EARNINGS FORECASTS AND MARKET VALUATION OF PROFIT AND LOSS-MAKING FIRMS

A thesis submitted to The University of Manchester for the degree of
Doctor of Philosophy
in the Faculty of Humanities

2019

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ABSTRACT

This thesis consists of three empirical studies in market-based accounting research. In particular, this thesis focuses on earnings forecasts and the market valuation of profit-making and loss-making firms separately. Overall, these studies contribute to the understanding of forecasting earnings and the properties of the resulting estimates of both profit and loss persistence classifications in understanding the valuation of profit-making and loss-making firms.

In the first study, we investigate the possibility of building better cross-sectional models to forecast earnings for profit-making and loss-making firms. We first examine the accuracy of the Hou et al. (2012) (HDZ) model when generating one year-ahead earnings forecasts for profit and loss-making firms separately. We then develop an extended cross-sectional earnings forecasting model that contains all the financial statement items that are reported to be useful for forecasting earnings and the valuation of the firms in prior studies. Our findings suggest that it is better to develop a cross-sectional earnings forecasting model for profit and loss-making firms separately. Further, our expanded models outperform the HDZ models in terms of forecast accuracy for profit-making and loss-making firms generally.

In the second study, we examine the ability of one year-ahead earnings forecasts to capture the future prospects of profit-making firms. We use the extended cross-sectional earnings forecasting model developed in the first study to compute the earnings forecasts. We then introduce a classification scheme that assigns profit-making firms into two categories based on whether firms are expected to report a profit (persistent) or a loss (transitory) in the next year. Building on a simple earnings and book value valuation model, we find that our one year-ahead earnings forecasts have an incremental value over and above current earnings and book value in the valuation of profit-making firms. Furthermore, the relative valuation importance of our one year-ahead earnings forecasts, current earnings, and book value depends on profit persistence as defined by our earnings forecasts.

In the third study, we examine the ability of one year-ahead earnings forecasts to capture the future prospects of loss-making firms. We use the extended cross-sectional earnings forecasting model developed in the first study to compute the earnings forecasts. We then classify loss-making firms into persistent (negative earnings forecasts) and transitory (positive earnings forecasts) groups based upon the sign of the forecasted earnings. Using the Darrough and Ye (2007) valuation model as our baseline model and the sample of loss-making firms, we demonstrate that the earnings forecasts have incremental information content over and above other important value drivers that are used to indirectly capture a firm's future prospects. In addition, investors price our earnings forecasts conditional upon loss persistence. Further, investors price both current earnings and book value conditional upon loss persistence.

DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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DEDICATION

I dedicate this work to my parents and my brother Yasser, for their endless love, support, and encouragement.

ACKNOWLEDGEMENTS

I would like to express my appreciation and thanks to everyone, who provided me with full support and encouragement throughout the four years of my PhD journey, which has been a truly life-changing experience for me.

First and foremost, I would like to thank God for giving me strength, knowledge, and opportunity to undertake the PhD study, for letting me through all the difficulties and to persevere and complete it satisfactorily. I have experienced your blessing and guidance day by day. I promise to keep on trusting you for my future.

I would like to express my sincere gratitude to my supervisors, Professor Andrew Stark and Doctor Wei Jiang. Your immense knowledge, patience, support and motivation helped me to widen my research from various perspectives. Without your guidance and constant feedback this PhD would not have been achievable. I feel extremely fortunate and honoured to be your student and have the opportunity to work with you.

I gratefully acknowledge the funding source that made my PhD journey possible. I was provided with a scholarship from the University of Bahrain that covered my tuition fees and living expenses during the last four years. I am very honoured to be a member at the business college of the University of Bahrain.

A special thanks to my family for all their love and encouragement. For my parents who always believing in me and motivating me to achieve my dreams. Your prayers and all of the sacrifices that you have made were what sustained me thus far. And most of all for my beloved, supportive, and encouraging brother Yasser whose faithful support during this challenging period is so appreciated. I love you so much.

Last but not least, to my best friend, to my cousin who has been by my side throughout this experience at all times, to Zainab, thank you for believing in me, for listening to me all the times, and for your patience. Thank you for motivating me and helping in whatever way you could during this period.

Najeeba Alzaimoor
Manchester, August 2019

CHAPTER 1

INTRODUCTION

It is commonly acknowledged that a major change in accounting research took place in the 1960's when researchers started to concentrate on the usefulness of accounting information for decision makers. The fundamental purpose of accounting information is to provide various users of financial statements with information to help them to make decisions. The concept of value relevance is developed in the studies of Ball and Brown (1968) and Beaver (1968), who investigate the information content of accounting income numbers. The main purpose of value relevance studies that attracted the attention of accounting researchers is the investigation of the relationship between different financial statements items and stock market value with the aim of defining the potential usefulness of these items in equity valuation. Theory in Stark (1997) also suggests a connection between value relevance and the ability of financial statement items to predict themselves and/or other value relevant items, including earnings.

Prior valuation studies often employ a restricted version of the residual income-based valuation model in Ohlson (1995), where the market value of equity is defined as a linear function of current residual income and book value, use earnings instead of residual income, and add a constant term and an error term into the model to reflect variables omitted from the model. Most of these studies concentrate on examining the value relevance of current earnings and book value without classifying firms based on the sign of net income (i.e., profit and loss-making firms individually). Examples include Easton and Harris (1991), Barth et al. (1993), Kothari and Zimmerman (1995), Francis and Schipper (1996), Collins et al. (1997), Barth et al. (1998), and Barth et al. (1999). Other streams of research focus on investigating the value relevance of other items such as advertising expenditures, research and development expenditures, dividends, capital contributions, and capital expenditures (e.g., Hirschey, 1982; Hirschey and Weygandt, 1985; Hirschey and Spencer, 1992; Green et al., 1996; Akbar and Stark, 2003; Shah et al., 2009). As a consequence, most prior research does not consider the direct value relevance of earnings forecasts, that can be considered a direct proxy of firms' future prospects, in constructing valuation models, although scholars link earnings forecasting properties to valuation, based on theoretical valuation frameworks.

Notwithstanding, Hayn (1995) provides evidence that the earnings-return relation is significantly positive for profit-making firms, but is not significant for loss-making firms. Further, Burgstahler and Dichev (1997) and Collins et al. (1999) claim that book value is more important in valuing loss-making firms than in valuing profit-making firms. Subsequently, research has investigated value relevance issues on loss-making firms only (e.g., Joos and Plesko, 2005; Darrough and Ye, 2007; Wu et al., 2010; Jiang and Stark, 2013). Building on Hayn, (1995), Joos and Plesko (2005) then claim that the earnings of loss-making firms are not homogenous in terms of information content. In particular, Joos and Plesko (2005) build a loss reversal model to forecast loss persistence and provide evidence that the earnings response coefficient (ERC), as a proxy for the valuation role of losses, is higher for the transitory than for the persistent loss group. Darrough and Ye (2007) argue that many loss-making firms are not operationally distressed and identify important value drivers (such as non-recurring charges, research and development, growth strategy, and business sustainability) of this category of loss-making firms. Building on Darrough and Ye (2007), Jiang and Stark (2013) argue that the role of book value in valuing loss-making firms will vary according to how likely loss-making firms are to exercise their abandonment/adaptation option. They find that the valuation weight placed on book value is higher for those firms that are more likely to exercise their abandonment/adaptation option.

Another study uses profit-making firms as a benchmark to investigate their research questions on loss-making firms, because they are likely to be valued as going concerns (Ciftci and Darrough, 2015). Franzen and Radhakrishnan (2009) examine the variations in the valuation role of research and development expenditures between profit and loss-making firms. They classify profit and loss-making firms into three categories, which are high, medium and low research and development expenditures firms. They document that research and development expenditures are value relevant for loss-making firms across all types, but not for profit-making firms. Building on the role of adaptation in equity valuation in Burgstahler and Dichev (1997), Rabier (2018) finds that the valuation weight placed on current earnings (book value) is lower (higher) for those firms that are more likely to have to adapt in a merger setting, when using a sample of all targets and also using a sample of profit targets only. This suggests that the valuation roles of current earnings and book value are based on *current* profitability.

This thesis is structured around three essays in Chapters 2, 3, and 4. These essays investigate different research questions, have separate literature reviews and hypotheses, and use different datasets. This thesis aims to contribute to the prior literature first by investigating the possibility of developing better cross-sectional models for forecasting future earnings for profit and loss-making firms separately. Prior earnings forecasting studies suggest that analysts are overly optimistic in their forecasts, despite being widely used by researchers (e.g., Mendenhall, 1991; Brown, 1993; Francis and Philbrick, 1993; Dugar and Nathan, 1995; McNichols and O'Brien, 1997; Das et al., 1998; Lin and McNichols, 1998;

Easton and Sommers, 2007). Further, there are issues about the availability and coverage of analysts' forecasts (e.g., La Porta, 1996; Hong et al., 2000; Diether et al., 2002). Recent research on earnings forecasts shows that certain accounting fundamentals help to predict future earnings (e.g., Hou et al, 2012; Li and Mohanram, 2014). They estimate and investigate their models on all firms (i.e., profit and loss-making firms merged together). Some other studies focus on developing earnings prediction models for loss-making firms specifically (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015). These studies do not consider the evidence, documented in prior valuation studies, that loss-making firms are heterogeneous and that each category might need to be considered separately (Darrough and Ye, 2007; Jiang and Stark, 2013). Second, this thesis aims then to extend prior literature by investigating the direct value relevance of the model-based earnings forecasts for profit and loss-making firms separately. Finally, this thesis aims to contribute by investigating the information content of our earnings forecasts, current earnings and book value conditional upon whether the forecast reverses the sign of current profits or losses.

In the first essay, we develop cross-sectional models for forecasting future earnings for profit and loss-making firms separately. We first evaluate the performance of the Hou et al. (2012) (HDZ) model that is commonly used in the earnings forecasting literature, when used to generate one year-ahead earnings forecasts for profit and loss-making firms separately. In particular, we estimate the HDZ model using different samples: all firms, profit-making, loss-making, and different categories of loss-making firms. We divide loss-making firms into three types: (i) high research and development (*RD*) and non- dividend paying; (ii) dividend paying; and (iii) other firms. The forecasting accuracy of these three approaches are compared. We then develop an extended version of the HDZ model and examine the information content of the accounting items we introduce into the model. Further, we evaluate the performance of the extended model in generating one year-ahead earnings forecasts for profit and loss-making firms separately. In particular, we estimate the extended model using different samples: profit-making, loss-making, and different categories of loss-making firms. Further, we estimate the extended model using different estimation approaches. Finally, we compare the forecasting performance of the HDZ models with that of the expanded models. Our empirical results show that the HDZ model performs better when estimated on profit-making firms (all firms) than when estimated on all firms (loss-making firms or each category of loss-making firms) to generate the one year-ahead earnings forecasts for profit-making firms (loss-making firms), in terms of forecast accuracy. We also find that the additional accounting items in the expanded earnings forecasting models are useful for explaining the future earnings of profit-making and loss-making firms, and this explanatory power is conditional on the categories of loss-making firms. Furthermore, the expanded models outperform the HDZ models in terms of forecast accuracy for profit-making and loss-making firms (the latter when estimated using all firms).

In the second essay, we investigate the value relevance of earnings forecasts for profit-making firms. As mentioned earlier, the majority of the prior earning forecasting literature develops and tests their models on all firms (i.e., profit-making and loss-making firms pools). Therefore, we start by building a cross-sectional earnings forecasting model for profit-making firms. We first investigate the value relevance of earnings forecasts, using a simple valuation model including only earnings and book value as our baseline model. We then divide profit-making firms into persistent and transitory groups according to the sign of their forecasted earnings. A transitory (persistent) profit-making firm is one for which forecasted earnings are negative (positive). This allows us to investigate whether the valuation role of our earnings forecasts, current earnings and book value are conditional upon profit persistence. Our empirical results show that our earnings forecasts have an incremental value relevance over and above current earnings and book value in the valuation of profit-making firms. We find that our earnings forecasts are value relevant for persistent profit-making firms only. Finally, we report that the implied valuation weights placed on current earnings and book value vary according to profit persistence.

In the third essay, we investigate a similar research question to that in the second essay, this time on loss-making firms. We examine the value relevance of earnings forecasts for loss-making firms. The earnings prediction models constructed specifically for loss-making firms (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015) ignore accounting fundamentals that are shown to be useful for predicting the future earnings for all firms in the existing earnings forecasting literature, and ignore value drivers identified in the existing valuation literature on loss-making firms. As a consequence, we start by building a cross-sectional earnings forecasting model for loss-making firms. We first investigate the value relevance of earnings forecasts, using the valuation framework of Darrough and Ye (2007) as the baseline model. We then divide loss-making firms into transitory and persistent loss categories, based upon the sign of their forecasted earnings. A transitory (persistent) loss-making firm is one for which forecasted earnings are positive (negative). This allows us to investigate whether the valuation role of our earnings forecasts, current earnings and book value are conditional upon loss persistence. Our empirical results show that our earnings forecasts have an incremental value relevance over and above the value drivers identified by Darrough and Ye (2007) in the valuation of loss-making firms, and for both transitory and persistent loss-making firms.

Finally, we find that capital markets place more weight on current earnings (book value) for loss-making firms classified as transitory (persistent), relative to those classified as persistent (transitory).

Overall, this thesis provides evidence of the importance of both earnings forecasts, and the resulting estimates of both profit and loss persistence, in understanding the valuation of profit and loss-making firms. Further, the results contribute to future research that requires improved earnings forecasts. We provide evidence on the validity of our model-based earnings forecasts.

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CHAPTER 2

FORECASTING EARNINGS FOR PROFIT AND LOSS-MAKING FIRMS

2.1 INTRODUCTION

The goal of this chapter is to investigate whether the performance of the cross-sectional earnings forecasting model of Hou et al. (2012), henceforth HDZ, can be improved by adopting different approaches to estimating the model and/or extending the model by adding in additional variables that we argue have the potential to help predict earnings. First, we consider estimation approaches. We initially ask whether the HDZ model performs better when estimated on profit-making firms than when estimated on all firms (profit and loss-making firms), the approach adopted by HDZ, in generating one year-ahead earnings forecasts for profit-making firms. In similar fashion, we then ask whether the HDZ model performs better when estimated on loss-making firms only, or on each category of loss-making firms that are identified below, relative to when it is estimated on all firms, in generating one year-ahead earnings forecasts for loss-making firms. Our categories of loss-making firms are: (i) high research and development (*RD*) and non-dividend paying firms; (ii) dividend paying firms; and (iii) other firms.

Second, we ask whether accounting items other than those in the HDZ model, that are either documented in the existing earnings forecast literature as having the ability to predict earnings, or in the value relevance literature as having the ability to explain cross-sectional differences in firm market valuations, contain incremental information on future earnings for profit-making firms, loss-making firms, and of the three categories of loss-making firms. Consequently, we build expanded earnings forecasting models for profit-making and loss-making firms that include additional accounting fundamentals together with the variables in the HDZ model and examine whether the additional variables help in the prediction of future earnings.

Finally, we ask whether our expanded earnings forecasting models, when applied to loss-making firms, perform better when estimated separately for each of our three categories of loss-making firms than when estimated using all loss-making firms together, and whether it is possible to extend the HDZ model to make more accurate one year-ahead earnings forecasts for profit and loss-making firms using these additional variables.

Prior research documents that using individual firm time-series models to produce earnings forecasts features two problems: (i) survivorship bias; and (ii) large data requirements (Fama and French, 2000). This has led to the use of analysts' earnings forecasts in studies that require earnings forecasts. Although analysts' forecasts are widely used by researchers and practitioners, studies in the US provide evidence that analysts are overly optimistic in their forecasts (e.g., Mendenhall, 1991; Brown, 1993; Francis and Philbrick, 1993; Dugar and Nathan, 1995; McNichols and O'Brien, 1997; Das et al., 1998; Lin and McNichols, 1998; Easton and Sommers, 2007). Another issue concerning the use of analysts' forecasts is the availability and coverage of firms (e.g., La Porta, 1996; Hong et al., 2000; Diether et al., 2002).

HDZ develop a cross-sectional model using lagged information to make one, two, three, four and five years-ahead earnings forecasts. Their model builds on the models in Fama and French (2000, 2006), Hou and Robinson (2006), and Hou and van Dijk (2011). They use their model-based earnings forecasts to estimate the implied cost of capital (ICC). They show that their model-based earnings forecasts can outperform the consensus analysts' earnings forecasts in this context. In particular, they find that their model-based earnings forecasts have lower forecast bias, and lead to higher estimates of earnings response coefficients (ERC), than analysts' earnings forecasts. The HDZ model has been used widely in recent research on accounting-based valuation (Chang et al., 2012), and the ICC (e.g., Lee et al., 2011; Patatoukas, 2011; Rusticus, 2011; Jones and Tuzel, 2012).

Other studies have developed cross-sectional earnings forecasting models. Ashton and Wang (2013) build a different cross-sectional model to make one year-ahead earnings forecasts in the context of estimating the ICC. They do not examine the properties of their model-based earnings forecasts compared to either the properties of the HDZ model-based earnings forecasts or analysts' earnings forecasts, however. Li and Mohanram (2014) construct two alternative cross-sectional earnings forecasting models (what they refer to as their EP and RI models) to the HDZ model, and find that both models outperform the HDZ model.

