budgeting internal expenses, and analyzing large amounts of external information. The benefits associated with disclosure include a lower cost of capital as a result of improved transparency. Managers who issue forecasts because they are compelled to do so may exert less effort to predict future earnings than managers who are motivated by a desire to provide timely and accurate information to market participants. Managers

who perceive that their disclosure costs exceed the benefits may intentionally delay or obscure their forecasts to reduce the costs. Thus, we expect mandatory forecasts to be less timely, less precise, and less accurate, on average, than voluntary forecasts. The above arguments lead to the following hypothesis:

H1: *Earnings forecast accuracy improves after the introduction of voluntary disclosure status.*

To test for the effect of management earnings forecast and the level of error we use the following research design:

AFE or FE or SUP or $MSUP = a + \beta_1\ SIZE + \beta_2\ AGE + \beta_3\ TLAG + \beta_4\ PRIV + \beta_5\ OVER + \beta_6\ UND + \beta_7\ H/C + \beta_8\ OWN + \beta_9\ IND + \varepsilon_i$[11] $\qquad\qquad$ (5)

where FE is the forecast error, AFE is the absolute forecast error, SUP is the forecast superiority and $MSUP$ the modified forecast superiority. $SIZE$ is the logarithm of the total market capitalisation of an IPO, AGE expresses the number of years that each listing firm is in operation since its inception before the year of listing, $TLAG$ is the period between the announcement of the prospectus and first day of the stocks' listing and $PRIV$ refers to companies partially or fully owned by the Greek state before going public. PRIV is a dummy variable having the value '1' for full or part government ownership, zero otherwise. $OVER$ is the demand multiple on the number of shares issued and UND is a dummy variable for underwriters reputation having a value of '1' for reputable underwriters, zero otherwise. Reputable underwriters are defined as one of the top five older and more experienced underwriting banks. H/C is a dummy variable classifying IPOs listed under hot verses cold market conditions taking on a value of '1' when the IPO is listed under hot conditions, zero otherwise. OWN is the proportion of given ownership by the pre-IPO shareholders and IND is a dummy variable taking the value of one if the company is industrial, zero otherwise.

Most of the above variables have been extensively used in prior literature; however our inclusion of a Privatization variable in an IP setting is unique in this area and warrants additional discussion. Privatization, broadly defined as the deliberate sale by a government of state-owned enterprises (SOEs) or assets to private economic agents, is now in use worldwide (i.e. see Megginson and Netter (2001) and Borisova and Megginson (2011)). Since its introduction by Britain's Thatcher government in the early 1980s, privatization now appears to be accepted as a legitimate tool of statecraft by governments of more than 100 countries. Privatization is one of the most important elements of the continuing global phenomenon of the increasing use of markets to allocate resources.

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[11] See Appendix A for definitions of the variables.

The Greek government, in its effort to minimise state ownership and its desire to raise capital, conducted many privatization IPOs during 1994-2002 period. We expect that the more control a state has on a firm at the time it goes public (privatizations), the greater the accuracy of the forecast, and the lower the forecast error.

Of course, one potential reason for the change in accuracy after the introduction of voluntary earnings forecasts in IPO prospectuses is that firms self-select whether or not they disclose an earnings forecast. This choice is unlikely to be random as firms will base their decision on a variety of factors. For example, firms with high information asymmetry might choose to issue an earnings forecast in an attempt to reduce the asymmetry. Conversely, firms where the cost of issuing a forecast might be relatively higher due to their smaller size or firms where the forecast is likely to be less accurate (e.g. younger firms with less earnings history or firms in non-industrial industries) are expected to be less likely to disclose an earnings forecast. To address this issue we develop and estimate the following probit model of disclosure choice:

$Disclosure\_Choice = a + \beta_1\ SIZE + \beta_2\ AGE + \beta_3\ TLAG + \beta_4\ PRIV + \beta_5\ OVER + \beta_6\ UND + \beta_7\ H/C + \beta_8\ OWN + \beta_9\ IND + \varepsilon_i$ (6)

Where *Disclosure_Choice* has the value of 1 if the firm included an earnings forecast in their IPO prospectus (and is otherwise 0) and all of the other variables are as described above.

B. Sentiment Effect

Investor sentiment can be defined as investor opinion, usually influenced by emotion. It has more impact in developed than developing countries (Chang et al. (2012)). Higher quality legal and corporate governance environments intensifies the sentiment effect (Schmeling (2009). Interpreting sentiment as the propensity to speculate, Baker & Wurgler (2006) find that sentiment increases the relative demand for stocks whose earnings forecast are subjective, are vulnerable to speculation and whose contemporaneous returns are higher than is justifiable. Specifically, small stocks, extreme growth stocks, distressed stocks, young stocks and non-dividend-paying stocks, should be the most difficult to provide accurate earnings forecast, therefore, the most vulnerable to investor sentiment. Sentiment expressed as a result of optimism or pessimism in forecast earnings will be uniform and therefore independent of the disclosure regime. Thus we hypothesize that:

H2: *The optimistic/pessimistic earnings forecasts during the mandatory disclosure era do not change after the switch to the voluntary disclosure era.*

C. Regulatory Effect

Leuz and Wysocki (2008) suggests that to justify its existence, regulations must function as a low-cost commitment device for preventing market failures. Arguments suggesting as well as casting doubt on the net benefit of regulation are well documented, and the extant empirical evidence is largely mixed (see Healy and Palepu, (2001); Shleifer, (2005); Hail and Leuz (2006); Mulherin, (2007); Zingales, (2009)). Despite this voluminous literature, very little is known about the efficacy of regulatory reforms in emerging economies (Leuz and Wysocki, 2008). Baker and Wurgler [(2006), (2007)] report that a regulatory intervention in the form of restriction on daily variation may produce a 'cooling off' effect so that overall underpricing will be moderated. Baker and Wurgler (2006) argue that higher information asymmetry intensifies the appearance of investor sentiment. If early investor sentiment, whether spontaneous or managed by underwriters, is responsible for earnings forecast accuracy (or some portion thereof), it is plausible that its manifestation will be hampered by limits on price variation.

H3: *Other regulatory and governance reforms (i.e. price cap, green shoe, book building) are positively related to the level of the earnings forecast error.*

D. Information effect

Champers and Dimson (2009) document a narrowing of information gaps, reflecting better regulation and disclosure as well as the benefits of certification. However, they suggest that any marginal benefit from better regulation, disclosure, and certification are being outweighed by other developments in the IPO market. Amongst other developments, there is the deterioration in the level of trust between investors, issuers, and sponsors. This has a direct effect on the level of underpricing because in spite of improvements in regulation and disclosure, the prestige of IPO underwriters is increasing. Consistent with the erosion of trust, investment banks are increasing their market power, managers' incentives are being realigned as investment is becoming more institutionalized, and winner's curse is exacerbated as investors are becoming more heterogeneous.

The purpose of a mandatory earnings forecast is to supply investors with useful information that they would not otherwise receive. Despite the fact that the mandatory earnings forecast certainly increases the quantity of information, we expect that the accuracy of forecasts will decline. The rationale is that mandatory forecasts, in many occasions, are provided by management who are unable to provide an accurate forecast or are unwilling to do so as it would reveal too much proprietary information. Whether investors view mandatory forecasts as useful is an empirical issue.

Furthermore, it is unclear whether or not investors can distinguish the quality of the earnings forecast at the time of the IPO or do they have to wait until the earnings announcement post-IPO to determine the quality of the forecast. If investors are able to discern the quality in advance of the earnings announcement then we would expect the earnings quality to be related to the IPO pricing. Alternatively, a lack of a market reaction to underpricing in the mandatory forecast regime would cast doubt on the effectiveness of the forecast, the ability of investors to infer the quality of the forecast, or both. Therefore we hypothesize:

H4a: *Underpricing is lower over time following the transformation from mandatory to voluntary earnings forecasts.*

H4b: *Companies with high forecast error are associated with a high level of underpricing.*

Consistent with Daske et al. (2008), we control for the impact of potentially confounding events using IPOs that do not provide an earnings forecast as our control sample. Any change in forecast accuracy for non-providers will likely reflect the impact of concurrent economic and regulatory changes.

An extended version of the previous model including additional control variables is the following:

AFE or FE or $SUP = a + \beta_1\ SIZE + \beta_2\ AGE + \beta_3\ TLAG + \beta_4\ PRIV + \beta_5\ OVER + \beta_6\ UND + \beta_7\ H/C + \beta_8\ OWN + \beta_9\ IND + \beta_{10}\ MAR + \beta_{11}\ RET + \beta_{12}\ NUIPO + \beta_{13}\ MAIR + \beta_{14}\ BB + \beta_{15}\ PC + \beta_{16}\ PR + \beta_{17}\ GS + \beta_{18}\ CLU + \beta_{19}\ InAl + \varepsilon_i$ *(7)*

where *RET* is the quarterly market rate of return divided by the overall quarterly average, *NUIPO* is the quarterly number of IPOs divided by the average number of IPOs in all quarters, *MAIR* is the return to investors at the end of the first day of trading adjusted by the returns on the market and *BB* is a dummy variable that takes on the value of '1' if the IPO was sold via book building, zero otherwise. Book-building is the process of generating, capturing, and recording investor demand for shares during an IPO in order to support efficient price discovery. P*C* is a dummy variable that takas on the value of '1' if the IPO is subject to a price limit of ±8%. IPOs were listed on the ASE with a price cap limitation of ±8% during Nov. 1993 – Nov. 1996 period. *GS* is a dummy variable that tales on the value of '1' if the IPO was subject to a Green Shoe regulation, zero otherwise. Green Shoe is an overallotment allocation that allows underwriters to short sell shares in a registered securities offering at the offering price. C*LU* or Consecutive Limit Up is the number of Consecutive Limit

Up's an IPO has achieved as a result of the Price Cap Limit and finally, *InAl* is the percentage of shares allocated to institutional investors during the public offering process.