Given the growing attention to the HDZ model, it is useful to examine how it is estimated. In particular, it is useful to examine whether the model gives more accurate estimates if the estimation of the model takes place on profit-making firms, loss-making firms, and categories of loss-making firms separately. This is so for the following reasons. First, prior literature (e.g., Hou et al., 2012; Ashton and Wang, 2013, Li and Mohanram, 2014) estimate and test out their cross-sectional models on all firms (i.e., profit and loss-making firms). Some of these models add an indicator variable for negative earnings to take into account the differences between profit-making and loss-making firms. Nonetheless, some studies build earnings forecasting models for loss-making firms only (i.e., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015), suggesting that these researchers do not believe it best to build an earnings forecasting model for all firms and then apply it loss-making firms.

Second, the valuation literature on valuing loss-making firms suggests that: (i) not all loss-making firms are financially distressed; and (ii) there are different categories of loss-making firms (Darrough and Ye, 2007; Jiang and Stark, 2013) that could need to be considered individually when estimating earnings forecasting models. The prior literature on forecasting earnings for loss-making firms does not consider the separate estimation of earnings forecast models on the various categories of loss-making firms, however.

Third, recent studies find that the random walk model performs better than the HDZ model in terms of forecast accuracy, bias, and estimates of ERCs. Further, HDZ find that their models produce larger forecast errors for firms without analysts' coverage, where the requirement for an earnings forecasting model is more important (Gerakos and Gramacy, 2013; Li and Mohanram, 2014).

Finally, the earnings prediction models developed for all firms (e.g., Hou et al., 2012; Ashton and Wang, 2013, Li and Mohanram, 2014), or specifically for loss-making firms (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015), exclude accounting fundamentals that are shown to contain information about firms' future earnings in the existing earnings forecast, or in the value relevance literature. Ignoring value relevant variables could be potentially important given the generic connection between value relevance and predictive ability established by Ohlson (2001).

Consequently, we extend the HDZ model by adding in all these accounting fundamentals to estimate one year-ahead earnings forecasts for profit-making and loss-making firms. We examine the performance of the HDZ model-based one year-ahead earnings forecasts where the model is estimated on profit-making and loss-making firms separately. We then examine the usefulness of the additional accounting items in the expanded forecasting models and the performance of these models when used to predict future earnings for profit-making and loss-making firms. Finally, we compare the performance of the HDZ and expanded models for profit-making and loss-making firms.

Our sample includes 115,658 firm–year observations, of which 88,408 are profit-making firm–year observations, and 27,243 are loss-making firm–year observations, for US firms that are listed on NYSE, Amex, or Nasdaq between 1971 and 2015. To examine whether the HDZ model performs better when estimated on profit-making firms (loss-making firms or each category of loss-making firms) than using all firms to generate one year-ahead earnings forecasts for profit-making firms (loss-making firms), we first generate earnings forecasts from each model. We then compute the forecast accuracy of the model-based earnings forecasts and compare the median forecast accuracy for profit and loss-making firms individually. We report that the one year-ahead earnings forecasts generated by the HDZ model estimated on profit-making firms are more accurate than the earnings forecasts generated by the HDZ model estimated on all firms. For loss-making firms, we report that the earnings forecasts generated by the HDZ model estimated using all firms are more accurate than earnings forecasts from the HDZ model estimated on either loss-making firms alone or on each category of loss-making firms separately.

To examine the performance of our expanded earnings forecasting models, we estimate them in two basic ways. The first uses the OLS approach to estimate coefficients and the second uses the forward stepwise approach. We find that many of the additional accounting items we include in the expanded models are useful for explaining one year-ahead earnings for profit and loss-making firms, and their explanatory power varies across the categories of loss-making firms.

To examine whether our expanded earnings forecasting model performs better when estimated for each category of loss-making firms than when estimated using all loss-making firms together, we compute the forecast accuracy of the model-based earnings forecasts and compare the median forecast accuracy. We report that when our expanded model is estimated separately for each category of loss-making firms, it generates more accurate one year-ahead earnings forecasts for loss-making firms overall than when the model is estimated on all loss-making firms.

To examine whether extending the HDZ model generates more accurate one year-ahead earnings forecasts for profit-making and loss-making firms, we compare the median forecast accuracy of all alternative model-based earnings forecasts for profit-making and loss-making firms individually. For profit-making firms, we report that the expanded model estimated: (i) on profit-making firms; and (ii) using the forward stepwise approach outperforms all the other models in terms of the forecast accuracy. Further, for loss-making firms, we report that the expanded model estimated: (i) on each category of loss-making firms separately; and (ii) using the forward stepwise approach outperforms all the other models in terms of the forecast accuracy.

Overall, our main results are robust to alternative choices regarding the definition of forecast accuracy, sample specifications, and estimations of the cross-sectional earnings models. The results hold when we use cross-sectional models to generate the two year-ahead earnings forecasts rather than the one year-ahead earnings forecasts. The results also hold when we use subsamples of loss-making firms with analysts' coverage, and also for loss-making firms without analysts' coverage, where the need for a forecasting model is crucial. Further, the results also hold when we estimate our expanded earnings forecasting model on all firms to generate the one year-ahead future earnings for profit-making firms. The results for loss-making firms are different from the main findings. In particular, we find that the expanded model estimated on all firms and using the forward stepwise approach provides the most accurate earnings forecasts for loss-making firms. Nonetheless, the results still support extending the HDZ model to produce improved earnings forecasts for loss-making firms.

Our study makes several contributions to the research literature that examines the forecasting of earnings. First, the majority of studies in the prior literature focus on testing models estimated either on all firms together, or a few studies concentrate on estimating forecasting models for loss-making firms only. This study examines the performance of models estimated not only on all firms, or on loss-making firms alone, but also on profit-making firms and three categories of loss-making firms. Our results suggest that allowing earnings forecasting models to be separately estimated on these different sub-samples can be useful in terms of increasing median forecast accuracy.

Second, we extend the prior earnings forecast literature by providing comprehensive earnings forecasting models that can be used to generate superior one year-ahead earnings forecasts for both profit-making and loss-making firms. We provide evidence that the majority of accounting items reported: (i) in the existing earnings forecast literature as useful in predicting earnings; or (ii) in the value relevance literature as helpful in explaining cross-sectional variations in firms' market value are useful for predicting next year earnings for both profit and loss-making firms. We find that our expanded model outperforms the HDZ model in terms of forecast accuracy for profit and loss-making firms generally. As a consequence, our expanded earnings forecasting models can be used in a variety of contexts, such as in valuation and ICC research.

The rest of the paper is organized as follows. Section 2.2 explains the relevant literature and develops the hypotheses. Section 2.3 explains the research design, including the earnings forecasting models for profit and loss-making firms. Section 2.4 explains the data and sample selection. Section 2.5 discusses the main empirical results, including the main results and robustness checks. Section 2.6 concludes.

2.2 RELEVANT PRIOR STUDIES AND HYPOTHESES DEVELOPMENT

Prior literature includes earnings forecasts in analyses investigating a variety of contexts (for example, estimating marginal tax rates (e.g., Graham,1996; Blouin et al., 2010), anomalies (e.g., Wu and Zhang, 2011), and the ICC (e.g., Hou et al., 2012; Lee et al., 2011; Li and Mohanram, 2014)). In the past, the main source of earnings forecasts was from time-series analysis of individual firm earnings, using random walk and random walk with drift approaches. This approach can only be applied to a restricted number of firms with enough historical data (for example, at least 20 years of data could be demanded). Nonetheless, using 20 observations of annual earnings to estimate time-series models still generates inaccurate earnings forecasts, despite 20 years being considered a long time period for which to require data. Requiring such a period of data might also lead to a survivor bias problem (Fama and French, 2000). Further, analysts' forecasts produce higher levels of accuracy relative to time-series forecasts (e.g., Fried and Givoly, 1982; Brown et al., 1987; O'Brien, 1988; Wiedman, 1996; Walther, 1997). As a consequence, analysts' earnings forecasts have become the main source of earnings forecasts and are commonly used in prior studies requiring earnings forecasts.

Although analysts' forecasts are commonly used by researchers and practitioners, they also have problems. First, there is extensive evidence in the US that analysts' earnings forecasts are overly optimistic. This might lead to serious problems in decision-making (e.g., Mendenhall, 1991; Brown, 1993; Francis and Philbrick, 1993; Dugar and Nathan, 1995; McNichols and O'Brien, 1997; Das et al. 1998; Lin and McNichols, 1998; Easton and Sommers, 2007). Second, although IBES analysts' earnings forecasts data covers the period after the late 1970s, it has few earnings forecasts for small and financially distressed firms (e.g., La Porta, 1996; Hong et al., 2000; Diether et al., 2002). In this context, recent study, however, reports that the superiority of analysts' earnings forecasts over time-series earnings forecasts is not applicable for small and young firms (Bradshaw et al., 2011). Finally, IBES analyst data does not provide earnings forecasts beyond two year-ahead, or long-term growth forecasts, for many firms with analyst information, particularly in the early years (Hou et al., 2012).

Given the above, attention has moved to developing cross-sectional earnings forecasting models. Recent studies (e.g., Hou et al., 2012; Ashton and Wang, 2013; Li and Mohanram, 2014) report that cross-sectional models provide relatively useful forecasts for both unscaled earnings and profitability (scaled earnings). The major advantage of these cross-sectional models is that they solve the problems associated with using earnings forecasts that are generated either from the time-series approach and/or from those made by analysts. In particular, cross-sectional models allow the generation of earnings forecasts for firms that are not covered by analysts, and for firms without a long time series of earnings observations (Hou et al., 2012; Gerakos and Gramacy, 2013). Further, cross-sectional models allow the inclusion of firm characteristics, such as accruals and dividends, that contain useful information about future profitability (e.g., Fama and French, 2006; Hou et al., 2012).

HDZ develop a cross-sectional model to generate one, two, three, four and five years-ahead earnings forecasts. Their model is an extension of the models found in Fama and French (2000, 2006), Hou and Robinson (2006), and Hou and van Dijk (2011), and uses earnings, total assets, accruals, dividend payments, a dummy variable for negative current earnings, and a dummy variable for making dividend payments in the current year as predictive variables. They use the earnings forecasts generated by their model to estimate the ICC for a sample of US firms over the period from 1968–2008. They find that the earnings forecasts generated by their model have a lower forecast bias and provide a higher ERC than consensus analysts' earnings forecasts, although they also find that the earnings forecasts generated by their model are generally less accurate than consensus analysts' earnings forecasts. Nonetheless, they find that the earnings forecasts generated by their model perform better than analysts' earnings forecasts for firms with a poorer information environment (i.e., firms that are smaller, younger, firms with higher idiosyncratic volatility, lower analyst coverage, more volatile earnings, poorer accruals quality, or lower past returns).

Ashton and Wang (2013) develop a different cross-sectional model to forecast one year-ahead earnings. The main focus of their study is to estimate the ICC and the long-run earnings growth rate for US industrial sectors over the period 1975–2006. They regress next year's earnings on current earnings, current and lagged book values of equity, and current and lagged market prices of equity to produce an earnings forecasting model. Ashton and Wang (2013) do not investigate the characteristics of their model-based earnings forecasts compared with the earnings forecasts generated by the HDZ model and consensus analysts' earnings forecasts. Harris and Wang (2013), however, employ the Ashton and Wang (2013) model to produce one to three years-ahead earnings forecasts and compare them to those generated by the HDZ model, and also to consensus analysts' earnings forecasts. They report that the three earnings forecasts are similar in terms of accuracy. Further, they find that the HDZ and the Ashton and Wang (2013) models produce one year-ahead forecasts that are unbiased, while consensus analysts' earnings forecasts show very significant upwards bias. Additionally, they find that the two model-based earnings forecasts have more significant information content about firms' future earnings. Although there is little difference in the forecast bias, accuracy and information content about future earnings when comparing the two model-based forecasts, the overall results indicate that the Ashton and Wang (2013) model outperforms the HDZ model in predicting the future earnings.

Li and Mohanram (2014) develop two alternative models to the HDZ model to generate one to five years-ahead earnings forecasts. First, they develop what they refer to as the EP model that employs earnings, a dummy variable for negative earnings, and its interaction term with earnings as explanatory variables. Second, they develop the RI model, based on the residual income model from Feltham and Ohlson (1996), that employs two additional explanatory variables to those included in the EP model, which are the book value of equity and total accruals. As in HDZ, they use the generated earnings forecasts from these two models to estimate the ICC for a sample of US firms over the period from 1969–2012. They compare the two models with the HDZ model in terms of forecast bias, accuracy, ERC and correlations of ICC proxies with future returns and risk factors. They find that both models are superior to the HDZ model.

The studies discussed above do not discriminate between profit-making and loss-making firms when estimating their earnings forecasting models, although some of them include a dummy variable for negative earnings in the earnings forecasting models and interact this variable with earnings, allowing the constant and the coefficient of earnings in the model to vary between profit-making and loss-making firms. Prior literature provides evidence that profits are more useful in forecasting future earnings than losses (Hayn, 1995; Collins et al., 1999), however. As a result, it might be more difficult to predict the future earnings of loss-making firms than of profit-making firms.

Some studies focus solely on predicting the future profitability of loss-making firms. Joos and Plesko (2005) develop a loss reversal probability model to classify loss-making firms into firms that are likely to continue reporting losses and firms that are likely to return to profitability. The main focus of their study is to investigate the valuation role of earnings for loss-making firms. They find that accounting information is useful for predicting the probability of loss reversal, and report also that the ERC varies according to the probability of loss reversal. Particularly, they find that the ERC is positive for loss-making firms likely to return to profitability and becomes negative over time for firms with persistent losses as a consequence of engaging in RD activities. Li (2011) investigates investors' expectations of loss persistence. He proposes a model to predict earnings in the following quarter for loss-making firms, based on the model in Joos and Plesko (2005). He uses the generated earnings forecasts as a proxy of the expected persistence of loss-making. Li (2011) finds that market prices do not completely capture the information in the earnings forecasts. Further, he finds that the forecast errors of his model are smaller than for two random walk models. Jiang et al. (2015) use a similar model to the models in Joos and Plesko (2005) and Li (2011) to investigate whether UK stock market prices fully reflect the estimated loss reversal probability.

Although prior studies on earnings forecasting for loss-making firms (i.e., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015) allow for distinctions to be made between different categories of loss-making firms (i.e., the losses of which are persistent or transitory), prior studies on the valuation of loss-making firms make different distinctions. For instance, Darrough and Ye (2007) distinguish loss-making firms based on non-recurring charges, RD, growth strategy and sustainability. Further, Jiang and Stark (2013) provide evidence that the role of book value is different in valuing various categories of loss-making firms. They use RD and dividend payments as indicators for whether a loss-making firm is unlikely to be in financial distress.

A number of studies use the HDZ model in different contexts, such as accounting-based valuation (Chang et al., 2012), and ICC (e.g., Lee et al., 2011; Patatoukas, 2011; Rusticus, 2011; Jones and Tuzel, 2012). Given the growing attention to the HDZ model and based on the arguments above, it could be useful to estimate the model on profit-making firms, loss-making firms, and categories of loss-making for the following reason. First, HDZ estimate their model on all firms (i.e., profit-making and loss-making firms) and include a dummy variable for negative earnings. As a consequence, the coefficients of the predictive variables in their model are fixed across profit-making and loss-making firms. Second, developing earnings forecasting models that generate the most accurate future earnings forecasts is not the main purpose of the prior literature on forecasting earnings for loss-making firms. This literature uses the generated earnings forecasts only as a tool to classify losses based on their expected persistence (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015). Third, the prior literature on forecasting earnings for loss-making firms does not consider the different possible categories of loss-making firms in the prior literature on the valuation of loss-making firms.

Our study considers the possibility of developing earnings forecasting models that generate more accurate earnings forecasts for profit and loss-making firms. First, we ask whether the HDZ model performs better on profit-making firms when estimated using only profit-making firms rather than using all firms. Second, we ask whether the HDZ model performs better on loss-making firms when estimated on all loss-making firms, or on each category of loss-making firms separately, than when estimated on all firms. We classify loss-making firms into three categories, broadly based upon Jiang and Stark (2013): (i) high RD and non-dividend paying firms; (ii) dividend paying firms; and (iii) other firms. The first two categories are less likely to be in financial distress compared with the third category.

Profits are more useful for predicting future earnings than losses (Hayn, 1995; Collins et al., 1999). Therefore, we expect that the prediction of the future earnings for profit-making firms is relatively straightforward. In particular, we expect that the HDZ model estimated on profit-making firms will outperform the HDZ model estimated on all firms in generating one year-ahead earnings forecasts for profit-making firms. Based on the prior studies on earnings forecasting for loss-making firms (i.e., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015) and the prior studies on the valuation of loss-making firms (i.e., Darrough and Ye, 2007; Jiang and Stark, 2013), we might expect that the HDZ model will perform better when estimated on loss-making firms or on each category of loss-making firms separately in generating one year-ahead earnings forecasts for loss-making firms. In particular, we might expect that the HDZ model estimated using all firms will be less accurate than the HDZ model estimated on loss-making firms or on each category of loss-making firms separately.

The discussions above result in the following hypotheses, expressed in null form:

H1(a): in terms of forecast accuracy, the HDZ model estimated on profit-making firms does not outperform the HDZ model estimated on all firms in generating one year-ahead earnings forecasts for profit-making firms; and

H1(b): in terms of forecast accuracy, the HDZ model estimated on loss-making firms, or on each category of loss-making firms separately, does not outperform the HDZ model estimated on all firms in generating one year-ahead earnings forecasts for loss-making firms.

The alternative hypotheses are that the HDZ model estimated on profit-making firms is more accurate than the HDZ model estimated on all firms in generating one year-ahead earnings forecasts for profit-making firms; and that the HDZ model estimated on loss-making firms, or on each category of loss-making firms separately, is more accurate than the HDZ model estimated on all firms in generating one year-ahead earnings forecasts for loss-making firms.

The second area of study is whether accounting variables that are documented in either the prior earnings prediction literature or as value relevant in the value relevance literatures (other than those already in the HDZ model), are useful for predicting one year-ahead earnings for profit and loss-making firms. We consider variables previously found to be value relevant because of the connection between value relevance and predictive ability found in Ohlson (2001). Recent studies by Gerakos and Gramacy (2013) and Li and Mohanram (2014) provide evidence that RW model that simply sets the earnings forecast to equal current earnings outperforms the HDZ model in terms of forecast accuracy, bias, and estimates of the ERC in the full sample, a small firms sample, and a sample of firms without analysts' coverage. Further, they report that the forecast errors are larger for firms without analysts' coverage where the requirement for an earnings forecasting model is more important. In addition, recent studies develop alternative earnings forecasting models to the HDZ model and find that their models outperform the HDZ model in terms of forecast bias, accuracy, and estimates of the ERC (Ashton and Wang, 2013; Harris and Wang, 2013; Li and Mohanram, 2014). These previous earnings forecasting models are not considered comprehensive models, however, as they use different variables than each other and exclude the majority of the financial statement items that are proposed in the value relevance literature.

To test our second concern, we examine the predictive power of financial statement items other than those in the HDZ model. Therefore, we extend the HDZ model by including financial statement items that are documented to be useful in the valuation and earnings prediction literature, for either all firms or for loss-making firms only, in the UK and the US. We add measures of a firm's size and a firm's growth, measures of the incidence and frequency of previous profits (losses), the firm's stability and firm conservatism measures, and other measures, into the HDZ model. Based on the arguments above, we expect that at least some of these accounting items will be helpful for explaining one year-ahead earnings for profit-making and loss-making firms. In addition, based on the prior valuation literature for loss-making firms, we expect that the explanatory power of those accounting items will vary across the various categories of loss-making firms defined above.

The discussions above lead to the following hypotheses, stated in null form:

H2(a): the financial statement items in the extended model other than those in the HDZ model are not useful for explaining one year-ahead earnings for profit-making firms;

H2(b): the financial statement items in the extended model other than those in the HDZ model are not useful for explaining one year-ahead earnings for loss-making firms; and

H2(c): the explanatory power of the financial statement items in the extended model other than those in the HDZ model is the same across the three categories of loss-making firms.

The alternative hypotheses are that the financial statement items in the extended model other than those in the HDZ model are useful for explaining one year-ahead earnings for profit-making firms; the financial statement items in the extended model other than those in the HDZ model are useful for explaining one year-ahead earnings for loss-making firms; and the explanatory power of the financial statement items in the extended model other than those in the HDZ is different across the various categories of loss-making firms.

As mentioned above, prior literature provides evidence that loss-making firms are not homogeneous. Estimating forecasting models as if they are homogeneous could lead to mis-specified forecasting models in the same way that assuming profit-making and loss-making firms are homogeneous with respect to earnings forecasting models. Thus, we expect that the forecasting accuracy of our expanded model will be different according to how the model is estimated on loss-making firms. In particular, if the null hypotheses of H2(b) and H2(c) are rejected in favour of their respective alternative hypotheses, we expect that the forecast accuracy of our expended model will be higher when the models are estimated using each category of loss-making firms separately than when the model is estimated using all loss-making firms.

This leads to the following null hypothesis:

H3: in terms of forecast accuracy, expanded models estimated on each category of loss-making firms separately do not outperform the expanded model estimated on all loss-making firms.

The alternative hypothesis is that the expanded models estimated on each category of loss-making firms separately are more accurate than the expanded model estimated on all loss-making firms.

Our final area of study concerns the possibility of extending the HDZ model to predict one year-ahead earnings more accurately for both profit and loss-making firms. If the null hypothesis of H2(a) is rejected in favour of the alternative hypothesis, we expect that it is possible to extend the model of HDZ to generate more accurate future earnings forecasts for profit-making firms. In particular, we expect that the extended model estimated on profit-making firms is more accurate than the HDZ models estimated either using all firms or profit-making firms alone for predicting one year-ahead earnings for profit-making firms. Based on the arguments above, we also expect that the extended model estimated on each category of loss-making firms separately is more accurate than the HDZ model estimated on various possible samples (i.e., all firms, loss-making firms only, and each category of loss-making firms separately) and the expanded model estimated on loss-making firms, if the null hypotheses of H2(b), H2(c), and H3 are rejected in favour of their respective alternative hypotheses.

This leads to the following null hypotheses:

H4(a): in terms of forecast accuracy, the expanded model estimated on profit-making firms does not outperform the HDZ models that are estimated on either all firms or profit-making firms alone; and

H4(b): in terms of forecast accuracy, the expanded model estimated on each category of loss-making firms separately neither outperforms the HDZ models estimated on various possible samples nor the expanded model estimated on loss-making firms.

The alternative hypotheses are that the expanded model estimated using profit-making firms outperforms the HDZ models estimated either on all firms or on profit-making firms, in terms of forecast accuracy; and the expanded model estimated on each category of loss-making firms separately outperforms both the HDZ models estimated on various possible samples and the expanded model estimated on loss-making firms, in terms of forecast accuracy.

2.3 METHODOLOGY

Our methodology has three parts. First, we describe the earnings forecasting models used to generate one year-ahead earnings forecasts for profit-making and loss-making firms. We start with the HDZ model and then we develop an expanded version of their model. Second, we describe our approach to forecasting one year-ahead earnings. Third, we describe our approach to evaluating the performance of these models in terms of forecast accuracy.

2.3.1 Developing the Earnings Forecasting Models for Profit and Loss-Making Firms

2.3.1.1 The Hou et al. (2012) Model Estimated on an 'All Firms' Sample

As mentioned previously, we start from the HDZ earnings forecasting model that is commonly used in recent accounting research. The model is based on an extension of the cross-sectional profitability models in Fama and French (2000, 2006), Hou and Robinson (2006), and Hou and van Dijk (2011). Their model is specified as:

$$Forecast_{t+1} = \alpha_0 + \alpha_1 TA_t + \alpha_2\, Div_t + \alpha_3\, DivDum_t + \alpha_4\, NIEI_t + \alpha_5\, NegE_t + \alpha_6\, Accruals_t \quad (1)$$

where: $Forecast_{t+1}$ is earnings before extraordinary items for year $t+1$ and running a regression of it on the variables in the model. Forecasts are generated by applying the model to firms out of sample. For the independent variables in the model above, ; TA_t is total assets in year t; Div_t is the amount of any dividend payment in year t; $DivDum_t$ is an indicator variable equal to one for firms that pay dividends in year t and otherwise equals zero; $NIEI_t$ is earnings before extraordinary items in year t; $NegE_t$ is a dummy variable equal to one for firms that report negative earnings in year t and equal to zero otherwise; and $Accruals_t$ is total accruals in year t.

The model coefficients are estimated by running regressions of *NIEI* on the independent variables for periods up to time t-1, and then the model coefficients are applied to data from time t to produce earnings forecasts for time $t+1$. In HDZ, this model is estimated on all firms (i.e., both profit-making and loss-making firms). In addition, we use equation (1) to forecast profitability (earnings and other variables in equation (1), except *DivDum*, are scaled by opening total assets (*OTA*)), as in the prior studies (e.g., Fama and French, 2000; Li, 2011), while HDZ forecast dollar earnings. They provide similar results when scaling equation (1) by OTA as a part of their robustness checks. When equation (1) is estimated, the model includes industry-specific dummies, using SIC industry classifications.

2.3.1.2 The Hou et al. (2012) Model using Profit and Loss-Making Firms Samples

We then estimate the HDZ model on profit-making and loss-making firms separately. In particular, we estimate equation (1) (and predict one year-ahead earnings) on profit-making firms. Further, we estimate equation (1) on loss-making firms, or each category of loss-making firms separately, to predict one year-ahead earnings for loss-making firms. As mentioned above, we divide loss-making firms into three categories: (ii) high RD and non-dividend paying firms: (ii) dividend paying firms; and (iii) other firms. A firm is classified as a high RD firm if a firm's RD is above the median of RD for loss-making firms with positive

RD for year *t*, following Jiang and Stark (2013). For these estimations, *NegE* is excluded from the HDZ model. This leads to the following model:

$$Forecast_{t+1} = \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 Accruals_t \quad (2)$$

When estimated, the model also includes industry-specific dummies, using SIC industry classifications. All variables in equation (2) are deflated by OTA except *DivDum.*

2.3.1.3 The Expanded Earnings Forecasting Models

We then extend the model in equation (2). Our approach is to consider all financial statement items that are shown to have useful information content in prior studies either to forecast earnings, or to value all firms or loss-making firms specifically. Therefore, we add all these additional drivers to equation (2), which allows us to build a comprehensive earnings forecasting model and to test the ability of these additional variables to help in explaining one year-ahead earnings for profit-making and loss-making firms.

We classify the variables added to equation (2) into four types of measures. First, we add size and firm growth measures. Following the earnings forecasting models of Fama and French (2000) and Li (2011), we add $Size_t$ - the log of market value of equity. Following the earnings forecasting models of Fama and French (2006) and So (2013), we add BM_t, the ratio of book value to the market value of equity. Following the valuation models of loss-making firms developed in Darrough and Ye (2007) and Jiang and Stark (2013), we add the sales growth ratio (SGR_t); a dummy variable capturing whether the sales growth ratio is negative

(*NegSGR*$_t$); change in sales (*SG*$_t$); and a dummy capturing whether the change in sales is negative (*NegSG*$_t$).

Second, we add measures capturing the incidence and frequency of previous profit-making (loss-making). We add two variables that give an indication about the past profit history. For loss-making firms, *FirstLoss*$_t$ is an indicator variable equal to 1 if the current year's loss is the first in a sequence, and otherwise zero, following Joos and Plesko (2005) and Li (2011). *LossSeq*$_t$ is a count of the number of sequential losses over the past five years before the current loss, following Joos and Plesko (2005). We add similar variables into the model estimated on profit-making firms only. In particular, we add *FirstProfit*$_t$, - an indicator variable equal to 1 if the current year's profit is the first in a sequence, and otherwise zero; and *ProfitSeq*$_t$ is a count of the number of years of sequential profits over the past five years before the current profit-making year.

Third, we add measures of a firm's stability and the degree of a firm's accounting conservatism. Following the loss reversal model of Joos and Plesko (2005), we include *DivStop*$_t$ an indicator variable equal to 1 if a firm stops paying dividends in the current year, and 0 otherwise. The sum of cash and short-term investments (*Cash*$_t$), capital contributions (*CC*$_t$), lagged capital contributions (*LagCC*$_t$); cash proceeds from issuing debt in the current year (*DbtIss*$_t$); and research and development expense (*RD*$_t$) are added following the loss-making firm valuation model of Darrough and Ye (2007). Further, the increase in the long-term debt (*IncLTD*$_t$) is included, following Jiang and Stark (2013).

Finally, we add various other measures. The book value of equity (*BV*$_t$); extraordinary items (*EI*$_t$); capital expenditures (*CE*$_t$) are added following the loss-making firm valuation model of Jiang and Stark (2013). The absolute value of negative special items (*AbsNegSpI*$_t$), following Darrough and Ye (2007), and total special items (SpI_t), are added to the model following Li (2011).

Therefore, we estimate the following expanded earnings forecasting model for profit-making firms:

$$\begin{aligned} Forecast_{t+1} = {} & \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 Accruals_t + \\ & \alpha_6 Size_t + \alpha_7 BM_t + \alpha_8 SGR_t + \alpha_9 NegSGR_t + \alpha_{10} SG_t + \alpha_{11} NegSG_t + \\ & \alpha_{12} FirstProfit_t + \alpha_{13} ProfitSeq_t + \alpha_{14} DivStop_t + \alpha_{15} Cash_t + \alpha_{16} CC_t + \\ & \alpha_{17} LagCC_t + \alpha_{18} DbtIss_t + \alpha_{19} RD_t + \alpha_{20} IncLTD_t + \alpha_{21} BV_t + \alpha_{22} EI_t + \\ & \alpha_{23} CE_t + \alpha_{24} AbsNegSpI_t + \alpha_{25} SpI_t \end{aligned} \tag{3}$$

and we estimate the following expanded earnings forecasting model for loss-making firms, (and for each category of loss-making firms):

$$\begin{aligned} Forecast_{t+1} = {} & \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 Accruals_t + \\ & \alpha_6 Size_t + \alpha_7 BM_t + \alpha_8 SGR_t + \alpha_9 NegSGR_t + \alpha_{10} SG_t + \alpha_{11} NegSG_t + \\ & \alpha_{12} FirstLoss_t + \alpha_{13} LossSeq_t + \alpha_{14} DivStop_t + \alpha_{15} Cash_t + \alpha_{16} CC_t + \\ & \alpha_{17} LagCC_t + \alpha_{18} DbtIss_t + \alpha_{19} RD_t + \alpha_{20} IncLTD_t + \alpha_{21} BV_t + \alpha_{22} EI_t + \\ & \alpha_{23} CE_t + \alpha_{24} AbsNegSpI_t + \alpha_{25} SpI_t \end{aligned} \tag{4}$$

We first estimate equations (3) and (4) using OLS. The regressions are estimated after deflating all variables (except for *BM, Size, FirstProfit (FirstLoss), ProfitSeq (LossSeq), DivDum*, *DivStop*, *SGR*, *NegSGR*, and *NegSG*) by OTA. The estimations of the equations are performed after including industry-specific dummies based on SIC industry classifications. As with equation (2), we estimate equation (3) on profit-making firms and equation (4) on loss-making firms or on each category of loss-making firms separately.

2.3.1.4 Estimating the Expanded Earnings Forecasting Models using the Stepwise Approach

Given that we have a big set of predictors for equations (3) and (4), some of which are likely to overlap in terms of information content for future earnings, we also estimate these equations using the forward stepwise regression approach using a 1% significance level, following Gerakos and Gramacy (2013). As in using the OLS approach, the regressions are estimated after deflating all variables (except for *BM, Size, FirstProfit (FirstLoss), ProfitSeq (LossSeq), DivDum, DivStop, SGR, NegSGR*, and *NegSG*) by OTA. The estimations of the equations are performed after including industry-specific dummies based on SIC industry classifications. We again we estimate equation (3) on profit-making firms and equation (4) on loss-making firms or on each category of loss-making firms separately. As a consequence, we have four cross-sectional earnings forecasting models that are used to predict the next year's earnings for profit-making firms, while we have seven cross-sectional earnings forecasting models that are used to predict the next year's earnings for loss-making firms.

2.3.2 Forecasting One Year-ahead Earnings

To estimate the cross-sectional earnings forecasting models for *t+1*, we follow the approach of Hou et al. (2012) and Li and Mohanram (2014). We estimate our cross-sectional earnings forecasting models (equations (1) - (4)) using all available observations over the past 10 years, for each year between 1971 to 2015. We then multiply the estimated coefficients by the variables for firm *i* for year *t* to produce the forecast of earnings for year *t+1*. For example, if 2003 is year *t*, we use data from 1993 to 2002 (years *t-10* to *t-1*) to estimate the coefficients that will be used to predict the earnings for firms in 2004 (year *t+1*), using firm information for 2003 (year *t*). This method only requires that firms have non-missing values for all explanatory variables to forecast their future earnings.

2.3.3 Evaluating the Cross-Sectional Earnings Forecasting Models

We evaluate the performance of the cross-sectional earnings models (equations (1)-(4)) in terms of forecast accuracy. We define the forecast accuracy as the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by OTA. We use income before extraordinary items from Compustat to define the actual earnings. Further, the best earnings forecasting model is the one which produces the most accurate earnings forecasts. For an earnings forecasting model, accuracy is defined as the median of the forecast accuracy for all forecasts made.

We use two nonparametric tests to investigate whether the median and the distribution of forecast accuracy (the sign test and the Wilcoxon sign rank tests respectively) of the best earnings forecasting model are different from the median and the distribution of forecast accuracy of the other earnings forecasting models.

To test our first hypotheses on whether the HDZ model performs better when estimated on profit-making firms rather than when estimated on all firms, we compare the median of forecast accuracy of the two models and apply the median and distribution tests to investigate whether there are significant differences between the two models. Second, to test whether the HDZ model performs better when estimated on loss-making firms or on each category of loss-making firms separately than when estimated on all firms, we compare the median of forecast accuracy for the three models and apply the median and distribution tests to investigate whether there are significant differences between the best HDZ model and the other two models.

To examine our second hypotheses on whether the financial statement items other than those in the HDZ model have information content to explain one year-ahead earnings for profit and loss-making firms, we investigate the coefficients, and their significance, from estimating the expanded earnings forecasting models (equations (3) and (4)) on profit-making firms, loss-making firms, and the three categories of loss-making firms using OLS, for the periods from 1981 to 2015. When using the forward stepwise approach to estimate the expanded earnings forecasting models, we are not able to report the estimated average coefficients as the explanatory variables vary across the various ten-year estimation periods. As a consequence, we investigate the number of times that each explanatory variable is included in the final model for forecasting one year-ahead earnings.

To test our third hypotheses on whether the expanded earnings forecasting model estimated on each category of loss-making firms separately performs better than when estimated on all loss-making firms, we compare the median of forecast accuracy of the two models and apply the median and distribution tests to investigate whether there are significant differences between these models. We also apply the same procedures for the expanded earnings forecasting models that are estimated using the forward stepwise approach.