4. Sample and Data

The sample consists of 306 IPOs that occurred during the January 1st, 1993 to December 31st, 2014 time period.[12] A great effort was made to collect the data relating all the firms listed on the Athens Stock Exchange (ASE) during this period except for insurance and investment companies. Thus, a variety of sources are used to make sure we have the maximum amount of information. Specifically, accounting data is from Compustat, the returns of firms are from DataStream and specific control variables are from Thomson FSDC. Forecast earnings for the IPO year t are also retrieved from the IPO prospectus and from the official statistical Bulletin of the ASE. Actual earnings are manually collected from the first published annual report. We confirm most of the professional databases information with hand collected information from prospectuses, annual reports and publicly available financial statements, as we would like to verify the accuracy of our data. Stock prices, market returns and the Athens Stock Exchange General Index (ASEGI) are retrieved from the ASE database. IPO share prices, ASEGI prices and the corresponding returns are collected for the first three years of trading (765 trading days) subsequent to the IPO. Appropriate adjustments are made for stock splits and stock dividends. Firms are included in the sample if the following items are available: a prospectus, financial statements for the year prior to the offering and stock prices for at least 36 months or 756 trading days following the IPO for all years except for an IPO listed during 2009 where we have a minimum of 504 trading days following the listing.

Historical accounting information is derived from published financial statements at the end of fiscal year t−1 prior to the IPO year t. The institutional framework is well described in the Greek Presidential Decree No. 348 of 1985 and can be seen in Ghicas et al. (2000). Information related to variables that can affect the earnings forecast such as market capitalization of the IPOs at the IPO date, operating history of the firm prior to going public, the time period between the offer price day and the first day of trading, the demand multiple of the number of shares issued and the proportion of retained ownership by the initial shareholders, is from the IPO prospectus.

Table 1 Panel A lists the sample's 306 IPOs by year and by mandatory and voluntary disclosure regime. For the first eight years of our sample, Greek IPOs are obliged to provide earnings forecasts while since 2001 forecasted earnings are provided voluntarily. Of the total sample of 86 IPOs issued during the voluntary period, 25 IPOs chose not to provide an earnings forecast. We can

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[12] There is no waiting list for firms scheduled to go public in the A.S.E.

confirm that no IPOs were listed on the Athens Stock Exchange in the years 2008, 2010, 2011, 2012, 2013 and 2014, most likely as a result of the global financial crisis.

In contrast to U.S. firms that they are less likely to provide earnings forecast in the corresponding US voluntary disclosure environment, 100% of Greek IPOs issue forecasts during the mandatory forecast regime, compared with 70.9% of firms during the voluntary regime. We find that following the voluntary reporting regime, the average age of firms going public and choosing not to provide earnings forecasts drop from 17.29 to 5.92 years, thereby providing an initial signal that young, immature companies choose to omit this information.

[Please Insert Table 1 About Here]

Table 1 Panel B provides summary statistics for 281 IPOs that have an earnings forecast figure in their prospectuses. Prior to the IPO, firms have an average (median) total market capitalization of €42.6 million (€33.3 million) and an average (median) age of 17.2 years (14 years) by the year of listing. The time lag between the announcement of the prospectus and first day of the stocks' listing averages (median) 29.7 days (28 days) while the demand multiple relative to the number of shares issued averages (median) 91.5 times (25 times). The proportion of given ownership by the initial shareholders is on average 20%.

Table 1 Panel C provides summary statistics for the 25 IPOs that selected not to provide an earnings forecast during the voluntary period. Amongst other characteristics, IPOs choosing not to disclose an earnings forecast are considerably smaller - with average (median) total market capitalization of €31.6 million (€28.5 million) - than the total sample of firms and are much younger at the time they go public with an average (median) age of 5.82 years (4 years).[13] The much lower demand multiple average (median) of 5.08 (2.58) compared to all firms that provide an earnings forecast indicates the lower level of investors' interest for these IPOs.

The summary statistics of forecast errors, absolute forecast errors, and forecasting superiority measures, are in Table 2. The means, medians and standard deviations of errors are broken down by mandatory and voluntary disclosure environments. The mean (median) forecast error for the total sample is 3.66 (-0.38%)[14]. The positive mean indicate that, on average, the forecast profits are less

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[13] In contrast the average (median) age of the 61 IPOs that elected to provide an earnings forecast during the voluntary period is 20.16 years (14 years). This is a point that we will return to in section 5.

[14] The mean forecast error for the total sample in the Greek case is substantially less than the comparable statistics from Australia (Lee *et al.* (1993) and Hartnett and Romcke (2000)), Canada, Pedwell *et al. (*1994), China, Chen and Firth (1999) and New Zealand, Firth and Smith, (1992) but similar to the errors reported in Hong Kong (Chan *et al.* (1996), Jaggi (1997), Cheng and Firth (2000), Chen *et al.* (2001), Malaysia, Jelic *et al.* (1998), Singapore, Firth *et al.* (1995), Thailand, Firth and Lonkani (2005)) and in UK, (Keasey and McGuinness (1991)).

than the actual and so the forecasts are pessimistic. Breaking down the mean forecast error by mandatory and voluntary environments, the results reveal a positive mean of 8.65% for IPOs providing an earnings forecast during the mandatory period and a negative mean of -9.58% for IPOs providing a forecast of earnings during the voluntary period. This tells us that firms are very conservative when compelled to provide a forecast and therefore actual profit are typically higher than forecast. Once the disclosure environment turns voluntary, Greek IPOs behave more liberally and the forecast error sign typically changes indicating more optimistic forecasts. This gives great support to the self-selection theory, which in part states that earnings forecasts during voluntary periods are generally overoptimistic. It also opposes hypothesis H2 which claims that there should be no change in level of optimism or pessimism of the earnings forecasts as the regulatory regime changes from mandatory to voluntary disclosure. Interestingly, we note that in both cases the average forecast error is below ±10% which is one of the lowest ever reported in an international study.

However the picture is different when we examine the absolute forecast error (AFE). The mean (median) AFE for the total sample is 39.72% (31.03%), much larger than the mean forecast error. The mean AFE for the total sample is more than the errors reported in Hong Kong (Chan *et al.* (1996), Jaggi (1997), Cheng and Firth (2000), Chen *et al.* (2001)), Malaysia (Jelic *et al.* (1998)), Singapore (Firth *et al.* (1995)) the UK, (Keasey and McGuinness (1991)) and is similar to China (Chen and Firth (1999)) and Thailand (Firth and Lonkani (2005)) but less than the comparable statistics from Australia (Lee *et al.* (1993)), Canada (Pedwell *et al.* (1994)) and New Zealand (Mak (1989), Firth and Smith (1992)).

[Please Insert Table 2 About Here]

Negative values are observed for the means and medians of the SUP scores. Voluntary disclosure IPOs experience lower SUP and MSUP scores than mandatory disclosure IPO's, but nevertheless they still have positive signs for MSUP. The MSUP means are larger than the SUP means suggesting that the growth model is a less accurate benchmark for assessing management's ability to forecast accurately than the pure random walk model. Finally, the MSUP score for mandatory forecasts is significantly larger than the MSUP score for voluntary forecasts. The correlation matrix of the above variables is presented in Table 3.

[Please Insert Table 3 About Here]

5. Empirical Analysis: Mandatory vs Voluntary Period listed Public Offerings

The regression results for all 281 firms that provide a forecast appear in table 4. For each disclosure regime (mandatory, voluntary and overall sample) we run four regressions, one each for absolute forecast error, forecast error, superiority of management forecasts and superiority of management forecasts adjusted for growth of earnings. All twelve regressions are well specified and statistically significant at conventional levels. Adjusted R^2 are sometimes low[15] but for the mandatory sample of IPOs they are similar to the related literature and are somewhat higher for IPOs with voluntary earnings forecast disclosure. The models are estimated using robust standard errors.

[Please Insert Table 4 About Here]

The size control variable is positive for the mandatory earnings forecast and for the total sample of IPOs implying that larger companies have higher forecast errors. In contrast, the size coefficient for IPOs that voluntarily provide an earnings forecast is negative, suggesting that larger companies have lower forecast errors. All size coefficients for the AFE regressions are statistically significant. In other words, we find compelling evidence that larger firms provide more accurate forecasts under the voluntary earnings forecast regime and more inaccurate forecasts under the mandatory regime. Our results are in line with Firth-Smith (1992) for New Zealand, Jaggi (1997) for Hong Kong, Firth and Lonkani (2005) for Thailand companies and opposite to Chen et al. (2001) for Hong Kong and Cormier and Martinez (2006) for French companies. The results of other studies, such as Firth et al. (1995) for Singapore and Harnett and Romcke (2000) for Australian companies find no significant association between company size and forecast accuracy.

Company age has the expected negative sign and for the AFE regressions, it is highly significant, for our total sample and for the mandatory disclosure environment. This indicates that companies with a long operational history before listing have lower forecast errors indicating that the accuracy of their profit forecasts are comparatively high. The sign of the coefficient is consistent with the results of some earlier studies that show a significant association between forecast accuracy and company's age e.g. Jaggi (1997) and Jelic *et al.*(1998). The results of earlier studies for China, Chen and Firth, (1999) and Hong Kong companies, Chen et al. (2001) did not show any significant association between accuracy and the company's age. The results of this study are interpreted to mean that Greek companies that are in existence for a longer time can expect to have more accurate

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[15] The adjusted R^2s are quite similar to studies on earnings forecast. Chen and Firth (1999) report poor explanation power of between 6.6 percent and 1.8 percent. Chen et al. (2001) obtains R^2s of 1.6 percent (AFE), 11.5 percent (SUP) and 9.3 percent (MSUP). A third study by Firth and Lonkani (2005) obtains an R^2 of 2 percent.

forecasts than younger companies. These findings are in accordance with Jaggi (1997) and could reflect the enthusiasm of younger companies in providing an over optimistic picture of future performance and thus inaccurate forecasts. Another explanation could be that companies with more experience have a better knowledge of the market environment and have better control over their operations compared to younger companies.

The time lag variable for all Greek IPOs that provide an earnings forecast is positive as expected and in the case of the AFE regression for the overall sample, the coefficient is statistically significant. Therefore, companies make more accurate predictions when the time period between the offer price and first day of trading is comparatively short. The positive sign of our time lag coefficient is in accordance with previous studies for time horizon which shows a significant relation between 'TIME' of forecast and forecast accuracy, e.g. Firth, et al. (1995) for Singapore companies, Jaggi (1997) for Hong Kong companies and Chen and Firth (1999) for Chinese companies. However, Chan et al. (1996) and Cheng and Firth (1999) for Hong Kong and Jelic et al. (1998) for Malaysia find no significant association between time and forecast accuracy for Hong Kong companies.[16] Our results indicate that forecast accuracy improves with shorter time lags. The significant AFE coefficient for the overall sample supports the view that Greek companies with shorter time lags will have more accurate IPO forecasts.

The result for privatization is unexpectedly positive indicating that privatized firms experience higher absolute forecast error. The sign is statistically significant in the case of the AFE regression under the mandatory reporting environment. Obviously, our finding does not provide support to the proposition that privatized companies tend to provide more accurate forecasts. Instead, it appears as though newly privatized firms behave as if they were young companies without much experience in the newly privatized environment and so provide inaccurate earnings forecasts, especially when forced to do so under the mandatory earnings forecast regime.

The over subscription (demand multiple) variable is unexpectedly positive. The coefficients are statistically significant in many cases, particularly for the voluntary disclosure environment and the overall sample. The positive coefficients suggest that companies with greater investor demand experience higher average forecast errors meaning that their forecasts are less accurate. This does not confirm our expectation that investors express greater demand for shares of IPOs with greater earnings accuracy. Instead, the direction of the errors seems to be the operative influence because for the overall period, the FE coefficients are statistically significant at the 5% level. This positive association between IPO share demand and forecasts of earnings that are too low suggests that

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[16] Also Firth and Smith (1992) did not report any significant association between forecast accuracy and forecast horizon for New Zealand companies

investors can detect when the company is too pessimistic or conservative in their earnings forecasts and so increase the demand for the shares.

The company's underwriter reputation variable has the expected sign for the full sample of IPOs that provide earnings forecasts with the coefficient for the AFE regression significant at 1% level. This result supports the view that IPOs forecast accuracy is higher if a "Big-Five" underwriter advises the company going public. The results of earlier studies sometimes find an association between forecast accuracy and the company's underwriter. Cheng and Firth (2000) report that IPOs underwritten with reputable underwriters are associated high forecast error for Hong Kong companies. However, just one year later, Chen et al. (2001) could not find any association between forecast accuracy and the company's underwriter for the same market. Chen and Firth (1999) and Jog and McConomy (2003) also could not find any association between underwriter reputation and forecast accuracy for Chinese and Canadian companies respectively. Therefore our results confirm the findings of earlier studies in that underwriter reputation is important, but we find that employing reputable underwriters increases rather than decreases earnings forecast accuracy.

The coefficient for market condition H/C (Hot or cold) is positive only for the voluntary disclosure environment. Furthermore, while the FE coefficient is statistically significant at the 5% level, the AFE coefficient is not significant. This suggests that the errors during 'hot' market conditions are caused by forecasts that are too conservative. Moreover the SUP coefficient is also significantly negative at the 1% level clearly indicating that management could reduce these forecast errors by merely extrapolating from the past. This suggests that management is understating their forecast earnings during 'hot' market conditions. Overall, these results suggest that for voluntary disclosures during 'hot' market conditions firms provide conservative and therefore inaccurate earnings forecasts.

The company's given ownership variable is negative for all three sets of AFE regressions and are statistically significant in the cases of voluntary disclosure. However, the MSUP for voluntary and SUP for mandatory disclosures are also significantly negative, clearly indicating that management provides forecasts that are inferior to a simple extrapolation from past earnings. Overall, the results confirm that the larger the portion of the firm sold via IPO the more accurate and credible are the earnings forecasts, especially when earnings forecasts are voluntary, thereby supporting the substitution effect hypothesis discussed in section 2.1. We interpret this result to mean that when a large portion of the firm is sold via IPO, management makes some effort to provide accurate earnings forecasts in an attempt to encourage demand for their shares. Thus managers' choices of the earnings forecast and given ownership signals are jointly determined after controlling for other factors that

affect each decision independently, and that a substitution effect exists between managers' choices of the two signals.

The MSUP coefficients suggest that there is some room for improvement in these management forecasts. Interestingly, this relation is not statistically significant for mandatory disclosures suggesting that forcing firms to provide earnings forecasts when they are unwilling or unable to provide an accurate forecast could obscure this relation. The direction of the coefficients is consistent with the findings of some previous studies that have shown a significant positive association between forecast errors and a high portion of retained ownership. The results by Cormier and Martinez (2006) for France show a significant positive association between forecast errors and a high proportion of retained ownership. Jelic et al. (1998) for Malaysia did not find any association between retained equity and forecast error. Contrary to their own hypothesis and our results, Chen and Firth (1999) for China and Chen et al. (2001) for Hong Kong report the percentage of shares sold to the public has an unexpected positive sign in explaining AFE.

We interpret the significantly negative given ownership variable to mean that Greek companies that sell a large piece of their capital will provide more accurate forecasts, especially when they have the choice to do so, than IPOs that decide to sell just a small proportion. An explanation could be that companies that sell a large share of their capital are more anxious than companies that retain a large proportion of their ownership to achieve a successful IPO so they make an effort to acquire a better understanding of market conditions and invest more money to get a better picture of their accounts.

The industry control AFE coefficients for all three sets of regressions are of the expected sign and the coefficient for IPOs that have to provide earnings forecasts are statistically significant. The positive coefficients suggest that industrial firms make less accurate profit forecasts. However, we find that the industry control variable is positive and significant under the voluntary regime for the SUP and MSUP regressions suggesting that when industrial firms are allowed to voluntarily provide an earnings forecast they are able to make a forecast that is more accurate than a simple random walk or geometric growth average extrapolation from past results. The sign of the coefficients is consistent with the findings of earlier studies that show a significant association between forecast error and the company's industrial classification. The results by Jelic et al. (1998) for Malaysia show significant association between industrial IPOs and forecast errors. They also report that unexpected industry activity appears to be a useful proxy for forecasting errors. Finally Chan et al. (1996), Jaggi (1997) and Chen et al. (2001) for Hong Kong and Chen and Firth (1999) for China do not find any association between industrial classification and forecast error.

[Please Insert Table 4 About Here]

To capture the effect of mandatory vs voluntary earnings forecast, we propose the 'mandatory' variable, which separates those IPOs that were forced to provide earnings forecast during the listing period with those that voluntarily decided to announce their expected earnings. Specifically, in the case where the issuer is uncertain about future operations, there is the option under the voluntary regime to avoid announcing a forecast of earnings whereas in the case where the issuer has clear understanding of the operations and the returns on investment, the company can make a forecast of earnings.

Table 5 presents the results for this analysis. In specification (1) the mandatory coefficient is positive and statistically significant at the 1% level. This result confirms our prediction that absolute forecast error among public offerings will increase when the earnings forecast is mandatory. Moreover, in specification (2) we run the same analysis for forecast error and the coefficient on the 'mandatory' variable is again positive and significant at the 1% level. Overall, the results imply that the disclosure of a forecast of earnings in a mandatory regime provides more, but not necessarily more useful information to investors as the accuracy of the information is suspect.

[Please Insert Table 5 About Here]

In order to shed further light on the relationship between the earnings forecast and the level of underpricing in the immediate aftermarket, we investigate the impact of forecast accuracy by employing the market adjusted initial returns of the new listed firm as the dependent variable. If IPOs have lower levels of forecast error and have a wider access to investors, then it is plausible that merely providing the forecast itself can signal the quality of the IPO. Table 6 reports the results. In both specifications (1) and (2) we incorporate the absolute forecast error as the main control variable for the whole sample and for those firms which provide mandatory earnings forecast. Note that AFE carries a positive and significant coefficient at the 10% significance level in specifications (1). In economic terms, having a large forecast error increases the likelihood of underpricing by 12.23% over our sample average. Overall, the results of this analysis add further support to our hypothesis that firms with higher forecast error are more likely to be associated with higher levels of underpricing.