To test out last set of hypotheses on the possibility that extending the HDZ model can produce more accurate one year-ahead earnings forecasts for profit and loss-making firms, we find the earnings forecasting model with the lowest median forecast accuracy (i.e., the best earnings forecasting model) among all the earnings forecasting models used to predict one year-ahead earnings for profit-making firms. We then, investigate whether the best earnings forecasting model is significantly different from all the other models in terms of the median and distribution of forecast accuracy by applying the sign test and the Wilcoxon sign ranked test. Finally, we replicate the same procedures on the earnings forecasting models that are used to predict one year-ahead earnings for loss-making firms.

2.4 Data and Sample Selection

2.4.1 Sample Construction

Our total sample includes all firms included on the Compustat fundamentals annual file between 1971 and 2015. We collect market value data from the Compustat security monthly file. Our sample includes firm–year observations from NYSE, Amex, and Nasdaq listed securities. We also collect analysts' forecasts information from IBES for our robustness checks. We eliminate financial institutions (SIC codes 6000–6999), and utilities (SIC codes 4900–4999), as in prior studies. We define earnings as income before extraordinary items (annual Compustat data item #18). We then classify firms into profit-making and loss-making firms based on the sign of income before extraordinary items. In particular, if income before extraordinary items is positive, a firm is classified as a profit-making firm, and a loss-making firm otherwise. As mentioned previously, we also classify loss-making firms into three categories: (i) high RD and non-dividend paying firms; (ii) dividend paying firms, and (iii) other firms.

We eliminate any firm-year observation with a zero or missing value for market value, opening total assets, or lagged sales. We require all firm-years to have the Compustat data presented in Table 1, which provides the definitions of all the variables that are used in our study. Following Hou et al. (2012) and Li and Mohanram (2014), we winsorize all the variables that are included in the earnings forecasting models annually at the 1st and 99th percentiles to reduce the impact of extreme observations. Where appropriate, we scale the variables by OTA. Given that we use 10 years of lagged data to estimating the earnings forecasting models, we are able to generate one year-ahead earnings forecasts for the period 1981 to 2015.

Insert Table 1 here

Table 2 outlines our sample construction for all firms, profit-making firms, and loss-making firms. The initial sample include 379,582 all firm-year observations, 262,874 profit-making firm-year observations, and 116,663 loss-making firm-year observations for the period 1971 to 2015. After applying our sample selection criteria, the final sample include 115,658 firm-year observations, of which 88,408 are profit-making firm-year observations, and 27,243 are loss-making firm-year observations.

Insert Table 2 here

2.4.2 Descriptive Statistics

Table 3 outlines the descriptive statistics for the frequency and distribution of all firms, profit-making firms and loss-making firms within our sample. Table 3 outlines the total number of all firms available for the period from 1971 to 2015 before and after we apply our sample selection criteria, by year and in total. The annual profit-making firm observations are always higher than the annual loss-making firm observations for each year of our sample period. In addition, Table 3 presents the distribution of the annual number of observations of for each of the loss-making firms' categories. High RD and non-dividend paying firms constitute 28% of all loss-making firm observations, dividend paying firms constitute another 20% of all loss-making firm observations, and 52% of loss-making firm observations are classified as other loss-making firms.

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Insert Table 3 here

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Figure 1, Panel A, provides a graph of the annual number of observations of all firms, profit-making firms, and loss-making firms. It shows that the annual observations of all firms and profit-making firms have the same direction over our sample period. Panel B outlines the annual number of observations for each of the loss-making firms' categories as a percentage of all loss-making firms. The percentage of both dividend paying and other firms fluctuate over the early years of our sample period.

Insert Figure 1 here

Table 4 shows the classification of all firms profit-making firms and loss-making firm observations between different industry groups. The distributions of all firm, profit-making firm and loss-making firm observations across various industry categories are similar. Most of the firm-year observations are in the manufacturing sector, which represent 56%, 56% and 55% respectively of the three samples. The Agriculture, Forestry and Fishing sector constitutes only 0.37%, 0.39% and 0.33% of total firm-year observations respectively for the three samples.

Insert Table 4 here

Table 5 presents summary statistics for the variables, used in the HDZ model (equation (1)) for all firms. Tables 6 and 7 present the descriptive statistics of the variables, used in the expanded earnings forecasting models (equations (3) and (4)) for profit-making and loss-making firms.

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Insert Tables 5, 6, and 7 here

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For reasons of space, we do not present tables of correlations between the variables in the earnings forecasting models. We can summarise the Pearson correlations as follows. The correlations between the variables used in the HDZ model for all firm-year observations are significant between all variables at the 1% significance level. Nonetheless, the magnitude of these correlations is generally relatively small. Examples of a high correlation between independent variables is that between *Div* and *DivDum* (0.563). Further, the vast majority of the correlations are significant between the variables at the 1% significance level between the variables used in the expanded earnings forecasting models (equations (3) and (4)) for profit and loss firm-year observations. The size of these correlations is small, however.

2.5 EMPIRICAL RESULTS

2.5.1 Main Results

Table 8 presents the coefficients (p-values beneath them in parentheses) from estimating the HDZ model, for the periods from 1981 to 2015. It presents the estimation of the HDZ model on samples of all firms (equation (1)), profit-making firms, loss-making firms, and each category of loss-making firms (equation (2)) respectively. Overall, the results are consistent with HDZ when estimated using all firms (the second column of Table 8) in terms of sign and significance, except that the coefficient of *Accruals* is insignificant. Further, the adjusted R^2 for our period (53.5%) is smaller than the adjusted R^2 (86%) for the period covered by HDZ.

The coefficient for each of the independent variables keeps the same sign, but displays different sizes, across different estimation samples. The coefficients of current earnings are large in magnitude and significantly positively related to future earnings for each estimation sample, consistent with prior studies (e.g., Fama and French, 2006; Hou and Robinson, 2006; Hou and van Dijk, 2011; Hou et al., 2012; Li and Mohanram, 2014). The adjusted R^2 for profit-making firms (21.8%) is smaller than the adjusted R^2 (55.8%) for loss-making firms. The adjusted R^2 also varies between high RD and non-dividend paying, dividend paying, and other loss-making firms (59.4%, 44.7%, and 38% respectively).

Insert Table 8 here

To examine our first hypothesis on whether the HDZ model performs better when estimated on profit-making firms than when estimated on all firms, we compute the one year-ahead earnings forecast by multiplying the annual estimated coefficients from the lagged 10 years data by the current year data of profit-making firms. We then compute the forecast accuracy for each model-based earnings forecast. Panel A of Table 9 compares the performance of the one year-ahead earnings forecasts generated from the HDZ model estimated on all firms and on profit-making firms. It reports the median forecast accuracy. As mentioned above, we define the forecast accuracy as the absolute value of the difference between actual earnings and the model-based earnings forecasts scaled by OTA and, hence, a smaller number is indicative of a more accurate earnings forecast. The results show that the earnings forecasts from the HDZ model estimated on profit-making firms are more accurate than the earnings forecasts from the HDZ model estimated on all firms. The median forecast accuracy of the two model-based earnings forecasts are 0.0286 and 0.0305 respectively. We also apply nonparametric tests to evaluate differences in forecast accuracy. We find that the median and the distribution of forecast accuracy of the two model-based earnings forecasts are significantly different from each other. This is consistent with our first (alternative) hypothesis that the HDZ model performs better when estimated on profit-making firms only than on all firms to generate the one year-ahead earnings forecasts for profit-making firms.

We then apply the same procedure for loss-making firms. We compute the forecast accuracy for each model-based earnings forecast. Panel B of Table 9 compares the performance of the one year-ahead earnings forecasts generated from the various HDZ models for loss-making firms. The results show that the earnings forecasts from the HDZ model estimated on all firms are more accurate than the other two HDZ models. We also report that the median and the distribution of forecast accuracy of the most accurate model are significantly different from the other two HDZ models. This result is not consistent with our first (alternative) hypothesis on loss-making firms.

Insert Table 9 here

We now report on our second hypotheses on whether the financial statement items in the extended earnings forecasting models, other than those in the HDZ model, are useful for explaining one year-ahead earnings for profit-making firms, loss-making firms, and the different categories of loss-making firms. Table 10 presents the coefficients (p-values beneath them in parentheses) from estimating the expanded earnings forecasting models using OLS, for the periods from 1971 to 2015. Table 10 presents the estimation of the expanded model for profit-making firms (equation (3)), for loss-making firms, and each category of loss-making firms (equation (4)) respectively.

The estimation results for profit-making firms show that the coefficients of many variables are significant, such as *SGR*, *NegSGR*, *RD*, *AbsNegSpI*, *SpI*, *EI*, *CE*, *CC*, *LagCC*, and *BV*, suggesting that they are useful for explaining one year-ahead earnings incremental to the variables in the HDZ model. Further, the coefficient of *Accruals* becomes significant, as shown in the second and third columns, unlike when the HDZ model is estimated. Column 3 of Table 10 shows that many variables that are not in the HDZ model are useful for explaining one year-ahead earnings for loss-making firms, such as *SG*, *RD*, *SpI*, *CE*, *IncLTD*, *Cash*, *LagCC* and *BV*. In addition, the adjusted R^2 for profit-making firms (27.2%) is higher than the adjusted R^2 (21.8%) when estimating the HDZ model on profit-making firms. Similarly, the adjusted R^2 for loss-making firms (60.4%) is higher than the adjusted R^2 (55.8%) when estimating the HDZ model on loss-making firms.

The estimation results for equation (4) for each category of loss-making firms separately demonstrate that the coefficients of variables are different in terms of significance and size across the categories, suggesting that an earnings forecasting model is not homogeneous across the different categories. For instance, the coefficient of *Cash* is significantly positive for the high RD and non-dividend category of loss-making firms only. Further, the adjusted

R^2 for each category of loss-making firms are higher than the adjusted R^2 when estimating the HDZ model for each category.

Overall, these results are consistent with our second hypotheses, in that some or all of the variables added in to our expanded models have power to explain one year-ahead earnings for profit and loss-making firms incremental to the variables in the HDZ model, and this explanatory power varies across the different categories of loss-making firms.

Insert Table 10 here

To examine our second hypotheses further, we re-estimate the expanded model for profit-making firms, loss-making firms, and each category of loss-making firms using the forward stepwise estimation approach. As a result of estimating the expanded model using the forward stepwise method, the explanatory variables are different across our various estimation periods. This does not allow us to present average coefficients across the estimation periods. Instead, Table 11 presents the number of times, and the percentages of times relative to the total forecast years, that each explanatory variable is included in the final model for forecasting one year-ahead earnings for profit-making firms in our forecasting period (1981-2015). We classify the variables in our expanded earnings forecasting model into two categories: (i) variables in the HDZ model; and (ii) other variables. The results demonstrate that all variables that are not in the HDZ model are included in the final forecast model for one year-ahead earnings for profit-making firms at least in one year of our forecasting period, except for *NegSG.*

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Insert Table 11 here

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Tables 12 and 13 present the number of times, and the percentages of times relative to the total forecast years, that each explanatory variable is shown to be useful for explaining one year-ahead earnings for loss-making firms and for each category of loss-making firms separately in our forecast period. The results in Table 12 report that all variables that are not in the HDZ model appear in the final forecasting model for one year-ahead earnings for loss-making firms in at least in one of the years of our forecasting period, except for *NegSG, FirstLoss and DivStop.*

The results in Table 13 report that the explanatory power of the variables that are not in the HDZ model varies based on the category of loss-making firms. For instance, *DbtIss* is useful for explaining one year-ahead earnings for high RD and non-dividend paying firms (37% of our forecast period) more than for dividend paying and other firms (0% and 17% of our forecast period).

Overall, these results provide more support for the alternative versions of our second hypotheses and indicate that the additional variables in our expanded earnings forecasting models have explanatory power for one year-ahead earnings for profit-making and loss-making firms.

Insert Tables 12 and 13 here

We now report on our third hypothesis concerning whether the performance of our expanded earnings forecasting model is better when estimated for each category of loss-making firms separately than when estimated on all loss-making firms together. We compute and compare the accuracy of the one year-head earnings forecasts generated from the expanded model estimated on either all loss-making firms or on each category of loss-making firms separately. Panel A of Table 14 reports the median forecast accuracy of earnings forecasts generated from the expanded models estimated using OLS. The results show that estimating the expanded model individually on each category of loss-making firms generates more accurate one year-ahead earnings forecasts than estimating on all loss-making firms together. However, we find that the median and the distribution of forecast accuracy of the earnings forecasts generated from the two expanded models are insignificantly different from each other, when applying our nonparametric tests. Panel B of Table 14 reports the forecast accuracy of the one year-ahead earnings forecasts generated from the expanded models estimated using the forward stepwise estimation approach. We report similar results as when estimating the expanded model using OLS. In this case, however, we find that the median and the distribution of forecast accuracy of the earnings forecasts generated from the two expanded models are significantly different from each other when applying the nonparametric tests.

Overall, our results support our third hypothesis in that the performance of our expanded model is either better, or at least as good, when estimated on each category of loss-making firms separately than for all loss-making firms together.

Insert Table 14 here

Table 15 compares the performance of all the alternative model-based earnings forecasts for profit-making firms in Panel A and for loss-making firms in Panel B. It reports the medians of forecast accuracy for each of the model-based earnings forecasts. The medians of forecast accuracy for profit-making firms are smaller in magnitude than the medians of forecast accuracy for loss-making firms for all model-based earnings forecasts.

Insert Table 15 here

To examine our last hypotheses on whether the HDZ model can be extended to generate more accurate one year-ahead earnings forecasts for profit-making and loss-making firms, we rank the four alternative earnings forecasting models for profit-making firms and the seven alternative earnings forecasting models for loss-making firms based on the median forecast accuracy, from the lowest to the highest. We present the results in Table 16. Panel A of Table 16 shows that the expanded model estimated on profit-making firms only, and using the forward stepwise approach, outperforms all the other models in terms of forecast accuracy. Further, the results show that the medians and the distributions of forecast accuracy of all the other earnings forecasting models are significantly different from those for the most accurate model. Panel B of Table 16 shows that the expanded model estimated for each category of loss-making firms separately, and using the forward stepwise approach, outperforms all the other models in terms of forecast accuracy. In addition, the results of the nonparametric tests show that the medians and the distributions of forecast accuracy for all the other earnings forecasting models are significantly different from those for the most accurate model. These results are consistent with our last (alternative) hypothesis.

Insert Table 16 here

In sum, the analysis suggests that using the cross-sectional expanded earnings forecasting model provides the most accurate one year-ahead earnings forecasts for both profit and loss-making firms relative to all the other alternative cross-sectional models. Further, the results also suggest that the one year-ahead earnings forecasts are more accurate for loss-making firms when they are estimated on the categories of loss-making firms separately, rather than on all loss-making firms together. These results provide evidence that the HDZ model can be usefully extended to generate more accurate one year-ahead earnings forecasts for profit-making firms and loss-making firms separately.

2.5.2 Additional Tests on Forecasting Models

In this section, we provide additional analyses that consider whether our main results are robust to alternative methodological choices.

In the previous analyses, we define forecast accuracy as the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by OTA. We now use two alternative definitions of forecast accuracy, based on using different deflators. First, we define forecast accuracy as the absolute value of the difference between actual earnings and the model-based earnings forecast scaled by the market value of equity (*MV*).

We report comparisons of the performance between all cross-sectional models (i.e., HDZ and expanded models) used to generate one year-ahead earnings forecasts for profit-making firms in Panel A of Table 17 and for loss-making firms in Panel B of Table 17. We find consistent results with our main findings. In particular, the expanded models estimated on profit-making firms, and using the forward stepwise approach, produce the most accurate predictions for the next year earnings for profit-making firms, and the expanded models estimated on each category of loss-making firms separately produce the most accurate predictions for one year-ahead earnings for loss-making firms. Further, all the other models are significantly different from the most accurate models in terms of median and the distribution of forecast accuracy.

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Insert Table 17 here

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We also define the forecast accuracy as the absolute value of the difference between actual earnings and the model-based earnings forecasts scaled by the lagged market value of equity (*LagMV*). We report the results for profit-making firms in Panel A of Table 18 and for loss-making firms in Panel B of Table 18. Overall, the results are the same as our main findings and using the market value of equity (*MV*) as the deflator for the forecast accuracy.

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Insert Table 18 here

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We then consider sub-samples of firms with and without analysts' coverage. We obtain consensus analysts' earnings per share (EPS) forecasts (median estimates), actual EPS, and analysts' coverage from the I/B/E/S Summary History files. Our sub-samples of firms with analysts' coverage constitute of firms that are followed by at least three analysts. We define the analysts' forecasts as the first available consensus analysts' EPS forecasts (median estimates) for *t+1* after the earnings announcement date of year *t*. We generate the earnings forecasts by multiplying the analysts' EPS forecasts by the number of shares outstanding, and then scale it by OTA to report them in the same units as our model-based earnings forecasts.

The total profit-making firm-year observations with available model-based earnings forecasts are 70,049 for the period 1981 to 2015, while only 31,947 firm-year observations are covered by at least three analysts.

We then compare the accuracy of the analysts' earnings forecasts with accuracy of the most accurate model-based earnings forecasts for this sub-sample, to give an indication about the difference between the accuracy of the two forecasts. We use the actual income before extraordinary items from Compustat to evaluate the performance of both the model-based and analysts' earnings forecasts to make their forecast accuracies comparable and to prevent the impact of using different definitions for actual earnings on the comparisons. In particular, we define the model-based forecasts accuracy (analysts' forecasts accuracy) as the absolute value of the difference between actual earnings (i.e., income before extraordinary items from Compustat) and model-based earnings forecasts (consensus analysts' earnings forecasts) scaled by OTA.