[Please Insert Table 6 About Here]

5.1. Endogeneity Control

It is possible that our results can be affected by endogeneity so we apply 2SLS, with the probability of providing a forecast as the dependent variable in the reduced form equation, and the absolute forecast error as the dependent variable in the structural form equation. Table 7 shows the results for this analysis. In the reduced model (1) our time lag instrument is highly statistically significant and carries the expected coefficients. In the structural equation (2) the variable of provide forecast error PFE, is statistically significant at the 5% level. Additionally, in the second lower panel of Table 7 the results from the Hausman endogeneity test shows that the forecast error is endogenous to our model. Therefore, we correct for endogeneity for the earnings forecast by including the PFE in our structural regressions. Overall, the findings support our hypothesis of an inverse association between absolute forecast error and providing a forecast of earnings.

[Please insert Table 7 about here]

We further employ a two-step treatment effect model which we estimate via a maximum likelihood and the two-stage least squares method. The first stage equation is a probit regression that estimates the probability of forecast error based on specific independent variables and the second stage estimates the effect of forecast error on market adjusted initial returns. To estimate this model we require an instrument that is correlated with the variable that is considered endogenous but has no effect on the outcome. We construct the variable 'provide forecast earnings' in order to satisfy the required identification restriction. This variable identifies the IPOs that are able to announce an earnings forecast in their prospectus. We argue that public offerings that have been able to provide an earnings forecast are of better quality.

Table 8 presents the output of this inquiry. Interestingly, we observe that after controlling for the endogenous nature of underpricing, companies listed during the mandatory period are now significantly related to absolute forecast error AFE at the 10% level. Similarly, forecast error FE appears to significantly decline (at the 1% level) during the voluntary period. The results show that the degree of forecast error is significantly smaller for firms that provide earnings forecast during the voluntary period. The estimated coefficients of Mand1Vol0 are negative across two columns with MAIR as treatment effect in Table 8. The results are consistent with the information revelation theory and suggest that voluntary status reduce information asymmetry between the issuer and informed investors. As for the control variables, the more uncertainty regarding the firm value, the more chances an unrepeatable underwriters will lead in the process. Consistent with this conjecture, we find

that less reputable underwriters are associated with larger forecast error. To the extent that issues traded on parallel (secondary) market and companies listed during the cold period are riskier, they have significantly larger degree of inaccurate earnings forecast. In addition, the coefficient of the TLAG is significantly positive.

[Please insert Table 8 about here]

6. Further Robustness Checks

In the previous analysis, we provided evidence of the impact of regulations on the disclosure and on the accuracy of an earnings forecast in IPOs when the disclosure environment changes from a mandatory to voluntary disclosure setting. We discover that new listed companies which provide an earnings forecast after the switch to voluntary disclosure are more likely to provide an accurate forecast, while we document the opposite for companies which are obliged to provide an earnings forecast under the mandatory regulatory regime. In this section, we offer additional auxiliary tests to check the validity of our findings.

6.1 Self-Selection Bias Control

Heckman (1979) argues that self-selection produces a specification error that leads to biased estimators; and proposes a two stage method to control for it. Earlier in our preliminary discussion, we report significant differences in the mean of specific characteristics of IPOs among firms that are forced to provide an earnings forecast under the mandatory regime and those that select to voluntarily provide their expected earnings under the voluntary regime. Therefore, we employ the two-stage Heckman method in order to determine whether selection bias is affecting our results. As with the treatment effect estimation model, we employ the variable 'Market adjusted initial returns' to run the first stage probit regressions. This variable as shown in Table 9 is always significant at the 5% level across all types of qualifications indicating that, as we expect, IPO-firms with high levels of forecast error are likely to experience high levels of underpricing. We extract the inverse Mills ratio from the first stage and include it in the second stage regressions. The coefficient of the Inverse Mills Ratio is always found to be insignificant which means that selection bias is most likely not affecting our results.

[Please insert Table 9 about here]

6.2 Price Cap and Management Earnings Forecast (Continues Limit Ups)

In order to shed further light on the relationship between voluntary and mandatory disclosure environments and earnings forecast accuracy, we investigate the impact of other regulatory changes that took place during our sample period. Baker and Wurgler (2006) argue that higher information asymmetry intensifies the appearance of investor sentiment. If early investor sentiment, whether spontaneous or managed by underwriters, is responsible for earnings forecast accuracy (or some portion thereof), it is plausible that its manifestation will be hampered by limits on price variation. Thus, we create the dummy variable *price cap* that is 1 for firms listed with a price cap, and 0 otherwise. Note that the price limit regulations were operative only during the mandatory regime. Table 10 reports the results.

In specification (1) we incorporate the *price cap* PC control variable to explain the level of forecast error FE and in specification (7) we include the control variable *continuous limit ups* CLU. This variable is the number of times the price cap limit was applied for a given IPO. In both specifications, the coefficients of *price cap* and *continuous limit ups* are positive and significant at the 10% level. In economic terms, going public with a restriction on daily variation increases the level of error of the earnings forecast during the mandatory disclosure period. Overall, the result of this analysis adds further support to our hypothesis that the obligation to provide earnings forecasts drive firms to forecast inaccurately.

[Please Insert Table 10 About Here]

6.3 Returns and Management Earnings Forecast

Consistent with the above analysis we examine the relation between management earnings forecast and the returns to investors. Our main variable of interest is the *market adjusted initial return* and the control variables are the same as above. The results are interesting as they indicate a positive relation between highly underpriced IPOs and management earnings forecast error with a significant coefficient at the 5% significance level. This result has a strong economic significance as it indicates that investors are able to distinguish between good and bad companies prior to listing and they require higher returns for lower quality firms that are unable to provide accurate earnings forecasts. Other metrics which we employ to account for returns include RET (i.e. quarterly market rate of return divided by the average return across all quarters) in specification (2). Consistent with our prediction, the higher the rate of return, the larger the forecast error at the 1% significance level. The significance disappears when we concentrate on IPOs listed under the voluntary disclosure environment.

[Please Insert Table 11 About Here]

6.4 Bookbuilding and Management Earnings Forecast

Next, we test the relation between the management earnings forecast and the book building mechanism, the process of generating, capturing, and recording investor demand for shares during an Initial Public Offering (IPO) (see Cornelli and Goldreich [(2001; 2003)]; Sherman and Titman (2002); Derrien and Womack, (2003); Busaba and Chang (2010)). In specification (6), which explores only IPOs listed under the mandatory disclosure environment, the bookbuilding mechanism is positive and significant at the 1% significance level, and in specifications (8) and (9), which comprises IPOs listed under the voluntary disclosure environment, the bookbuilding is also positive and significant at the 1% significance level. That is, companies which select the book building mechanism to go public experience high forecast error. Overall the results support our hypothesis that regulatory and governance reforms (i.e. price cap, green shoe, book building) adversely affects the earnings forecast.

7. Discussion

A. Why do pessimistic earnings forecasts during the mandatory era turn optimistic in the voluntary period?

A natural question that arises from our findings is why there is a change in the bias of earnings forecasts following the change of forecast regime. We argue that forecast behavior is not homogenous across the two disclosure environments.

The disclosure of corporate forecasts of projected annual earnings has been a topic of intensive debate within the investment community during the years 1970-75 (Patel 1976). Questions of accuracy, objectivity, independent certification, and investment utility have been examined from a number of theoretic and pragmatic viewpoints. Most of these inquiries appear to assume that an investor's beliefs and/or actions may be affected by the disclosure of a management forecast and several researchers explore the possible rewards and sanctions that a firm may experience as a result of forecast accuracy.

Our view on management behavioral change is that, initially, it is the aftermarket uncertainty surrounding the company's future operations that lead many issuers to understate their earnings forecasts during the mandatory regime and to provide conservative (pessimistic) earnings forecasts. Those managers facing uncertain future operations choose not to disclose earnings forecast during the voluntary period thereby allowing more optimistic views to dominate. This confirms the self-

selection theory stated by McNichols and O'Brien (1997) regarding the coverage decisions as it indicates that issuers with a relatively pessimistic view–compared to other issuers–are more reluctant to issue their earnings forecasts, and as a result they tend to defer revealing their earnings forecasts until later in the forecasting period.

B. How generalizable are the results from this relatively small country to settings in larger countries?

The Greek market has been underestimated for decades due to its relative small size and peripheral location. The recent European sovereign debt crisis indicates that Greece has a dynamic market and that events taking place there have a significant impact on the European and Global markets. An important fact, not well known to the public, is that Greek companies are highly exposed to countries in South-eastern Europe having investments totalling more than €15 billion Euros in the area. Greek entrepreneurs are among the pioneers and claim the role of key regional players, especially in Bulgaria, Romania, Serbia and Turkey where Greek businesses are among the three largest foreign investors[17]. Thus Greece does not stand alone in the world arena but has an important regional presence in an area containing more than 100 million people.

Further, following the general election in October 2009, the then new elected government in Greece announced a revised 2009 budget deficit forecast of 12.7 percent of GDP—more than double the previous estimate of 6.0 percent. The Greek fiscal accounts for previous years were also revised to show significantly larger deficits. These adverse developments were reflected in rising spreads on the nation's sovereign bonds with Greece being the first country to be shut out of the bond market. Recent Greek economic events that affect the world stage includes the destabilization of the Euro in comparison with other currencies, the corresponding domino effect which was created and affected by many more Mediterranean countries and the rising value of precious and industrial metals to historical high levels. In this political arena the triumph of Angela Merkel in the German Elections in 2013 has been mainly driven by her actions on the Greek Sovereign Debt Crisis.

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[17] The markets of Romania, Turkey, Bulgaria, Serbia and Albania, where the Greek banks are activated, present a challenge for Greek bankers because of their strong growth rates. In such a high-growth environment it comes as no surprise that the National Bank, Alpha Bank, Eurobank and Piraeus Bank will seek to consolidate their presence in the region during the next few years, in order to become major players in a market with a population of more than 100 million, including Turkey.

8. Conclusion

The main purpose of this study is to provide, for the first time, a direct comparison between IPOs that were obliged to provide an earnings forecast in their prospectuses with those that were allowed to voluntarily disclose an earnings forecast. We find that earnings forecast accuracy increases following the introduction of voluntary disclosure but still perhaps not to the level that would satisfy regulators and investors. This behavioral change implies that managerial confidence increases under the voluntary regime resulting in higher and more accurate figures in the earnings forecast.

The voluntary disclosure mechanism allows twenty-four out of a total sample of eighty one Greek IPOs to avoid disclosing earnings forecast information for reasons such as a lack of confidence in their ability to forecast, poor income expectations, prohibitively high proprietary costs and high costs of acquiring information. For those that do voluntarily provide earnings forecasts, we find that younger firms with a long time lag between the forecast and the IPO issue date provides inaccurate forecasts. Errors decrease with the age of the issuing firm, the size of the issue and the shorter time lag between forecast and IPO issue dates.

Four metrics are employed to model earnings forecast accuracy and reveal differences between the mandatory and voluntary earnings forecast regimes. Large IPOs that must provide earnings forecasts experience higher absolute forecast errors while those that voluntarily announce earnings forecasts experience lower errors. We interpret this as, under the voluntary regime, larger firms that can provide accurate forecasts do so while firms that are unable to provide a reliable forecast chose not to disclose. Moreover the age and the privatization variables indicate that inexperienced companies have difficulties in providing earnings forecasts as they obtain larger errors than older and private companies. These three instances of self-selection could explain why the absolute earnings forecast errors decrease under the voluntary regime.

Demand multiples are positively related to forecast errors under the voluntary disclosure regime. Examining this coefficient for the combined sample we discover that it is the direction of the forecast errors rather than the level which is the operative influence. Together, these findings suggest that investors can detect when the company is being too conservative in their earnings forecasts and so increase the demand for the shares. The last finding indicates an opportunity for improving the IPO market for uninformed investors. If IPOs choose to make a greater effort and provide more accurate figures, they will reduce the cost of information for uninformed investor's thereby increasing demand for their initial share offering. Further, we are in the position to document a perverse inverse relation between 'hot' market conditions and forecast errors under the voluntary disclosure environment. The direction of the errors seems to be operative influence suggesting that during the voluntary

disclosure period when market conditions are 'hot", firms understate earnings forecasts to avoid the possibility of disappointing investors.

Overall, forecast errors decrease on average during the voluntary regime as firms that choose to disclose earnings forecast are more accurate. This is especially evident for large firms and for IPOs that need to sell a large portion. However, that does not prevent firms from manipulating their forecasts by deliberately understating their forecasts when they wish to signal the quality of their IPO, noticeably so when market conditions are 'hot'. These results suggest that allowing for a voluntary disclosure of earnings forecasts is a good idea which benefits young firms that otherwise would have difficulties in providing private information directly to the capital market. On the basis of these findings we conclude that earnings forecasts disclosed in the prospectuses of Greek IPOs are reliable to a large extent. Stock exchange directors appear to have made a good decision by changing the regulations from a mandatory to a voluntary earnings disclosure as there is a reduction in the level of absolute forecast error. Investment banks should encourage newly listed companies to provide earnings forecast information in their prospectuses as voluntary disclosure contributes to the transparency of market operation and minimizes information asymmetry.

In response to the questions raised in the introduction, the finding of this study indicates that earnings forecast improve after the change of the disclosure environment from a mandatory to voluntary regime. This is mainly attributed to the 30% of IPOs that chose to forego announcing earnings forecast due to low confidence and ability to disclose an accurate forecast. Surprisingly, pessimistic forecasts during the mandatory era turn optimistic in the voluntary era revealing a change to more liberal management behavior. Our results have also important corporate policy implications. Given the magnitude of the forecast, initial public offering managers should put particular emphasis on improving forecast accuracy to benefit their stakeholders. In particular, our findings imply that managers of new issues should avoid being too optimistic during the voluntary era and target an optimum level of accuracy.

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Appendix A. Variable Definitions

Variable	Definition
Panel A: Measures of Earnings Forecast	
Absolute Forecast Error	Absolute Forecast Error. Measures the relative deviation of actual earnings (published in the Annual Report) from forecast earnings (announced in the prospectus of the firm). It is based on forecast of the next annual earnings.
Forecast Error	The percentage difference between earnings announced in the first annual report of the firm with the earnings forecast as this has been announced in the prospectus.
Superiority	Superiority of forecasting profits (*SUP*) relative to the actual changes in profits. Management forecast superiority measures the ability of management to anticipate earnings more accurately than time series models.
Market Adj. Initial Returns	Returns to investors in the end of first day of trading adjusted with the returns of the market. Raw initial returns (RIR) are adjusted for market changes taking into account the Athens Stock Exchange General Index (ASEGI) between the offer price closing date and the end of first day of trading.
Panel B:IPOs Characteristics	
Size of the IPO	Market capitalization measured by the log of the total number of outstanding shares after the IPO multiplied by price per share.
Age of the IPO	Age of the firm starting from the year of its establishment until the year it goes public.
Time Lag	Period between the announcement of the prospectus and first day of the stocks' listing.
Privatizations	Companies owed by the State before going public. State sells part of its holdings on those companies in the market.
Oversubscription	Oversubscription on the number of shares issued.
Underwriter Reputation	Dummy variable: 1 for reputable underwriters (major banks), 0 otherwise
Hot/Cold	Classifies IPOs listed under hot market conditions with a dummy value '1' and IPOs listed under cold market conditions with a '0'
Market Classification	Dummy variable: 1 if an IPO is listed in Main Market and '0' if listed in Parallel or New Market.
Herfindahl Index	The Herfindahl index (HHI) is a measure of the size of firms in relation to the industry and an indicator of the amount of competition.
Share Overhang	Proportion of given ownership (OWN) during the going public process
Industry classification	Dummy variable: 1 for industrial classified companies, 0 otherwise.
Panel C: Market Characteristics	
RET	Quarterly market rate of return divided by overall quarterly average.
NUIPO	Quarterly number of IPOs divided by the average number of IPOs in all quarters.
Institutional Allocation	The percentage of shares allocated to institutional investors during the public offering process.
Green Show	Green Shoe or overallotment allows underwriters to short sell shares in a registered securities offering at the offering price.
Bookbuilding	Book-building is the process of generating, capturing, and recording investor demand for shares during an IPO in order to support efficient price discovery.
Consecutive Limit Ups	The number of Consecutive Limit Up's an IPO has achieved as a result of the Price Cap Limit.
Panel D: Price Limit Characteristics	
Price Cap ±8%	Dummy variable: 1 IPOs listed with a price cap limitation of ±8%, otherwise 0 Cap ±8%: IPOs listed in ASE with a price cap limitation of ±8% during Nov. 1993 – Nov. 1996 period.
Price Cap ±99%	Dummy variable: 1 IPOs listed with a price cap limitation of ±99%, otherwise 0 Cap ±99%: IPOs listed in ASE during Dec 1996 to Dec. 1999 period.

Table 1
Greek IPO sample description

The table presents details of the Greek IPOs and control samples. Panel A provides the number of firms in each sample (mandatory, voluntary) in every calendar year this study covers. This panel provides details of the IPO samples as well as for the IPO listed in a mandatory disclosure environment, voluntary earnings forecast regime and IPOs that were not able to provide any forecast. Fiscal years are converted to calendar years as follows: fiscal years ending before December 31st are classified into the previous calendar year, while those ending on or after January 1st are classified into the current calendar year. Panels B and C present summary statistics on the IPO firms. Market value (capitalization) is computed as the number of shares outstanding after the offering times the offer price.

Panel A: Number of observations in Greece and control sample by forecasted profits

Event Year	IPO firms full sample	Mandatory	Provide Forecast	No Forecast
			Forecasted Profits	
			Voluntary	
1993	10	10	-	-
1994	45	45	-	-
1995	19	19	-	-
1996	20	20	-	-
1997	14	14	-	-
1998	23	23	-	-
1999	38	38	-	-
2000	51	51	-	-
2001	23	-	19	4
2002	21	-	15	6
2003	15	-	11	4
2004	9	-	8	1
2005	11	-	2	9
2006	2	-	2	-
2007	4	-	4	-
2008	0	-	0	-
2009	1	-	0	1
2010-2014 (No IPO Listed)	0	-	0	-
Total	306	220	61	25

Panel B: Summary Statistics of Greek IPO firms(with forecast)

	Mean	Median	Maximum
Total market capitalisation of an IPO (€ million)	42.6	33.3	5900
The age of the issuing firm (years)	17.29	14	106
Time lag between the announcement of the prospectus and first day of stocks' listing (days)	29.76	28	70
Companies partially or fully owned by the Greek state	0.06	0.07	-
Demand multiple on the number of shares issued (times)	91.55	25	760.6
Underwriters reputation (dummy)	0.44	-	-
IPOs listed in the Hot or Cold Period (dummy)	0.29	-	-
Proportion of given ownership by the initial shareholders (%)	20.18	20	68.43
IPOs belonging in the industrial sector (dummy)	0.17	-	-

Panel C: Summary Statistics of Greek IPO firms (No forecast)

	Mean	Median	Maximum
Total market capitalisation of an IPO (€ million)	31.61	28.50	105.78
The age of the issuing firm (years)	5.82	4	29
Time lag between the announcement of the prospectus and first day of stocks' listing (days)	24.75	24.5	37
Companies partially or fully owned by the Greek state	0.08	0.06	-
Demand multiple on the number of shares issued (times)	5.08	2.58	6.48
Underwriters reputation (dummy)	0.61	-	-
IPOs listed in the Hot or Cold Period (dummy)	0.33	-	-
Proportion of given ownership by the initial shareholders (%)	16.47	13.69	42.92
IPOs belonging in the industrial sector (dummy)	0.125	-	-

Panel D: Test of difference between Forecast and No Forecast Samples mean and medians.