We report the results for profit-making firms in Table 19. Panel A of Table 19 provides the results of firms with analysts' coverage. Panel A of Table 19 compares the performance of all the model-based earnings forecasts generated using our different cross-sectional models. Overall, the results are the same as our main results, except that the earnings forecasts generated from the expanded model estimated using OLS are insignificantly different from the most accurate model. Panel A of Table 19 also shows that the most accurate model-based earnings forecasts are more accurate than analysts' earnings forecasts. The median of forecast accuracy of the most accurate model-based earnings forecasts is 0.0244, whereas it is 0.0365 for analysts' earnings forecasts. Further, the nonparametric tests show that the median and the distribution of forecast accuracy of the most accurate model are significantly different from those for the analysts' earnings forecasts.

In untabulated analysis, we also use the actual income before extraordinary items from Compustat to evaluate the performance of the model-based forecasts and the actual EPS from IBES for analysts' forecasts, as in the HDZ. We then generate actual earnings by multiplying the actual EPS by the number of shares outstanding and then scale it by OTA. In particular, we define the analysts' forecasts accuracy as the absolute value of the difference between the actual earnings from IBES and the consensus analysts' earnings forecasts scaled by OTA. The untabulated results show that the most accurate model-based earnings forecasts are less accurate than analysts' earnings forecasts. The median of forecast accuracy of the most accurate model-based earnings forecasts is 0.0244, whereas it is 0.008 for analysts' forecasts.

Panel B of Table 19 provides the results for firms without analysts' coverage. The total profit-making firm-year observations without analysts' coverage are 22,926. The results show that the HDZ model estimated on profit-making firms only outperforms all the other models in terms of forecast accuracy. Further, the nonparametric tests show that the medians and the distributions of forecast accuracy of all the other earnings forecasting models are significantly different from those for the most accurate model, except that the earnings forecasts generated from the expanded model estimated using OLS is insignificantly different from the most accurate model, in terms of distribution (Wilcoxon sign rank tests). This still provides evidence that the HDZ model needs to be estimated individually for profit and loss-making firms.

Insert Table 19 here

Table 20 provides the results for loss-making firms. Panel A of Table 20 provides the results of firms with analysts' coverage. The total loss firm-year observations with available model-based earnings forecast are 25,912 for the period 1981 to 2015, while only 8,535 firm-year observations are covered with at least three analysts. Panel A of Table 20 compares the performance of all the model-based earnings forecasts generated using different cross-sectional models. Overall, the results are consistent with the main results. In particular, the results show that the expanded model estimated for each category of loss-making firms separately, and using the forward stepwise approach, outperforms all the other models in terms of forecast accuracy. Further, the results show that the medians and the distributions of forecast accuracy of all the other earnings forecasting models are significantly different from those for the most accurate model, except that earnings forecasts generated from the expanded model estimated using all loss-making firms and using the forward stepwise approach is insignificantly different from the most accurate model, in terms of distribution (Wilcoxon sign rank tests).

Panel A of Table 20 also shows that the most accurate model-based earnings forecasts are less accurate than analysts' earnings forecasts, when evaluating the performance of both the model-based and analysts' earnings forecasts based on the actual earnings from Compustat. The median of forecast accuracy of the most accurate model-based earnings forecasts is 0.0696 and 0.0578 for analysts' earnings forecast. Further, the nonparametric tests show that the median and the distribution of forecast accuracy of the most accurate model are significantly different from those for the analysts' earnings forecasts for the median but not the distribution. In untabulated results, we find the same results when evaluating the performance of the analysts' forecasts based on the actual earnings from IBES.

Panel B of Table 20 presents the results of firms without analysts' coverage. The total loss firm-year observations without analysts' coverage are 11,712. The results are consistent with the main results (i.e., all loss-making firms) and with the results of the sub-sample of loss-making firms that are followed by at least three analysts.

Insert Table 20 here

As part of our robustness checks, we consider two-year ahead earnings forecasts to test our hypotheses. In particular, we use the cross-sectional earnings models to estimate the two year-ahead earnings forecasts for profit and loss-making firms. We re-estimate equations (1) to (4) to generate two year-ahead earnings forecasts rather than one year-ahead earnings forecasts, using the same procedures. In untabulated results, some or all of the variables added into our expanded models (estimated using OLS or forward stepwise approaches) have explanatory power for two year-ahead earnings for profit and loss-making firms, incremental to the variables in the HDZ model, and this explanatory power varies across the different categories of loss-making firms, consistent with our main results.

We report comparisons of the performance between all cross-sectional models that generate two year-ahead earnings forecasts for profit-making firms in Panel A of Table 21 and for loss-making firms in Panel B of Table 21. Overall, the results for profit-making firms are similar to the main findings, except that the median and distribution of the expanded model estimated using OLS are insignificantly different from those for the most accurate model. However, this difference still provides support for our hypotheses. Further, Panel B of Table 21 shows that the results of loss-making firms are similar to our main findings.

Insert Table 21 here

Finally, we also consider estimating the expanded earnings forecasting models on all firms. In particular, we estimate the expanded model (equations (3) and (4)) on all firms, using both OLS and forward stepwise approaches, in addition to our models in the main analysis. Therefore, we add *NegE* to equations (3) and (4). We then use the estimated coefficients to generate one year-ahead earnings forecasts for profit and loss-making firms. As a consequence, we have six alternative earnings forecasting models for profit-making firms and nine alternative models for loss-making firms.

In untabulated results, some or all of the variables added in to our expanded models (estimated using OLS or forward stepwise approaches) have explanatory power for one year-ahead earnings for profit and loss-making firms, incremental to the variables in the HDZ model, and this explanatory power varies across the different categories of loss-making firms, consistent with our main findings. We then rank the six alternative earnings forecasting models for profit-making firms and the nine alternative earnings forecasting models for loss-making firms based on the median of forecast accuracy and from the lowest to the highest.

We report comparisons of forecasting performance between all the cross-sectional models that generate one year-ahead earnings forecasts for profit-making firms in Panel A of Table 22 and for loss-making firms in Panel B of Table 22. Panel A of Table 22 suggests that our main results continue to hold. In particular, the results show that the expanded model estimated on profit-making firms only, and using forward stepwise approach outperforms all the other models in terms of forecast accuracy. Further, the medians and the distributions of forecast accuracy of all the other earnings forecasting models are significantly different from those for the most accurate model.

Nonetheless, Panel B of Table 22 shows that the expanded model estimated on all firms, and using the forward stepwise approach, outperforms all the other models used to generate one year-ahead earnings forecast for loss-making firms, in terms of forecast accuracy. In addition, the medians and the distributions of forecast accuracy of all the other earnings forecasting models are significantly different from those for the most accurate model. Although that these results do not support our main analysis, they still provide evidence on the usefulness of extending the HDZ model, and that the HDZ model is mis-specified, especially for loss-making firms.

Insert Table 22 here

2.6 Conclusions

In this chapter, we investigate whether better estimation approaches and cross-sectional models can be developed to predict future earnings for profit and loss-making firms. Prior studies have used analysts' forecasts, even though they are restricted with respect to availability and coverage of firms. As a consequence, many firms are excluded from investigations involving the use of analysts' forecasts, and exclusions are non-random. Further, adopting time series models to produce forecasts does not solve this issue as this approach exhibits two biases, which are substantial survivorship bias and long period data requirements. A recent study by HDZ develops a cross-sectional model to generate earnings forecasts using financial information for all firms (i.e., profit and loss-making firms). They provide evidence that their model-based earnings forecasts outperform analysts' earnings forecasts in terms of forecast bias, ERC, and estimating the ICC. Also, some prior studies concentrate on forecasting the future profitability of loss-making firms (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015).

Given the widespread adoption of the HDZ model to generate forecasts as an alternative to analysts' forecasts, we first examine the performance of the model to generate the one year-ahead earnings forecast for profit and loss-making firms. We test the performance of the HDZ model estimated on all firms (profit and loss-making firms) and on profit-making firms used to generate the one year-ahead earnings forecasts for profit-making firms on the basis of their forecast accuracy. We find that the one year-ahead earnings forecasts generated by the HDZ model estimated on profit-making firms are more accurate than the earnings forecasts generated by the HDZ model estimated on all firms. We then test the performance of the HDZ model estimated on all firms, loss-making firms only, and on each category of loss-making firms on the basis of their forecast accuracy. We find that the one year-ahead earnings forecasts generated by the HDZ model estimated on all firms are more accurate than the earnings forecasts generated by the HDZ model estimated on either loss-making firms alone or on each category of loss-making firms separately.

We then build an expanded earnings forecasting model by adding accounting fundamentals that are either documented in the existing earnings forecast or the value relevance literature into the HDZ model, and investigate whether the additional variables assist in forecasting the future earnings. We find that many of the accounting items we add into the expanded earnings forecasting models contain useful information for explaining one year-ahead earnings forecasts for profit and loss-making firms, and their explanatory power varies across the categories of loss-making firms. (i.e., high RD and non- dividend paying, dividend paying, and other firms). These results are similar whether the expanded models are estimated using the OLS or the forward stepwise approaches. We test the performance of the expanded models estimated on all loss-making firms and on each category of loss-making firms to generate the one year-ahead earnings forecasts for loss-making firms, on the basis of their forecast accuracy. We find that the earnings forecasts generated by the expanded model estimated separately for each category of loss-making firms are more accurate than the earnings forecasts generated by the expanded model estimated on all loss-making firms.

We also test the performance of all the alternative models in this chapter (i.e., the HDZ models and the expanded models using different samples or different estimation approaches) to forecast future earnings for profit and loss-making firms, on the basis of their forecast accuracy. For profit-making firms, we find that the expanded model estimated on profit-making firms, and using the forward stepwise approach, outperforms all the other models in terms of forecast accuracy. For loss-making firms, we find that the expanded model estimated on each category of loss-making firms, and using the forward stepwise approach, outperforms all the other models in terms of forecast accuracy.

Overall, our results are robust to different alternative research choices. First, we find the same results when we use another two alternative definitions of the forecast accuracy. Second, we re-investigate our hypotheses on subsamples partitioned by the degree of analysts' coverage. We show that our extended model estimated on each category of loss-making firms outperforms all the other models used to generate the future earnings for loss-making firms with an analysts' coverage of at least three. We also report the same results for loss-making firms without analysts' coverage, where the need for a forecasting model is important. In contrast to most of our results, we find that the HDZ model estimated on profit-making firms only outperforms all the other models used to generate the earnings forecasts for profit-making firms without analysts' coverage. Nonetheless, this still provides evidence that the HDZ model needs to be estimated separately for profit and loss-making firms, rather than on all firms together.

Further, the results remain the same when using the cross-sectional models to forecast two year-ahead earnings forecasts for profit and loss-making firms. Finally, we consider estimating our expanded model on all firms to predict one year-ahead earnings for profit and loss-making firms. As in our main analysis, we find that the expanded model estimated on profit-making firms, and using the forward stepwise approach, provides the most accurate earnings forecasts for profit-making firms. For loss-making firms, however, we find that the expanded model estimated on all firms, and using the forward stepwise approach, provides the most accurate earnings forecasts for loss-making firms. Nonetheless, overall, our results suggest there is a case for the use of our expanded model to generate one year-ahead earnings forecast for both profit and loss-making firms. Finding that the expanded model estimated on all firms provide the most accurate earnings forecasts for loss-making firms is a ‘puzzle’, but this provides another area for future research.

Overall, our study contributes to the existing literature of earnings forecasts. The findings provide evidence on the usefulness of estimating the earnings forecasting models on different sub-samples (i.e., profit-making firms only, loss-making firms only, and on each category of loss-making firms separately) in terms of improving median forecast accuracy. Further, the findings suggest the use of our earnings forecasting models and approaches in future earnings forecasting research. Nonetheless, although comparing forecast accuracy provide insights into the properties of model-based earnings forecasts, the implications of the model-based earnings forecasts could usefully be investigated in a variety of different contexts.

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TABLE 1	
Definitions for the Variables Used to Make Earnings Forecasts	
Variable	*Definition*
$NIEI_t$	Earnings before extraordinary items in year *t* (Compustat code: IB)
$NIEI_{t+1}$	Earnings before extraordinary items in year *t+1* (Compustat code: IB)
$NegE_t$	Equals 1 if earnings before extraordinary items in year *t* lower than zero; zero otherwise
MV_t	Market value of equity at the fiscal year end, calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO)
$LagMV_t$	Market value of equity (*MVt)* in year *t-1*
BV_t	Book value of equity at year *t* (Compustat code: CEQ)
TA_t	Total assets at year *t* (Compustat code: AT)
$Accruals_t$	Accruals, the change in the current assets (Compustat code: ACT) excluding the change in cash (Compustat code: CHE) less the change in current liabilities (Compustat code: LCT) plus the change in the short-term debts (Compustat code: USTDNC) plus the Depreciation and Amortizations (Compustat code: DP)
RD_t	Research and development expenses for year *t* (Compustat code: XRD)

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TABLE 1 (CONTINUED)	
Variable	*Definition*
EI_t	The total of extraordinary items for year *t* (Compustat code: XI)
SpI_t	Special items for year *t* (Compustat code: SPI)
$AbsNegSpI_t$	The absolute value of the negative special items for year *t* (Compustat code: SPI)
SGR_t	Growth rate of sales for year *t* (sales is Compustat code: SALE)
$NegSGR_t$	Equals SGR_t if SGR_t lower than zero; zero otherwise
SG_t	Change of sales for year *t*, deflated by opening total assets for year *t*
$NegSG_t$	Equals SG_t if SG_t lower than zero and zero otherwise
CE_t	Capital expenditures - the capital associated with purchase of fixed assets other than those related to acquisitions in year *t* (Compustat code: CAPX)
$Cash_t$	The sum of cash and short-term investments at year *t* (Compustat Code: CHE)
CC_t	Capital contributions in year *t* (Compustat Code: SSTK)
$LagCC_t$	Capital contributions in year *t-1* (Compustat Code: SSTK)
$DbtIss_t$	New debt issues in year *t* (Compustat code: DLTIS)

(Continued on next page)

TABLE 1 (CONTINUED)	
Variable	*Definition*
$IncLTD_t$	The change in long term debt between year *t* and year *t-1* (Long term debt is Compustat code: DLTT)
Div_t	Total cash dividends paid to the common stockholders in year *t* (Compustat code: DV)
$DivDum_t$	Equals one for firms that pay dividends in year *t* and otherwise equals zero
$DivStop_t$	Equals one for firms that stop paying dividends in the loss year; otherwise equals zero
$FirstLoss_t$ ($FirstProfit_t$)	Equals one for firms that report losses in year *t* but not in year *t-1*; otherwise equals zero (Equals one for firms that report profits in year *t* but not in year *t-1*; otherwise equals zero)
$LossSeq_t$ ($ProfitSeq_t$)	A count of the number of sequential losses over the past five years before the current loss (A count of the number of sequential profits over the past five years before the current profit)
BM_t	Book to market value ratio, calculated by dividing the book value of equity at year *t* (Compustat code: CEQ) by the market value of equity at year *t* (calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO))
$Size_t$	The log of market value of equity at year *t*

Notes: This table provides definitions for all the variables used for profit and loss-making firms.

TABLE 2

The Sample Selection Steps for the Samples (1971-2015)

Steps	*Number of observations for all firms*	*Number of observations for profit-making firms*	*Number of observations for loss-making firms*
All US firms from Compustat	379,582	262,874	116,663
Require firms to be listed on NYSE, Amex or Nasdaq	201,081	160,484	40,561
Less financial and utilities firms	(63,470)	(58,235)	(5,227)
Less observations with zero market value, zero opening total assets or zero opening sales	(2,290)	(478)	(1,800)
Less observations with missing values for any variable	(19,663)	(13,363)	(6,291)
Final sample	**115,658**	**88,408**	**27,243**

Notes: This table provides the data deletion procedure used to construct the all firms, profit-making firms, and loss-making firms' samples for the period 1971-2015.