	Mean	Median		Mean	Median
Market Capitalisation	(2.914)***	(-2.613)***	Demand Multiple	(1.743)*	(-1.269)
Age of the issuing firm	(3.987)***	(-3.529)***	Given Ownership	(1.903)*	(-1.894)*
Time Lag	(-0.648)	(-0.157)			

Note: FE = forecast error; FE = (Actual Profit (AP) − Forecast Profit (FP))/ │Actual Profit (AP)│, AFE = absolute forecast error; AFE= │FE│, SUP= Brown et al. (1987) measure of superiority SUP = log $[((AP_t − AP_{t-1})/(AP_t − FP_t))^2]$, MSUP = SUP = log $[((AP_t − AP_{t-1}*G)/(AP_t − FP_t))^2]$. ** Significant at the 5% , * significant at the 10% level respectively.

	FE	AFE	SUP	MSUP
Panel A: Total Sample				
Mean	3.66	39.72	-0.275	1.258
t-value	0.258	0.001	0.176	0.000
Median	-0.38	31.03	-0.133	1.257
z-value	0.045	0.000	0.112	0.184
St-dev	52.81	34.52	3.51	3.46
Max	234.82	234.82	14.30	15.54
Min	-132.32	0.38	-9.86	-7.80
Panel B: Mandatory Disclosure Environment (1993-2000)				
Mean	8.65	40.32	0.026	1.541
t-value	0.019	0.000	0.906	0.001
Median	2.96	31.65	-0.009	1.508
z-value	0.183	0.003	0.104	0.176
St-dev	52.35	34.38	3.33	3.35
Max	234.82	234.82	14.30	15.54
Min	-84.82	0.38	-9.86	-7.80
Panel C: Voluntary Disclosure Environment (2001-2014)				
Mean	-9.58	36.83	-1.052	0.520
t-value	0.048	0.000	0.015	0.218
Median	-9.11	26.40	-1.482	-0.126
z-value	0.282	0.053	0.435	0.292
St-dev	48.72	32.96	3.860	3.67
Max	163.30	163.30	11.492	13.81
Min	-90.30	0.57	-9.20	-6.47
Panel D: Test of difference between Mandatory and Voluntary mean and medians				
Mean	(1.866)*	(1.783)*	(0.727)	(1.053)
Median	(-1.693)*	(-2.083)**	(-0.817)	(-1.223)

Panel E: Market Adjusted Initial Returns under Mandatory and Voluntary Regime		
	MAIR in Mandatory Regime	MAIR in Voluntary Regime
Mean	39.55	19.83
Median	12.60	5.17
St-dev	67.14	48.01
Max	472	216
Min	-41.84	-43.19

Table 3: Correlation Matrix

The table presents pairwise correlations of the variables. The sample consists of Greek public, private, and subsidiary acquisitions announced over the period January 1, 1990 to December 31, 2014. All variables are defined in Appendix A.

	FE	AFE	Age	Tlag	Priv	Und	HC	Own	Ind	Mar	MAIR	PC	BB	Ret	Nuipo	CLU
AFE	0.431															
Size	-0.090	-0.004														
Age	-0.129	-0.193	0.313													
Tlag	0.066	0.117	-0.149	-0.169												
Priv	-0.108	0.103	0.294	0.096	-0.005											
Und	-0.084	-0.035	0.236	0.124	-0.038	0.021										
HC	-0.037	-0.106	0.316	0.094	0.034	0.088	-0.028									
Own	-0.146	-0.159	0.120	-0.078	0.142	-0.084	0.091	-0.039								
Ind	0.100	0.045	-0.086	-0.001	0.046	0.027	0.115	-0.026	-0.038							
Mar	-0.127	-0.091	0.541	0.208	-0.044	0.093	0.092	-0.035	0.395	-0.080						
MAIR	0.007	0.049	0.084	0.009	-0.035	0.082	0.045	0.455	-0.219	0.041	-0.293					
PC	-0.015	-0.006	-0.195	-0.054	-0.001	-0.077	-0.053	-0.633	0.212	-0.088	0.261	-0.690				
BB	0.027	0.093	0.438	0.098	-0.026	0.660	0.068	0.119	0.044	0.047	0.150	0.049	-0.120			
Ret	0.093	-0.108	0.243	-0.042	0.098	0.045	0.031	0.727	-0.014	0.029	-0.056	0.177	-0.501	0.078		
Nuipo	-0.118	-0.028	0.060	-0.020	0.049	-0.012	-0.037	-0.080	0.103	-0.087	0.138	-0.026	0.284	-0.085	-0.297	
CLU	0.048	-0.079	-0.251	0.039	-0.057	-0.097	-0.022	-0.264	0.020	0.020	-0.163	-0.152	0.41	-0.110	-0.205	0.116

Table 4: Cross Sectional Regression Results Explaining AFE, FE, SUM, MSUP Accuracy Measures of Greek IPOs

Multivariate regression analysis of cross-sectional variation in earnings management subsequent to listing for 281 Greek initial public offers of ordinary equity made between January 1993 and December 2014. The dependent variables are forecast error FE absolute forecast error AFE, forecast superiority SUP and modified forecast superiority MSUP. The independent variables are, SIZE - the logarithm of the total market capitalisation of an IPO, AGE - the number of years that each listing firm is in operation since its inception before the year of listing, TLAG - time lag is the period between the announcement of the prospectus and first day of the stocks' listing, PRIV - companies partially or fully owned by the Greek state before going public have the value'1' and fully private companies have the value'0', OVER - demand multiple on the number of shares issued, UND - underwriters reputation: '1' for reputable underwriters defined as one of the five older and more experienced underwriting banks and '0' for non-reputable underwriters, H/C - IPOs listed under hot market conditions have the value '1' and IPOs listed under cold market conditions have the value '0', OWN - proportion of given ownership by the pre-IPO shareholders, IND - dummy variable taking the value of one if the company is industrial otherwise IND zero. *** Significant at the one per cent level. **Significant at the five per cent level *Significant at the ten per cent level, t-statistics are robust for heteroskedasticity using the Newey-West HAC Standard Errors & Covariance process

Specifications	(1) AFE Mandatory	(2) FE Mandatory	(3) SUP Mandatory	(4) MSUP Mandatory	(5) AFE Voluntary	(6) FE Voluntary	(7) SUP Voluntary	(8)MSUP Voluntary	(9) AFE 1993-2014	(10) FE 1993-2014	(11) SUP 1993-2014	(12)MSUP 1993-2014
Constant	-27.08	-34.04*	0.973	5.264	153.56	56.27	2.36	4.74	-18.21	-53.00	-8.79	2.120
SIZE (-)	0.150	3.483	0.0482	-0.069	-0.293	-0.215	-0.115	-0.125	3.184	0.082	0.224	-0.018
	(1.954)*	(0.032)**	(0.847)	(0.800)	(-2.163)**	(-1.039)	(-0.917)	(-0.876)	(0.0541)*	(0.949)	(2.043)**	(0.635)
AGE (-)	-0.138	-0.105	-0.020	-0.019	0.013	0.055	0.371	0.387	-0.119	-0.077	-0.033	0.0036
	(-2.627)**	(0.670)	(0.262)	(0.074) *	(0.093)	(0.306)	(2.852)	(3.969)	(0.365)	(-1.272)	(-0.410)	(0.394)
Time Lag (+)	0.157	0.276	-0.016	-0.039	0.071	0.030	0.007	0.066	0.468	0.090	0.034	-0.020
	(1.485)	(0.282)	(0.053)*	(0.466)	(0.628)	(0.188)	(0.068)	(0.680)	(0.007)***	(1.451)	(0.548)	(0.336)
PRIV (-)	0.128	-15.62	0.0124	-1.439	0.137	0.076	-0.120	0.001	-0.119	0.22	-0.062	-0.764
	(1.682)*	(0.646)	(0.977)	(0.304)	(1.177)	(0.510)	(-0.986)	(-0.005)	(0.990)**	(0.322)	(-1.002)	(0.023)**
OVER (-)	0.078	0.0256	0.0008	0.0009	0.344	0.022	0.031	0.077	0.0294	0.128	0.109	0.003
	(0.778)	(0.296)	(0.776)	(0.002)***	(2.556)**	(0.145)	(0.240)	(0.523)	(0.0439)	(2.005)**	(1.864)*	(0.054)*
UND (-)	0.027	-12.98	-0.281	-0.744	-0.049	0.028	0.212	0.091	-3.136	0.034	0.017	-0.286
	(0.453)	(0.007)***	(0.307)	(0.027)**	(-0.439)	(0.204)	(2.549)**	(0.972)	(0.434)***	(0.762)	(0.262)	(0.366)
HC (+)	-0.029	-9.130	0.0171	0.848	0.251	0.309	-0.253	-0.025	-15.7	0.018	-0.016	0.151
	(-0.388)	(0.0851)*	(0.981)	(0.528)	(1.770)	(2.137)**	(-2.957)***	(-0.224)	(0.0023)	(0.319)	(0.257)	(0.265)
OWN (+)	-0.062	-0.735	-0.038	-0.030	-0.243	0.233	-0.109	-0.281	-0.280	-0.030	-0.070	-0.005
	(-0.918)	(0.083)*	(0.015)**	(0.738)	(-2.516)**	(1.632)	(-1.023)	(-2.549)**	(0.282)	(-0.243)	(-1.092)	(0.398)
IND (+)	0.119	10.59	-0.175	-0.422	0.177	0.148	0.335	0.385	3.795	0.062	-0.001	-0.059
	(1.826)*	(0.308)	(0.163)	(0.417)	(1.489)	(1.074)	(2.671)***	(3.348)***	(0.455)	(1.005)	(0.026)	(0.632)
Adj. R²	0.094	0.053	0.070	0.104	0.259	0.235	0.209	0.263	0.066	0.061	0.060	0.048
No. of IPOs	220	220	220	220	61	61	61	61	281	281	281	281
F-statistic	2.78	2.36	2.57	2.73	3.37	3.25	3.11	3.95	2.49	2.43	2.33	2.21

Table 5: Cross Sectional Regression Analysis on the Method of Management Earnings Forecast

The table presents the results of the cross sectional regression analysis on the method, the management of the firm follows to provide earnings forecast, for a sample of Greek IPOs over the period 1993-2014. In all models the variable 'mandatory' takes the value of 1 for IPOs where the management provide mandatory earnings forecast, and 0 for IPOs which voluntarily provide earnings forecast. See Appendix A for definitions of the variables. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity. N denotes the number of observations.

Specifications	(1) AFE	(2) FE	(3) SUP	(4) MSUP
Constant	-33.70	-95.05	-1.26	4.89
Mandatory	**0.174**	**0.181**	**0.140**	**0.135**
	(2.784)* **	**(2.817)*** **	**(1.999)** **	**(1.983)** **
SIZE	0.151	0.115	0.046	-0.068
	(2.456)**	(1.696)*	(0.308)	(-0.907)
AGE	-0.176	-0.096	0.000	0.019
	(-2.785)***	(-1.424)	(0.005)	(0.252)
Time Lag	0.064	0.032	-0.065	-0.138
	(1.052)	(0.543)	(-0.986)	(-2.321)**
PRIV	0.056	0.026	-0.012	-0.034
	(0.952)	(0.333)	(-0.199)	(-0.478)
OVER	0.061	0.136	0.047	0.063
	(1.006)	(2.021)**	(0.662)	(0.800)
UND	0.071	0.073	0.020	-0.001
	(1.263)	(1.107)	(0.261)	(-0.032)
HC	-0.092	-0.042	0.012	0.026
	(-1.546)	(-0.601)	(0.162)	(0.444)
OWN	-0.083	-0.001	-0.032	-0.055
	(-1.354)	(-0.030)	(-0.545)	(-0.871)
IND	0.068	0.073	-0.005	-0.014
	(1.166)	(1.185)	(-0.070)	(-0.271)
R² Adjusted	0.098	0.080	0.059	0.051
F-value	2.92	2.24	1.53	1.46
N	281	281	281	281

Table 6: Cross Sectional Regressions of Forecast effect on Market Adjusted Initial Returns

The table presents the results of the cross sectional regression analysis on the impact of various forms of forecast error on the adjusted initial returns of the public offering, for a sample of Greek IPOs over the period 1993-2014. See Appendix A for definitions of the variables. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity. N denotes the number of observations.

Variables	MAIR (1)	MAIR (2)	MAIR (3)	MAIR (4)
Constant	43.93***	67.03***	63.27***	64.16***
	(0.006)	(0.007)	(0.000)	(0.001)
AFE	0.545*	0.142	-	-
	(0.067)	(0.598)	-	-
FE	-	-	0.424*	0.130
	-	-	(0.098)	(0.320)
AGE	0.172	0.104	0.0606	0.180
	(0.662)	(0.853)	(0.894)	(0.741)
TLAG	-0.288	-0.473*	-0.362	-0.398
	(0.189)	(0.0578)	(0.120)	(0.119)
PRIV	-19.27*	-14.60	-17.03	-12.68
	(0.0711)	(0.363)	(0.142)	(0.405)
UND	-2.096	-3.692	-0.407	-0.714
	(0.798)	(0.728)	(0.962)	(0.943)
HC	23.05***	29.04***	24.14***	26.06***
	(0.001)	(0.0003)	(0.003)	(0.002)
OWN	-0.795**	-1.248**	-1.111***	-1.239**
	(0.019)	(0.012)	(0.004)	(0.016)
IND	6.744	13.76	9.480	17.57
	(0.538)	(0.340)	(0.449)	(0.275)
Observations	301	219	266	207
R² Adjusted	0.053	0.071	0.058	0.080

Table 7: Endogeneity Control for Earnings Forecast Existence

Results of instrumental variable probit regression to determine the probability of providing a forecast in the voluntary era for IPOs listed on ASE over the sample period. Specification (1) is the reduced regression of accuracy in the mandatory regime using Earnings Forecast Error as the dependent variable. Specification (2) is the structural regression for the IV Probit method. See Appendix A for definitions of the variables. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. N denotes the number of observations.

Variable	Reduced (1)	Structural (2)
Const.	-0.112	-14.94
	(0.695)	(0.663)
PFE	-	-72.52**
	-	(0.0395)
SIZE	0.0299*	4.889**
	(0.097)	(0.0491)
AGE	-0.001	-0.195
	(0.329)	(0.270)
Tlag	-0.006***	-
	(0.001)	-
PRIV	0.0854	5.233
	(0.429)	(0.680)
UND	-0.103**	-10.64*
	(0.025)	(0.0965)
HC	-0.111*	-22.38***
	(0.057)	(0.00431)
OWN	-0.005*	-0.0129
	(0.085)	(0.971)
IND	0.0891	10.38
	(0.126)	(0.155)
N	301	301
Pseudo (Adjusted) R^2	(0.0725)	
Hausman (Wald) Test		7.355
(P-value)		0.007

Table 8: Treatment Effect: Maximum Likelihood & Two Stage model

The table presents regression output of AFE and FE on 'Market Adjusted Initial Returns' based on returns to the investors and on the possibility of an IPO to provide forecast. The reported shows the obtained results from the treatment effect method of estimation for each individual qualification. Specifications (1) - (3) are estimated via maximum likelihood and specifications (4) - (6) are estimated with two stage least square model. See Appendix A for definitions of the variables. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. N denotes the number of observations.

VARIABLES	(1) AFE	(2) FE	(3) AFE	(4) AFE	(5) FE	(6) AFE
Treatment Effect	MAIR		PFE	MAIR		PFE
Constant	-33.71	-69.38***	25.00***	-64.15	-45.23	5.893
	(0.221)	(0.0005)	(0.009)	(0.102)	(0.311)	(0.826)
SIZE	3.406**	3.453*	1.866	3.298**	2.069	2.385
	(0.036)	(0.092)	(0.113)	(0.042)	(0.415)	(0.139)
AGE	-0.132	-0.112	-0.184***	-0.117	-0.0679	-0.188
	(0.307)	(0.111)	(0.000)	(0.371)	(0.750)	(0.128)
TLAG	0.408**	0.160	0.239***	0.418**	0.0707	0.365**
	(0.0221)	(0.464)	(0.008)	(0.020)	(0.804)	(0.029)
PRIV	0.904	-6.421	-0.452	1.341	-3.731	1.561
	(0.922)	(0.514)	(0.867)	(0.882)	(0.809)	(0.871)
OVER	0.011	0.024***	0.005***	0.0004	-	0.013
	(0.459)	(0.000)	(0.000)	(0.980)	-	(0.335)
UND	-3.743	-10.64***	-3.567***	-3.882	-10.18	-2.791
	(0.345)	(0.003)	(0.000)	(0.326)	(0.121)	(0.471)
HC	-15.11***	-10.90***	-5.775***	-15.53***	-10.60	-10.23**
	(0.002)	(0.001)	(0.000)	(0.002)	(0.247)	(0.036)
OWN	-0.209	-0.173	-0.314***	-0.206	-0.193	-0.355
	(0.418)	(0.692)	(0.000)	(0.416)	(0.661)	(0.168)
IND	4.316	6.972	3.129	4.381	7.577	3.396
	(0.384)	(0.151)	(0.158)	(0.374)	(0.358)	(0.496)
MAR	-4.865*	-9.235***	-2.457***	-5.314**	-9.195*	-2.908
	(0.096)	(0.000)	(0.000)	(0.0491)	(0.0701)	(0.393)
Mand1Vol0	23.40*	36.61*	-15.47***	68.35*	44.99*	-33.80**
	(0.076)	(0.076)	(0.000)	(0.097)	(0.069)	(0.012)
Observations	300	265	300	300	266	300

Table 9: Heckman Two-Stage Model - AFE and FE

The table presents the results of Heckman Two stage method for Absolute Forecast Error and Forecast Error. Specification A presents the results on the Absolute Forecast Error. Specification B presents the results for Forecast Error. In this two stage procedure the first stage selection equation is estimated by a probit regression from which the Inverse Mills Ratio is estimated. This ratio is the add to the second stage equation which controls for the presence of selection bias in the sample.