TABLE 3

All Firms, Profit-Making Firms, and Loss-Making Firms Observations by Year and the Distribution Between the Three Categories of Loss-making Firms by Year

	Numbers of all firms		*Numbers of profit and loss-making firms*		*The distribution of the three categories of loss-making firms*		
Year	*Total firms*	*After deletions*	*Profit-making firms*	*Loss-making firms*	*High RD and non-dividend paying firms*	*Dividend paying firms*	*Other firms*
1971	2,450	1,833	1,640	193	28	50	115
1972	2,606	1,939	1,814	125	20	33	72
1973	2,648	2,049	1,950	99	22	24	53
1974	2,719	2,060	1,921	139	23	57	59
1975	2,702	2,061	1,861	200	34	71	95
1976	2,687	2,014	1,871	143	26	35	82
1977	2,661	1,964	1,848	116	19	39	58
1978	2,692	1,911	1,825	86	11	30	45
1979	2,716	1,913	1,816	97	13	44	40
1980	2,728	1,946	1,813	133	19	59	55
1981	2,831	1,961	1,796	165	28	62	75
1982	3,001	2,055	1,729	326	62	137	127
1983	3,200	2,053	1,734	319	61	131	127
1984	3,380	2,127	1,820	307	68	106	133
1985	3,428	2,180	1,736	444	98	151	195

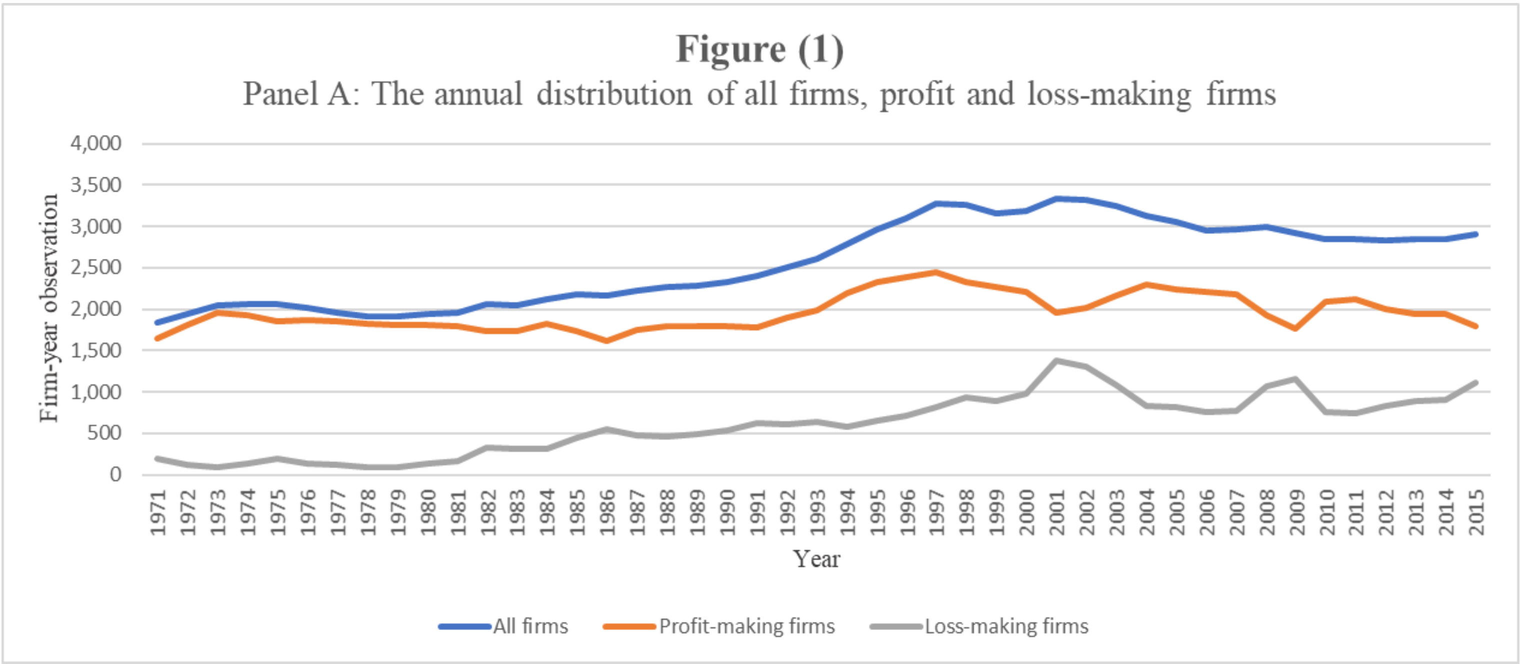
(Continued on next page)

TABLE 3 (CONTINUED)							
	Numbers of all firms		*Numbers of profit and loss-making firms*		*The distribution of the three categories of loss-making firms*		
Year	*Total firms*	*After deletions*	*Profit-making firms*	*Loss-making firms*	*High RD and non-dividend paying firms*	*Dividend paying firms*	*Other firms*
1986	3,689	2,163	1,619	544	110	189	245
1987	3,929	2,222	1,744	478	109	120	249
1988	3,996	2,267	1,801	466	106	115	245
1989	3,985	2,285	1,795	490	118	110	262
1990	4,107	2,331	1,793	538	125	144	269
1991	4,320	2,405	1,782	623	137	204	282
1992	4,714	2,510	1,892	617	156	177	284
1993	5,288	2,616	1,981	634	168	156	310
1994	5,638	2,780	2,195	585	160	114	311
1995	5,837	2,969	2,322	647	164	137	346
1996	6,150	3,098	2,387	710	196	138	376
1997	6,159	3,273	2,453	820	249	137	434
1998	6,082	3,262	2,328	934	262	167	505
1999	6,068	3,158	2,268	890	247	143	500
2000	5,891	3,183	2,210	973	289	131	553
2001	5,638	3,337	1,958	1,378	442	193	743
2002	5,596	3,326	2,018	1,306	429	162	715
2003	5,570	3,249	2,167	1,082	360	119	603

(Continued on next page)

TABLE 3 (CONTINUED)							
	Numbers of all firms		*Numbers of profit and loss-making firms*		*The distribution of the three categories of loss-making firms*		
Year	*Total firms*	*After deletions*	*Profit-making firms*	*Loss-making firms*	*High RD and non-dividend paying firms*	*Dividend paying firms*	*Other firms*
2004	5,614	3,134	2,300	834	265	100	469
2005	5,604	3,059	2,245	814	260	106	448
2006	5,563	2,956	2,203	753	249	106	398
2007	5,587	2,965	2,185	780	256	122	402
2008	5,450	2,998	1,933	1,065	309	210	546
2009	5,348	2,924	1,771	1,153	331	244	578
2010	5,366	2,844	2,084	760	227	100	433
2011	5,377	2,850	2,114	736	225	108	403
2012	5,363	2,834	2,005	829	252	149	428
2013	5,448	2,840	1,948	891	272	150	469
2014	5,622	2,846	1,944	902	287	154	461
2015	5,633	2,908	1,789	1,119	336	234	549
Total	**201,081**	**115,658**	**88,408**	**27,243**	**7,628**	**5,468**	**14,147**

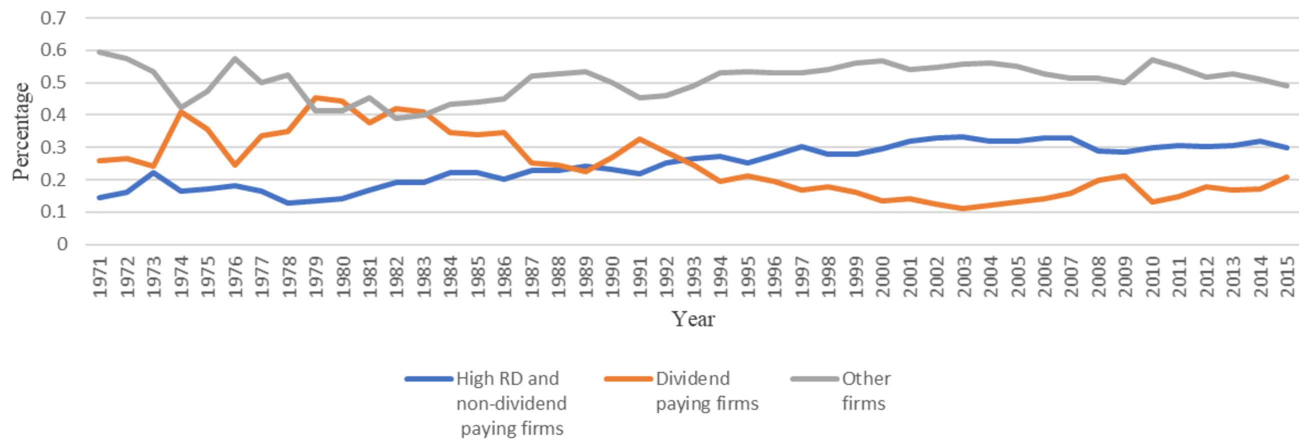
Notes: The explanations for this table are as follows:
1. *Total firms* – all profit and loss-making firms;
2. *After deletions* - the sample size after applying our sample selection criteria;
3. *Profit-making firms*- a company is defined as profit-making if its earnings before extraordinary items is higher than zero in a year *t*;
4. *Loss-making firms*- a company is defined as loss-making if its earnings before extraordinary items is lower than zero in a year *t*;
5. *High RD and non-dividend paying firms* - a loss-making firm with RD higher than the median of RD of positive RD loss-making firms, and that does not pay any dividend is classified under this category;
6. *Dividend paying firms*- a loss-making firm that pays dividend is classified under this category; and
7. *Other firms*- any loss-making firms that is not categorised under column (6) or (7).



Notes: Figure 1, Panel A, shows the annual numbers for all firms, profit-making firms and loss-making firms.

Figure (1)

Panel B: The categories of loss-making firms as percentages of all loss-making firms



Notes: Figure 1, Panel B, shows the distribution of the categories of loss-making firms annually as percentages of all loss-making firms.

TABLE 4

Industry Breakdown of the Samples

		All firms		*Profit-making firms*		*Loss-making firms*	
Compustat SIC code	*Industry*	*Firm-year observations*	*%*	*Firm-year observations*	*%*	*Firm-year observations*	*%*
0100-0999	Agriculture, Forestry and Fishing	432	0.37%	342	0.39%	90	0.33%
1000-1499	Mining	8,020	6.93%	5,682	6.43%	2,337	8.58%
1500-1799	Construction	1,793	1.55%	1,416	1.60%	377	1.38%
2000-3999	Manufacturing	64,255	55.56%	49,289	55.75%	14,962	54.92%
4000-4999	Transportation, Communications, Electric, Gas and Sanitary Services	8,213	7.10%	6,276	7.10%	1,937	7.11%
5000-5199	Wholesale Trade	4,701	4.06%	4,040	4.57%	661	2.43%
5200-5999	Retail Trade	8,332	7.20%	7,164	8.10%	1,168	4.29%
7000-8999	Services	19,912	17.22%	14,199	16.06%	5,711	20.96%
Total		**115,658**	**100.00%**	**88,408**	**100.00%**	**27,243**	**100.00%**

Notes: This table provides the numbers and %'s of the all firms, profit-making firms, and loss-making firms samples across different industries.

TABLE 5							
Descriptive Statistics for all Firms							
All firms (N=115,658)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
$NIEI_{t+1}$	0.025	0.003	0.054	0.108	0.225	-3.072	0.623
$NIEI_t$	0.021	0.004	0.051	0.097	0.182	-2.383	0.456
TA_t	1.159	0.985	1.079	1.209	0.410	0.350	7.676
$Accruals_t$	0.066	0.016	0.058	0.108	0.109	-0.405	0.727
Div_t	0.013	0.000	0.000	0.019	0.024	0.000	0.268
$NegE_t$	0.236	0.000	0.000	0.000	0.424	0.000	1.000
$DivDum_t$	0.486	0.000	0.000	1.000	0.500	0.000	1.000

Notes: This table provides the summary statistics for all the variables, used in the HDZ model (equation (1)) for all firms for the period 1971-2015.

TABLE 6							
Descriptive Statistics for Profit-Making Firms							
All profits (N=88,408)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
$NIEI_{t+1}$	0.083	0.033	0.072	0.124	0.112	-0.713	0.719
$NIEI_t$	0.087	0.039	0.070	0.113	0.071	0.001	0.576
BV_t	0.609	0.422	0.583	0.770	0.297	-0.322	3.069
$AbsNegSpI_t$	0.004	0.000	0.000	0.000	0.013	0.000	0.158
RD_t	0.028	0.000	0.000	0.033	0.052	0.000	0.366
SGR_t	0.176	0.029	0.116	0.240	0.299	-0.501	3.082
$NegSGR_t$	-0.019	0.000	0.000	0.000	0.058	-0.501	0.000
$Cash_t$	0.164	0.031	0.084	0.213	0.210	0.000	1.818
CC_t	0.032	0.000	0.003	0.013	0.114	0.000	1.768
$LagCC_t$	0.032	0.000	0.002	0.012	0.093	0.000	0.819
$DbtIss_t$	0.102	0.000	0.010	0.103	0.221	0.000	2.046
TA_t	1.180	1.023	1.102	1.225	0.315	0.630	4.056
$Accruals_t$	0.074	0.025	0.064	0.111	0.094	-0.294	0.658
EI_t	0.001	0.000	0.000	0.000	0.009	-0.156	0.095
SpI_t	-0.002	0.000	0.000	0.000	0.019	-0.158	0.240
SG_t	0.196	0.026	0.125	0.285	0.326	-1.108	2.604
$NegSG_t$	-0.023	0.000	0.000	0.000	0.078	-1.108	0.000
CE_t	0.085	0.030	0.058	0.106	0.091	0.000	0.736

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TABLE 6 (CONTINUED)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
$IncLTD_t$	0.031	-0.014	0.000	0.039	0.128	-0.349	1.193
Div_t	0.016	0.000	0.006	0.023	0.026	0.000	0.301
BM_t	0.706	0.324	0.546	0.903	0.596	-0.556	6.774
$Size_t$	5.592	3.879	5.534	7.155	2.268	0.084	12.132
$ProfitSeq_t$	4.282	4.000	5.000	5.000	1.163	0.000	5.000
$FirstProfit_t$	0.103	0.000	0.000	0.000	0.305	0.000	1.000
$DivDum_t$	0.574	0.000	1.000	1.000	0.494	0.000	1.000
$DivStop_t$	0.023	0.000	0.000	0.000	0.150	0.000	1.000

Notes: This table provides the summary statistics for all variables used in the expanded model (equation (3)) for profit-making firms for the period 1971-2015.

TABLE 7							
Descriptive Statistics for Loss-Making Firms							
All losses (N=27,243)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
$NIEI_{t+1}$	-0.182	-0.199	-0.044	0.016	0.513	-8.997	2.334
$NIEI_t$	-0.216	-0.248	-0.093	-0.032	0.383	-6.949	0.000
BV_t	0.508	0.243	0.451	0.683	0.617	-2.652	11.319
$AbsNegSpI_t$	0.048	0.000	0.004	0.050	0.105	0.000	1.638
RD_t	0.108	0.000	0.020	0.141	0.193	0.000	1.957
SGR_t	0.424	-0.149	0.011	0.227	25.915	-1.000	4270.833
$NegSGR_t$	-0.109	-0.149	0.000	0.000	0.190	-1.000	0.000
$Cash_t$	0.287	0.035	0.128	0.376	0.434	0.000	5.350
CC_t	0.159	0.000	0.004	0.045	0.488	-0.018	5.439
$LagCC_t$	0.130	0.000	0.006	0.088	0.265	0.000	1.520
$DbtIss_t$	0.110	0.000	0.000	0.093	0.263	-0.002	2.760
TA_t	1.100	0.836	0.955	1.100	0.702	0.194	12.750
$Accruals_t$	0.036	-0.021	0.035	0.093	0.165	-4.122	3.109
EI_t	0.000	0.000	0.000	0.000	0.027	-0.318	2.942
SpI_t	-0.046	-0.050	-0.004	0.000	0.107	-1.638	0.147
SG_t	0.022	-0.102	0.005	0.117	0.342	-2.853	3.102
$NegSG_t$	-0.090	-0.102	0.000	0.000	0.182	-2.853	0.000
CE_t	0.062	0.014	0.032	0.070	0.094	0.000	1.250

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TABLE 7 (CONTINUED)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
$IncLTD_t$	0.031	-0.017	0.000	0.025	0.197	-0.942	1.918
Div_t	0.003	0.000	0.000	0.000	0.010	-0.001	0.143
BM_t	0.640	0.206	0.531	1.041	1.825	-71.940	13.000
$Size_t$	4.562	3.169	4.490	5.856	1.974	-1.322	10.459
$LossSeq_t$	2.498	1.000	2.000	4.000	1.751	0.000	5.000
$FirstLoss_t$	0.356	0.000	0.000	1.000	0.479	0.000	1.000
$DivDum_t$	0.201	0.000	0.000	0.000	0.401	0.000	1.000
$DivStop_t$	0.0441	0.000	0.000	0.000	0.205	0.000	1.000

Notes: This table provides the summary statistics for all variables used in the expanded model (equation (4)) for loss-making firms for the period 1971-2015.

TABLE 8

Estimating the HDZ Model on the All Firms, Profit, Loss, and the Categories of Loss-Making Firms

Variable	*The HDZ model estimated on all firms*	*The HDZ model estimated on profit-making firms*	*The HDZ model estimated on loss-making firms*	*The HDZ model estimated on the three categories of loss-making firms*		
				High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
Constant	**0.094***	**0.024***	**0.220***	**0.284***	**0.126***	**0.202***
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
NIEI	**0.896***	**0.888***	**0.805***	**0.834***	**0.703***	**0.677***
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
NegE	**0.011***					
	(0.000)					
DivDum	**0.006***	**0.008***	**0.024***			
	(0.000)	**(0.000)**	**(0.000)**			
Div	**0.155***	**0.163***	**0.418***		0.0841	
	(0.000)	**(0.000)**	**(0.066)**		(0.723)	
TA	**-0.078***	**-0.028***	**-0.189***	**-0.201***	**-0.0848***	**-0.194***
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Accruals	-0.015	-0.009	**-0.081**	**-0.127***	**-0.1289***	-0.005
	(0.106)	(0.365)	**(0.011)**	**(0.084)**	**(0.002)**	(0.869)

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TABLE 8 (CONTINUED)						
Variable	*The HDZ model estimated on all firms*	*The HDZ model estimated on profit-making firms*	*The HDZ model estimated on loss-making firms*	*The HDZ model estimated on the three categories of loss-making firms*		
				High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
Adjusted R^2	0.535	0.218	0.558	0.594	0.447	0.380
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115,658	88,408	27,243	7,628	5,468	14,147

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the HDZ model using different samples, for the period 1981–2015. Model 1 presents the results of estimating the HDZ model on all firms. Model 2 presents the results of estimating the HDZ model on profit-making firms. Model 3 presents the results of estimating the HDZ model on loss-making firms. Models 4, 5, and 6 present the results of estimating the HDZ model on the three categories of loss-making firms: high RD and non-dividend paying, dividend paying, and other firms respectively. *Constant* is the intercept, and the definitions of all variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 9						
Tests of the Median Forecast Accuracy for the Various Estimates of the HDZ Model Relative to the Most Accurate Estimation Approach						
Panel A: *Median Accuracy for Profit-Making Firms*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	HDZ model	OLS	Profit-Making Firms	0.0286031		
2	HDZ model	OLS	All Firms	0.0305253	0.000***	0.000***
Panel B: *Median Accuracy for Loss-Making Firms*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	HDZ model	OLS	All Firms	0.0779439		
2	HDZ model	OLS	Categories of Loss-Making Firms	0.0781340	0.006***	0.003***
3	HDZ model	OLS	Loss-Making Firms	0.0806934	0.002***	0.006***

Notes: This table presents the results of testing the median forecast accuracy of the various HDZ models for the period 1971-2015. The forecast period is from 1981 to 2015. Panel A compares the median forecast accuracy between the model-based earnings forecasts for profit-making firms that are estimated on the all firms and profit-making firms' samples. Panel B compares the median forecast accuracy between the model-based earnings forecasts for loss-making firms that are estimated using the all firms, loss-making firms, and the three categories of loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test) between the approach with the highest accuracy and the other approaches.