Panel A: Heckman Two-Stage Model for self-selection bias

VARIABLES	AFE		FE	
	Selection	Outcome	Selection	Outcome
Constant	0.507***	-52.64	0.489***	-51.86
	(0.000)	(0.175)	(0.0005)	(0.380)
SIZE		3.232**		2.428
		(0.044)		(0.334)
AGE		-0.0594		-0.0490
		(0.653)		(0.810)
TLAG		0.424**		0.155
		(0.017)		(0.576)
PRIV		3.137		-4.605
		(0.727)		(0.747)
OVER		-0.0012		0.0133
		(0.947)		(0.636)
UND		-4.572		-10.20*
		(0.245)		(0.0935)
HC		-15.70***		-7.046
		(0.0016)		(0.367)
OWN		-0.212		-0.247
		(0.398)		(0.526)
IND		2.943		5.726
		(0.549)		(0.457)
MAR		-4.799*		-6.788
		(0.075)		(0.124)
HHI		-146.2**		-166.2*
		(0.018)		(0.0923)
Mand1Vol0		66.87*		53.52
		(0.097)		(0.385)
MAIR	0.0037**		0.00340**	
	(0.017)		(0.0339)	
Inv. Mills Ratio	-35.65		-24.97	
	(0.134)		(0.493)	
Observations	303	303	291	291

Table 10: Robustness and Auxiliary Tests

Results of multivariate regression analysis of cross sectional variation with Earnings Forecast Error as dependent variable for IPOs listed on ASE over the sample period between January 1, 1993 and December 31, 2014. Specification (1) tests for newly introduced variables RET and NUIPO. Specification (2) challenges the influence of market adjusted initial return. Specification (3) explore IPOs listed with a price cap limitation of ±8% and ±9%. Specification (4) tests the Green Shoe effect. Specifications (5) - (9) See Appendix A for definitions of the variables. All variables are winsorized at the 1% on both tails, with the exception of binary variables. Results have been corrected for Heteroskedasticity-robust clustered standard errors. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Variable	(1) FE 1993-2014	(2) FE 1993-2014	(2) FE 1993-2014	(4) FE 1993-2014	(5) FE 1993-2014	(6) FE Mandatory	(7) FE Mandatory	(8) FE Voluntary	(9) FE Voluntary
Const.	-69.48	-57.77	-44.07	-61.12	-77.00	-7.909	-31.83	-212.4	-339.8
	(0.189)	(0.249)	(0.386)	(0.253)	(0.134)	(0.910)	(0.667)	(0.154)	(0.141)
SIZE	5.043	4.661	3.167	4.478	5.224*	2.095	4.090	4.556	8.910
	(0.117)	(0.129)	(0.301)	(0.168)	(0.096)	(0.641)	(0.412)	(0.598)	(0.461)
AGE	-0.127	-0.114	-0.0718	-0.0943	-0.098	-0.006	-0.460	-0.479	-0.428
	(0.568)	(0.596)	(0.712)	(0.664)	(0.611)	(0.976)	(0.135)	(0.382)	(0.459)
Tlag	0.231	0.151	0.322	0.265	0.124	0.072	0.309	1.121	1.000
	(0.499)	(0.655)	(0.341)	(0.434)	(0.721)	(0.865)	(0.429)	(0.300)	(0.508)
PRIV	-9.827	-7.646	-7.149	-7.796	-10.27	-42.44**	-33.75*	-9.293	-17.27
	(0.494)	(0.590)	(0.618)	(0.578)	(0.478)	(0.048)	(0.0604)	(0.694)	(0.667)
OVER	0.0441	0.0442	0.0006	0.0401	0.0257	0.0231	-0.0406	-0.0367	-0.0178
	(0.158)	(0.221)	(0.983)	(0.194)	(0.494)	(0.587)	(0.376)	(0.962)	(0.986)
UND	-10.31	-12.52*	-9.459	-10.74	-9.476	-13.02*	-8.128	-5.690	15.34
	(0.125)	(0.066)	(0.149)	(0.113)	(0.152)	(0.092)	(0.332)	(0.735)	(0.546)
HC	-8.342	-34.79***	-13.25*	-11.92	-24.56**	-32.40**	1.081	-42.91*	-28.35
	(0.323)	(0.001)	(0.091)	(0.119)	(0.015)	(0.018)	(0.920)	(0.0967)	(0.320)
OWN	-0.241	-0.184	-0.077	-0.0756	-0.379	-0.650	-1.054**	2.016**	2.100*
	(0.525)	(0.620)	(0.838)	(0.849)	(0.293)	(0.130)	(0.010)	(0.037)	(0.060)
IND	6.160	3.645	2.328	5.642	4.077	5.318	14.54	-16.91	-6.124
	(0.481)	(0.668)	(0.771)	(0.519)	(0.603)	(0.587)	(0.186)	(0.222)	(0.764)
MAR	-11.98**	-11.66**	-12.70**	-11.57**	-15.74***	-15.64	-6.476	3.440	-18.57
	(0.0143)	(0.023)	(0.011)	(0.0208)	(0.006)	(0.137)	(0.558)	(0.857)	(0.549)
PC	18.82*	-	-	-	19.50**	12.64	-	-	-
	(0.068)	-	-	-	(0.040)	(0.250)	-	-	-
RET	-	4.460***	-	-	4.621***	5.233***	-	3.527	1.232
	-	(0.001)	-	-	(0.002)	(0.006)	-	(0.430)	(0.815)
NUIPO	-	1.377	-	-	1.264	-2.142	-	27.64	28.07
	-	(0.743)	-	-	(0.787)	(0.680)	-	(0.303)	(0.506)
MAIR	-	-	0.156**	-	0.123	0.089	-	0.0487	-0.103
	-	-	(0.0279)	-	(0.148)	(0.382)	-	(0.790)	(0.694)
BB	-	-	-	-	17.47	66.36**	-	54.39***	80.05***
	-	-	-	-	(0.140)	(0.012)	-	(0.008)	(0.005)
GS	-	-	-	-17.55	-	-	-	-	-15.80
	-	-	-	(0.364)	-	-	-	-	(0.703)
CLU	-	-	-	-	-	-	3.328*	-	-
	-	-	-	-	-	-	(0.098)	-	-
PR	-	-	-	-	-	-	-	-	0.156
	-	-	-	-	-	-	-	-	(0.811)
InAl	-	-	-	-	-	-	-	-	0.650*
	-	-	-	-	-	-	-	-	(0.086)
R² Adj.	0.063	0.082	0.081	0.083	0.095	0.148	0.103	0.173	0.193
N	270	270	270	270	270	220	160	82	80

Table 11: Robustness and Auxiliary Tests (continue...)

Results of multivariate regression analysis of cross sectional variation with Absolute Earnings Forecast Error as dependent variable for IPOs listed on ASE over the sample period between January 1, 1993 and December 31, 2014. Specification (1) challenges the influence of market adjusted initial return. Specification (2) tests for all additional control variables Specification (3) focus on a reduced sample of IPOs listed in the mandatory period making use of all additional control variables. Specification (4) concentrate on IPOs listed during the voluntary period making use of some additional control variables. Specification (5) is a probit regression where we include variables which would influence the firms decision to issue a voluntary earnings forecast. See Appendix A for definitions of the variables. All variables are winsorized at the 1% on both tails, with the exception of binary variables. Results have been corrected for Heteroskedasticity-robust clustered standard errors. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Variable	(1) AFE 1993-2014	(2) AFE 1993-2014	(3) AFE Mandatory	(4) AFE Voluntary	(5) Probit Voluntary Period
Const.	10.65	2.837	-109.2	67.64	-8.110**
	(0.730)	(0.931)	(0.188)	(0.459)	(0.0248)
SIZE	2.064	2.068	8.077*	0.208	0.559**
	(0.289)	(0.306)	(0.0614)	(0.965)	(0.0225)
AGE	-0.176	-0.169	0.430*	0.206	0.0347
	(0.313)	(0.286)	(0.0995)	(0.538)	(0.148)
Tlag	0.370*	0.402*	0.569*	0.0202	-0.0112
	(0.0533)	(0.0522)	(0.0949)	(0.976)	(0.677)
PRIV	2.469	-1.729	-24.14	14.45	-0.694
	(0.783)	(0.855)	(0.119)	(0.162)	(0.393)
OVER	0.00187	0.0160	0.00200	0.825**	0.0861***
	(0.919)	(0.425)	(0.961)	(0.0218)	(0.00130)
UND	-3.017	-1.800	-7.754	-4.425	-0.911**
	(0.463)	(0.663)	(0.361)	(0.660)	(0.0328)
HC	-11.00**	-10.49	-1.086	-2.764	-1.081**
	(0.0308)	(0.173)	(0.949)	(0.862)	(0.0277)
OWN	-0.406*	-0.472**	0.617	-1.007*	-0.00276
	(0.0862)	(0.0398)	(0.618)	(0.0675)	(0.933)
IND	2.944	1.559	-0.124	2.864	0.0682
	(0.544)	(0.742)	(0.988)	(0.813)	(0.872)
MAR	-2.846	-5.226	-23.94	-16.98	-
	(0.435)	(0.188)	(0.153)	(0.168)	-
RET	-	0.660	-2.573	1.574	-
	-	(0.538)	(0.213)	(0.543)	-
NUIPO	-	0.124	-11.69**	0.969	-
	-	(0.967)	(0.0384)	(0.936)	-
MAIR	0.0371	0.0371	0.117	-0.0885	-
	(0.561)	(0.549)	(0.350)	(0.386)	-
BB	-	17.35**	19.94	-16.32	-
	-	(0.0480)	(0.144)	(0.454)	-
PC	-	8.288	16.11	-	-
	-	(0.209)	(0.249)	-	-
InAl	-	-	0.286*	-	-
	-	-	(0.0599)	-	-
R² Adj.	0.049	0.078	0.282	0.258	0.374
N	280	280	75	82	82