TABLE 10

Estimating the Expanded Earnings Forecasting Models for Profit, Loss, and the Categories of Loss-Making Firms (Coefficients Estimated Using OLS)

Variable	*The expanded model estimated on profit-making firms*	*The expanded model estimated on loss-making firms*	*The expanded model estimated on the three categories of loss-making firms*		
			High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
Constant	**0.027*** **	**0.256*** **	**0.322*** **	**0.061***	**0.234*** **
	(0.007)	**(0.000)**	**(0.000)**	**(0.069)**	**(0.000)**
NIEI	**0.854*** **	**0.820*** **	**0.847*** **	**0.537*** **	**0.747*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
DivDum	0.000	-0.004			
	(0.976)	(0.402)			
Div	**0.108*** **	0.287		0.186	
	(0.000)	(0.182)		(0.344)	
TA	**-0.020** **	**-0.175*** **	**-0.182*** **	-0.029	**-0.169*** **
	(0.013)	**(0.000)**	**(0.000)**	(0.221)	**(0.000)**
Accruals	**-0.022** **	**-0.067** **	**-0.121***	-0.054	-0.003
	(0.032)	**(0.043)**	**(0.078)**	(0.276)	(0.948)
SGR	**-0.015*** **	**0.000*** **	0.002	-0.000	-0.002
	(0.001)	**(0.001)**	(0.591)	(0.748)	(0.642)

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TABLE 10 (CONTINUED)					
Variable	*The expanded model estimated on profit-making firms*	*The expanded model estimated on loss-making firms*	*The expanded model estimated on the three categories of loss-making firms*		
			High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
SG	**0.041***	**0.082***	**0.138***	**0.029***	**0.070***
	(0.000)	**(0.000)**	**(0.001)**	**(0.089)**	**(0.001)**
NegSGR	**0.023***	0.028	0.036	-0.007	0.010
	(0.009)	(0.101)	(0.169)	(0.848)	(0.701)
NegSG	**-0.000***	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.177)	(0.220)	(0.196)	(0.416)
RD	**-0.250***	**-0.214***	**-0.336***	-0.219	-0.085
	(0.000)	**(0.000)**	**(0.000)**	(0.112)	(0.400)
AbsNegSpI	**-1.069***	0.003	-0.138	0.390	-0.009
	(0.000)	(0.990)	(0.735)	(0.448)	(0.984)
SpI	**-1.286***	**-0.821***	**-1.076***	-0.239	-0.694
	(0.000)	**(0.003)**	**(0.006)**	(0.631)	(0.141)
EI	**0.277***	-0.027	-0.004	0.020	-0.034
	(0.000)	(0.576)	(0.959)	(0.889)	(0.672)
CE	**0.018**	**0.103**	0.086	**0.100***	**0.121**
	(0.021)	**(0.024)**	(0.509)	**(0.097)**	**(0.035)**

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TABLE 10 (CONTINUED)					
Variable	*The expanded model estimated on profit-making firms*	*The expanded model estimated on loss-making firms*	*The expanded model estimated on the three categories of loss-making firms*		
			High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
IncLTD	-0.017	**0.098*** **	0.036	-0.014	**0.096***
	(0.145)	**(0.005)**	(0.591)	(0.739)	**(0.096)**
Cash	0.009	**0.074*** **	**0.102*** **	0.033	0.053
	(0.118)	**(0.002)**	**(0.005)**	(0.454)	(0.224)
CC	**-0.076*** **	-0.004	0.051	**-0.290*** **	-0.075
	(0.000)	(0.880)	(0.122)	**(0.000)**	(0.228)
LagCC	**-0.059*** **	**-0.116*** **	**-0.112*** **	**-0.133** **	**-0.136*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.031)**	**(0.000)**
DbtIss	-0.001	-0.027	-0.049	-0.001	-0.015
	(0.728)	(0.129)	(0.467)	(0.947)	(0.499)
BV	**0.011** **	**-0.087*** **	**-0.130*** **	0.019	**-0.066** **
	(0.013)	**(0.000)**	**(0.000)**	(0.463)	**(0.021)**
FirstProfit	0.001				
	(0.488)				
FirstLoss		0.003	0.024	-0.010	0.002
		(0.514)	(0.116)	(0.109)	(0.808)

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TABLE 10 (CONTINUED)

Variable	*The expanded model estimated on profit-making firms*	*The expanded model estimated on loss-making firms*	*The expanded model estimated on the three categories of loss-making firms*		
			High RD and non-dividend paying firms	*Dividend paying firms*	*Other firms*
DivStop	-0.002	-0.012	-0.026		-0.007
	(0.671)	(0.156)	(0.441)		(0.400)
BM	**-0.021*****	-0.002	0.007	**-0.010*****	-0.003
	(0.000)	(0.230)	(0.305)	**(0.000)**	(0.192)
Size	**-0.001*****	**-0.003*****	-0.002	**-0.002***	**-0.003****
	(0.000)	**(0.009)**	(0.613)	**(0.088)**	**(0.013)**
ProfitSeq	**0.005*****				
	(0.000)				
LossSeq		**-0.003***	-0.004	**-0.005***	**-0.005****
		(0.077)	(0.340)	(0.072)	**(0.031)**
Adjusted R^2	0.272	0.604	0.635	0.573	0.437
Industry dummies	Yes	Yes	Yes	Yes	Yes
Observations	88,408	27,243	7,628	5,468	14,147

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the expanded earnings forecasting model using different samples and using the OLS method, for the period 1981–2015. Model 1 presents the results of estimating the model on profit-making firms. Model 2 presents the results of estimating the model on loss-making firms. Models 3, 4, and 5 present the results of estimating the model using the three categories of loss-making firms: high RD and non-dividend paying, dividend paying, and other firms respectively. *Constant* is the intercept, and the definitions of all variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 11

Summary of Estimating the Expanded Forecasting Model on Profit-Making Firms Using the Forward Stepwise Approach - The Number of Times Each Variables Appears in the Annual Model and the Percentage of Appearances Relative to the Total Years

Years (1981-2015) - 35 Years in Total

Variables in the HDZ model			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
$NIEI_t$	35	100%	SG_t	34	97%
$DivDum_t$	2	6%	$NegSG_t$	0	0%
Div_t	17	49%	SpI_t	35	100%
TA_t	6	17%	EI_t	4	11%
$Accruals_t$	25	71%	CE_t	17	49%
			$IncLTD_t$	28	80%
			$FirstProfit_t$	11	31%
			$DivStop_t$	1	3%
			BM_t	35	100%
			$Size_t$	9	26%
			$ProfitSeq_t$	11	31%

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TABLE 11 (CONTINUED)					
Variables in the HDZ model			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
			BV_t	22	63%
			$AbsNegSpI_t$	35	100%
			RD_t	28	80%
			SGR_t	20	57%
			$NegSGR_t$	5	14%
			$Cash_t$	22	63%
			CC_t	29	83%
			$LagCC_t$	35	100%
			$DbtIss_t$	12	34%

Notes: This table provides a summary of the results of estimating the expanded earnings forecasting model using the forward stepwise approach to generate the earnings forecast model for profit-making firms, for the period 1971–2015. The forecast period is from 1981 to 2015 (35 years). The table shows the number of times a variable appears in the annual models and the percentage of appearances relative to the total forecast years for each variable.

TABLE 12					
Summary of Estimating the Expanded Forecasting Model on Loss-Making Firms Using the Forward Stepwise Approach - The Number of Times Each Variables Appears in the Annual Model and the Percentage of Appearances Relative to the Total Years					
Years (1981-2015) - 35 Years in Total					
Variables in the HDZ model			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
$NIEI_t$	35	100%	SG_t	16	45.71%
$DivDum_t$	0	0.00%	$NegSG_t$	0	0.00%
Div_t	7	20.00%	SpI_t	33	94.29%
TA_t	27	77.14%	EI_t	8	22.86%
$Accruals_t$	27	77.14%	CE_t	11	31.43%
			$IncLTD_t$	21	60.00%
			$FirstLoss_t$	0	0.00%
			$DivStop_t$	0	0.00%
			BM_t	8	22.86%
			$Size_t$	8	22.86%
			$LossSeq_t$	2	5.71%

(Continued on next page)

TABLE 12 (CONTINUED)					
Variables in the HDZ model			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
			BV_t	22	62.86%
			$AbsNegSpI_t$	8	22.86%
			RD_t	30	85.71%
			SGR_t	22	62.86%
			$NegSGR_t$	10	28.57%
			$Cash_t$	27	77.14%
			CC_t	26	74.29%
			$LagCC_t$	32	91.43%
			$DbtIss_t$	9	25.71%

Notes: This table provides a summary of the results of estimating the expanded earnings forecasting model using the forward stepwise approach to generate the earnings forecast model for loss-making firms, for the period 1971–2015. The forecast period is from 1981 to 2015 (35 years). The table shows the number of times a variable appears in the annual models and the percentage of appearances relative to the total forecast years for each variable.

TABLE 13

Summary of Estimating the Expanded Forecasting Model on the Three Categories of Loss-Making Firms Using the Forward Stepwise Approach - The Number of Times Each Variables Appears in the Annual Model and the Percentage of Appearances Relative to the Total Years

Years (1981-2015) - 35 Years in Total

Variables in the HDZ model							*Other variables*						
Variable	*High RD and non-dividend paying firms*		*Dividend paying firms*		*Other firms*		*Variable*	*High RD and non-dividend paying firms*		*Dividend paying firms*		*Other firms*	
	Number of times	*% based on total years*	*Number of times*	*% based on total years*	*Number of times*	*% based on total years*		*Number of times*	*% based on total years*	*Number of times*	*% based on total years*	*Number of times*	*% based on total years*
$NIEI_t$	35	100%	33	94%	34	97%	SG_t	11	31%	4	11%	18	51%
$DivDum_t$	0	0%	0	0%	0	0%	$NegSG_t$	0	0%	0	0%	0	0%
Div_t	0	0%	8	23%	0	0%	SpI_t	28	80%	27	77%	25	71%
TA_t	13	37%	1	3%	27	77%	EI_t	3	9%	0	0%	3	9%
$Accruals_t$	14	40%	14	40%	17	49%	CE_t	2	6%	5	14%	12	34%
							$IncLTD_t$	3	9%	4	11%	21	60%
							$FirstLoss_t$	0	0%	1	3%	1	3%
							$DivStop_t$	0	0%	0	0%	0	0%
							BM_t	2	6%	17	49%	4	11%

(Continued on next page)

TABLE 13 (CONTINUED)

Variables in the HDZ model							*Other variables*						
Variable	*High RD and non-dividend paying firms*		*Dividend paying firms*		*Other firms*		*Variable*	*High RD and non-dividend paying firms*		*Dividend paying firms*		*Other firms*	
	Number of times	*% based on total years*	*Number of times*	*% based on total years*	*Number of times*	*% based on total years*		*Number of times*	*% based on total years*	*Number of times*	*% based on total years*	*Number of times*	*% based on total years*
							$Size_t$	5	14%	0	0%	2	6%
							LossSeqt	1	3%	3	9%	1	3%
							BV_t	19	54%	17	49%	20	57%
							$AbsNegSpI_t$	9	26%	10	29%	6	17%
							RD_t	25	71%	8	23%	3	9%
							SGR_t	1	3%	14	40%	15	43%
							$NegSGR_t$	4	11%	5	14%	5	14%
							$Cash_t$	18	51%	7	20%	10	29%
							CC_t	20	57%	28	80%	14	40%
							$LagCC_t$	19	54%	13	37%	26	74%
							$DbtIss_t$	13	37%	0	0%	6	17%

Notes: This table provides a summary of the results of estimating the expanded earnings forecasting model using the forward stepwise approach to generate the earnings forecast model for each of the three categories of loss-making firms, for the period 1971–2015. The forecast period is from 1981 to 2015 (35 years). The table shows the number of times a variable appears in the annual models and the percentage of appearances relative to the total forecast years for each variable.

TABLE 14

Tests of the Median Forecast Accuracy for the Various Estimates of the Expanded Model on Loss-Making Firms Relative to the Most Accurate Estimation Approach

Panel A: *Expanded Earnings Forecasting Models - Estimated using the OLS*

Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	OLS	Categories of Loss-Making Firms	0.0777236		
2	Expanded model	OLS	Loss-Making Firms	0.0786727	0.696	0.622

Panel B: *Expanded Earnings Forecasting Models - Estimated using the Forward Stepwise Approach*

Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0745676		
2	Expanded model	Forward stepwise	Loss-Making Firms	0.0768285	0.001***	0.021**

Notes: This table presents the results of testing the median forecast accuracy of the various estimated expanded models for the period 1971-2015 for loss-making firms. The forecast period is from 1981 to 2015. Panels A and B compare the median forecast accuracy between the expanded (stepwise) model earnings forecasts for loss-making firms that are estimated on either all loss-making firms or separately on the three categories of loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test) between the approach with the highest accuracy and the other approaches.

TABLE 15				
Median of Forecast Accuracy				
Panel A: *Profit-Making Firms*				
	Model	*Estimation Approach*	*Estimation sample*	*Median*
1	HDZ model	OLS	All Firms	0.0305253
2	HDZ model	OLS	Profit-Making Firms	0.0286031
3	Expanded model	OLS	Profit-Making Firms	0.0279017
4	Expanded model	Forward stepwise	Profit-Making Firms	0.0277928
Panel B: *Loss-Making Firms*				
	Model	*Estimation Approach*	*Estimation sample*	*Median*
1	HDZ model	OLS	All Firms	0.0779439
2	HDZ model	OLS	Loss-Making Firms	0.0806934
3	HDZ model	OLS	Categories of Loss-Making Firms	0.0781340
4	Expanded model	OLS	Loss-Making Firms	0.0786727
5	Expanded model	OLS	Categories of Loss-Making Firms	0.0777236
6	Expanded model	Forward stepwise	Loss-Making Firms	0.0768285
7	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0745676

Notes: This table shows the median forecast accuracy for each of the model-based earnings forecasts for profit and loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*).

TABLE 16

Tests of the Median Forecast Accuracy of the Various HDZ and Expanded Models Relative to the Most Accurate Estimation Approach

Panel A: *Profit-Making Firms*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0277928		
2	Expanded model	OLS	Profit-Making Firms	0.0279017	0.005***	0.000***
3	HDZ model	OLS	Profit-Making Firms	0.0286031	0.000***	0.000***
4	HDZ model	OLS	All Firms	0.0305253	0.000***	0.000***

Panel B: *Loss-Making Firms*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0745676		
2	Expanded model	Forward stepwise	Loss-Making Firms	0.0768285	0.001***	0.021**
3	Expanded model	OLS	Categories of Loss-Making Firms	0.0777236	0.000***	0.000***
4	HDZ model	OLS	All Firms	0.0779439	0.000***	0.000***

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TABLE 16 (CONTINUED)						
Panel B: *Loss-Making Firms*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
5	HDZ model	OLS	Categories of Loss-Making Firms	0.0781340	0.000***	0.000***
6	Expanded model	OLS	Loss-Making Firms	0.0786727	0.000***	0.000***
7	HDZ model	OLS	Loss-Making Firms	0.0806934	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for profit and loss-making firms, for the period 1971-2015. The forecast period is from 1981 to 2015. Panel A compares the median forecast accuracies for profit-making firms. Panel B compares the median forecast accuracies for loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 17

Tests of the Median Forecast Accuracy of the Various HDZ and Expanded Models Relative to the Most Accurate Estimation Approach

Panel A: *Profit-Making Firms- Using MV as the Accuracy Deflator*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0228711		
2	Expanded model	OLS	Profit-Making Firms	0.0230279	0.005***	0.000***
3	HDZ model	OLS	Profit-Making Firms	0.0233275	0.000***	0.000***
4	HDZ model	OLS	All Firms	0.0250176	0.000***	0.000***

Panel B: *Loss-Making Firms- Using MV as the Accuracy Deflator*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0852985		
2	HDZ model	OLS	All Firms	0.0868399	0.000***	0.000***
3	Expanded model	Forward stepwise	Loss-Making Firms	0.0873835	0.003**	0.000***
4	Expanded model	OLS	Categories of Loss-Making Firms	0.0893453	0.000***	0.000***

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TABLE 17 (CONTINUED)						
Panel B: *Loss-Making Firms- Using MV as the Accuracy Deflator*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
5	Expanded model	OLS	Loss-Making Firms	0.0896807	0.000***	0.000***
6	HDZ model	OLS	Categories of Loss-Making Firms	0.0907049	0.000***	0.000***
7	HDZ model	OLS	Loss-Making Firms	0.0936270	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for profit and loss-making firms, for the period 1971-2015. The forecast period is from 1981 to 2015. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by the market value of equity (*MV*). Panel A compares the median forecast accuracies for profit-making firms. Panel B compares the median forecast accuracies for loss-making firms. The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 18						
Tests of the Median Forecast Accuracy of the Various HDZ and Expanded Models Relative to the Most Accurate Estimation Approach						
Panel A: *Profit-Making Firms- Using LagMV as the Accuracy Deflator*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0265723		
2	Expanded model	OLS	Profit-Making Firms	0.0267511	0.005***	0.000***
3	HDZ model	OLS	Profit-Making Firms	0.0272840	0.000***	0.000***
4	HDZ model	OLS	All Firms	0.0291575	0.000***	0.000***
Panel B: *Loss-Making Firms- Using LagMV as the Accuracy Deflator*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0767200		
2	Expanded model	Forward stepwise	Loss-Making Firms	0.0785093	0.001***	0.000***
3	HDZ model	OLS	All Firms	0.0801608	0.000***	0.000***
4	Expanded model	OLS	Categories of Loss-Making Firms	0.0802180	0.000***	0.000***

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TABLE 18 (CONTINUED)						
Panel B: *Loss-Making Firms- Using LagMV as the Accuracy Deflator*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
5	Expanded model	OLS	Loss-Making Firms	0.0808309	0.000***	0.000***
6	HDZ model	OLS	Categories of Loss-Making Firms	0.0819195	0.000***	0.000***
7	HDZ model	OLS	Loss-Making Firms	0.0844190	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for profit and loss-making firms, for the period 1971-2015. The forecast period is from 1981 to 2015. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by the lagged market value of equity (*LagMV*). Panel A compares the median forecast accuracies for profit-making firms. Panel B compares the median forecast accuracies for loss-making firms. The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 19						
Tests of the Median Forecast Accuracy for the Various Forecasts for Profit-Making Firms Relative to the Most Accurate Estimation Approach						
Panel A: *Sub-sample of Profit-Making Firms that are Followed by at Least Three Analysts (N=31,947)*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0244391		
2	Expanded model	OLS	Profit-Making Firms	0.0244661	0.619	0.110
3	HDZ model	OLS	Profit-Making Firms	0.0265724	0.000***	0.000***
4	HDZ model	OLS	All Firms	0.0285347	0.000***	0.000***
Compare the Most Accurate Model-Based Earnings Forecasts with Analysts' Earnings Forecasts						
	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Sign Test*	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0244391		
2	Consensus analysts' earnings forecasts (median estimates)			0.0365816	0.000***	0.000***

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TABLE 19 (CONTINUED)						
Panel B: *Sub-sample of Profit-Making Firms that are not Followed by Analysts (N=22,926)*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	HDZ model	OLS	Profit-Making Firms	0.0301583		
2	Expanded model	Forward stepwise	Profit-Making Firms	0.0308078	0.007***	0.026**
3	Expanded model	OLS	Profit-Making Firms	0.0310047	0.050**	0.186
4	HDZ model	OLS	All Firms	0.0316590	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for sub-samples of profit-making firms that classified based on analysts' coverage, for the period 1971-2015. The forecast period is from 1981 to 2015. Panel A compares the median forecast accuracies for profit-making firms with analyst's coverage (Profit-making firms that are followed by at least three analysts). Panel B compares the median forecast accuracies for profit-making firms without analysts' coverage. Model-based forecasts accuracy is the absolute value of the difference between actual earnings (i.e., the actual income before extraordinary items from Compustat) and model-based earnings forecasts scaled by opening total assets (*OTA*). Analysts' forecasts accuracy is the absolute value of the difference between actual earnings (i.e., the actual earnings from IBES) and the consensus analysts' earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 20

Tests of the Median Forecast Accuracy for the Various Forecasts for Loss-Making Firms Relative to the Most Accurate Estimation Approach

Panel A: *Sub-sample of Loss-Making Firms that are Followed by at Least Three Analysts (N=8,535)*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0696462		
2	HDZ model	OLS	All Firms	0.0709177	0.005***	0.003***
3	Expanded model	Forward stepwise	Loss-Making Firms	0.0717914	0.017**	0.170
4	Expanded model	OLS	Categories of Loss-Making Firms	0.0719589	0.000***	0.000***
5	HDZ model	OLS	Categories of Loss-Making Firms	0.0739698	0.000***	0.000***
6	Expanded model	OLS	Loss-Making Firms	0.0740804	0.001***	0.003****
7	HDZ model	OLS	Loss-Making Firms	0.0750734	0.000***	0.000***

Compare the Most Accurate Model-Based Earnings Forecasts with Analysts' Earnings Forecasts

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Sign Test*	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0696462		
2	Consensus analysts' earnings forecasts (median estimates)			0.0578338	0.000***	0.967

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TABLE 20 (CONTINUED)						
Panel B: *Sub-sample of Loss-Making Firms that are not Followed by Analysts (N=11,712)*						
	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0771175		
2	Expanded model	Forward stepwise	Loss-Making Firms	0.0800409	0.015**	0.008***
3	HDZ model	OLS	Categories of Loss-Making Firms	0.0809889	0.000***	0.000***
4	Expanded model	OLS	Loss-Making Firms	0.0810957	0.000***	0.000***
5	Expanded model	OLS	Categories of Loss-Making Firms	0.0811677	0.000***	0.000***
6	HDZ model	OLS	All Firms	0.0815952	0.000***	0.000***
7	HDZ model	OLS	Loss-Making Firms	0.0831066	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for sub-samples of loss-making firms that classified based on analysts' coverage, for the period 1971-2015. The forecast period is from 1981 to 2015. Panel A compares the median forecast accuracies for loss-making firms with analyst's coverage (Loss-making firms that are followed by at least three analysts). Panel B compares the median forecast accuracies for loss-making firms without analysts' coverage. Model-based forecasts accuracy is the absolute value of the difference between actual earnings (i.e., the actual income before extraordinary items from Compustat) and model-based earnings forecasts scaled by opening total assets (*OTA*). Analysts' forecasts accuracy is the absolute value of the difference between actual earnings (i.e., the actual earnings from IBES) and the consensus analysts' earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 21

Tests of the Median Forecast Accuracy of the Various HDZ and Expanded Models Relative to the Most Accurate Estimation Approach

Panel A: *Profit-Making Firms- Estimating the Two Year-ahead Earnings Forecasts*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0420268		
2	HDZ model	OLS	Profit-Making Firms	0.0421450	0.000***	0.000***
3	Expanded model	OLS	Profit-Making Firms	0.0422058	0.637	0.268
4	HDZ model	OLS	All Firms	0.0445722	0.000***	0.000***

Panel B: *Loss-Making Firms- Estimating the Two Year-ahead Earnings Forecasts*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0896741		
2	Expanded model	Forward stepwise	Loss-Making Firms	0.0923434	0.032**	0.425
3	HDZ model	OLS	All Firms	0.0942361	0.000***	0.000***
4	Expanded model	OLS	Categories of Loss-Making Firms	0.0944871	0.000***	0.000***

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TABLE 21 (CONTINUED)						
Panel B: *Loss-Making Firms- Estimating the Two Year-ahead Earnings Forecasts*						
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
5	HDZ model	OLS	Categories of Loss-Making Firms	0.0946451	0.000***	0.000***
6	Expanded model	OLS	Loss-Making Firms	0.0948027	0.000***	0.000***
7	HDZ model	OLS	Loss-Making Firms	0.1008028	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate two year-ahead earnings forecasts for profit and loss-making firms, for the period 1971-2015. The forecast period is from 1981 to 2015. Panel A compares the median forecast accuracies for profit-making firms. Panel B compares the median forecast accuracies for loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

TABLE 22

Tests of the Median Forecast Accuracy of the Various HDZ and Expanded Models Relative to the Most Accurate Estimation Approach
(Including the Expanded Models Estimated on all firms and using OLS and Forward Stepwise)

Panel A: *Profit-Making Firms- Using OTA as the Accuracy Deflator*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	Profit-Making Firms	0.0277928		
2	Expanded model	OLS	Profit-Making Firms	0.0279017	0.005***	0.000***
3	HDZ model	OLS	Profit-Making Firms	0.0286031	0.000***	0.000***
4	Expanded model	Forward stepwise	All Firms	0.0301533	0.000***	0.000***
5	Expanded model	OLS	All Firms	0.0302780	0.000***	0.000***
6	HDZ model	OLS	All Firms	0.0305253	0.000***	0.000***

Panel B: *Loss-Making Firms- Using OTA as the Accuracy Deflator*

	Model	*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
1	Expanded model	Forward stepwise	All Firms	0.0727016		
2	Expanded model	OLS	All Firms	0.0727069	0.055*	0.008***

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TABLE 22 (CONTINUED)							
Panel B: *Loss-Making Firms- Using OTA as the Accuracy Deflator*							
Model		*Estimation Approach*	*Estimation sample*	*Median*	*Nonparametric tests*	
					Sign Test	*Wilcoxon Sign Rank Test*
3	Expanded model	Forward stepwise	Categories of Loss-Making Firms	0.0745676	0.001***	0.000***
4	Expanded model	Forward stepwise	Loss-Making Firms	0.0768285	0.000***	0.000***
5	Expanded model	OLS	Categories of Loss-Making Firms	0.0777236	0.000***	0.000***
6	HDZ model	OLS	All Firms	0.0779439	0.000***	0.000***
7	HDZ model	OLS	Categories of Loss-Making Firms	0.0781340	0.000***	0.000***
8	Expanded model	OLS	Loss-Making Firms	0.0786727	0.000***	0.000***
9	HDZ model	OLS	Loss-Making Firms	0.0806934	0.000***	0.000***

Notes: This table presents tests of the median forecast accuracy between all models used to generate earnings forecasts for profit and loss-making firms, for the period 1971-2015. The forecast period is from 1981 to 2015. We consider two more earnings forecasting models beside the other models: the expanded model that estimated on all firms, and using the OLS and forward stepwise approaches. Panel A compares the median forecast accuracies for profit-making firms. Panel B compares the median forecast accuracies for loss-making firms. Forecast accuracy is the absolute value of the difference between actual earnings and model-based earnings forecasts scaled by opening total assets (*OTA*). The last two columns of Panel A and B present the nonparametric tests of forecast accuracy (Sign Test and Wilcoxon Sign Rank Test).

CHAPTER 3

EARNINGS FORECASTS AND THE VALUATION OF PROFIT-MAKING FIRMS

3.1 INTRODUCTION

The purpose of this chapter is to examine the value relevance of earnings forecasts for profit-making firms. The first research question we investigate is whether our earnings forecasts are incrementally value relevant, using a basic valuation model with earnings and book value as our baseline model. We start by developing a cross-sectional earnings forecasting model for profit-making firms. We then classify profit-making firms into persistent and transitory groups according to the sign of their forecasted earnings. The second research question we investigate is whether the valuation role of our earnings forecasts is conditional upon profit persistence. The third research question we investigate is whether the valuation role of earnings and book value within the baseline model is conditional upon profit persistence. This allows us to investigate the value relevance of our earnings forecasts indirectly. Specifically, we ask whether current earnings (book value) plays a more (less) prominent role for persistent than for transitory profit-making firms.

The majority of the prior studies have focused on examining the value relevance of earnings and book value for all firms, without considering the profit and loss-making firms separately (e.g., Easton and Harris, 1991; Barth et al., 1993; Kothari and Zimmerman, 1995; Feltham and Ohlson, 1995; Ohlson, 1995; Francis and Schipper, 1996; Collins et al., 1997; Barth et al., 1998; Barth et al., 1999). Other studies concentrate on examining the value relevance of other items for all firms that capture the future prospects of firm such as research and development expenditures (*RD*), dividends (*DIV*), capital contributions (*CC*), and capital expenditures (*CE*) (e.g., Akbar and Stark, 2003; Shah et al., 2009; Rees and Valentincic, 2013).

Nonetheless, the earnings-return relation is shown to be significantly positive for profit-making firms, but not significant for loss-making firms (Hayn, 1995). Building on Hayn, (1995), Burgstahler and Dichev (1997b) and Collins et al. (1999) argue that book value has a less prominence role in valuing profit-making firms compared to loss-making firms. This work suggests that the valuation roles of book value and earnings is conditional on current profitability. Subsequently, research has examined value relevance issues on loss-making firms only (e.g., Joos and Plesko, 2005; Darrough and Ye, 2007; Wu et al., 2010; Jiang and Stark, 2013). Another study uses profit-making firms as a benchmark, because they are likely to be valued as going concerns, to examine their research questions on loss-making firms (Ciftci and Darrough, 2015).

Franzen and Radhakrishnan (2009) investigate the differences in the valuation role of RD expenditures between profit and loss-making firms. The main purpose of their study is to investigate whether the valuation role of RD reported for loss-making firms extend to profit-making firms. They allow the role of RD expenditures in valuation to vary across categories of profit and loss-making firms, these categories being high, medium and low RD expenditures firms. They suggest that RD expenditures are value relevant for loss-making firms across all categories, but not for profit-making firms. They argue that profit has information content that captures the future benefits from RD expenditures. Rabier (2018), building on the role of adaptation in equity valuation in Burgstahler and Dichev (1997b), then reports that the valuation importance of current earnings and book value is conditional upon expected adaptation in a merger setting. Rabier (2018) documents that the valuation weight placed on current earnings (book value) is lower (higher) for those firms that are more likely to have to adapt. Rabier (2018) reports these results when using a sample of all targets and then using a sample of profit targets only.

This study concentrates on the valuation of profit-making firms as they constitute a large proportion of all firms, given that the prior literature focuses on the valuation of all firms or loss-making firms only. Whereas prior research focuses on current profitability in considering the valuation roles of book value and earnings, we focus on future profitability. In particular, we focus on differences between firms that make profits currently but are expected to make a loss in the following year versus those firms that make profits currently but are expected to make a profit in the following year. Research provides evidence that there might be differences in valuation models according to the categories of profit-making firms in the merger market. This possibility is consistent with the findings of Barth et al. (1998), who argue that the valuation importance of current earnings (book value) decreases (increases) as financial health decreases.

The first step in our study is to develop an earnings forecasting model for profit-making firms. We do this for two specific reasons. First, prior research on earnings forecasts provides evidence that certain accounting fundamentals help to predict future earnings (e.g., Hou et al., 2012; Li and Mohanram, 2014). They develop and test their earnings forecasting models on all firms (i.e., profit and loss-making firms), however, whereas some studies develop earnings prediction models for loss-making firms specifically (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015). Second, the earnings prediction models developed previously do not include all accounting items that are found to be useful in the prior literature for valuing or predicting the future earnings for all firms or loss-making firms. Given the growing attention to the model developed by Hou et al. (2012), we extend this model by considering all accounting fundamentals that are shown to have information content about the future prospects of firms.

We examine the value relevance of our earnings forecasts directly and indirectly by classifying profit-making firms into persistent and transitory profit-making firms. We then, examine the valuation role of our earnings forecasts, current earnings and book value across the two categories of profit-making firms.

Our sample consists of 63,316 firm–year observations of US firms that are listed on the NYSE, Amex, or Nasdaq between 1981 and 2014. To examine whether our earnings forecasts are useful for valuing profit-making firms, we add our earnings forecasts to the basic valuation model with current earnings and book value. We report that our earnings forecasts have an incremental value over and above current earnings and book value in the valuation of profit-making firms. To examine whether the variation in profit persistence affects the valuation importance of the one year-ahead earnings forecasts, we interact a profit persistence dummy defined using our earnings forecasts with our earnings forecasts in our valuation model. We report that our earnings forecasts are value relevant for persistent profit-making firms only. To examine whether the variation in profit persistence affects the relative importance of current earnings and book value for valuation, we interact a profit persistence dummy defined using our earnings forecasts with current earnings and book value in our valuation model. We report that the implied valuation weights placed on current earnings and book value vary according to the categories of profit-making firms classified based upon profit persistence.

Overall, our results are robust to alternative empirical choices regarding valuation models, estimation methods, sample specifications, and classifications of profit-making firms. Specifically, the results are hold when we estimate the valuation models using the OLS approach with industry and year dummies rather than the Fama-MacBeth (1973) approach. The results are also robust when we limit the sample to only profit-making firms with profits substantively different from zero, or profit-making firms defined as healthy using the Altman (1993) model. Further, the results are consistent when using one, two, and three years-ahead earnings forecasts to define persistent and transitory profit-making firms. The results are also robust when we use other deflating procedures for our valuation models, and apply the Newey-West procedure to adjust the standard errors of Fama-McBeth (1973) approach.

In additional tests, we restrict our sample to profit-making firms that are followed by at least three analysts. Small firms and financial distressed firms are less likely to be followed by analysts (Diether et al., 2002; Hou et al., 2012). Thus, when we exclude these firms from our sample, we lose approximately 52% of firm-year observations. We use both analysts' earnings forecasts and our own earnings forecasts to perform the analysis on this sample. Using our earnings forecasts, the results are consistent with the main conclusions overall, except that some of the expectations for book value are not supported. Using analysts' earnings forecasts, the results show that analysts' earnings forecasts have incremental value relevance over and above current earnings and book value in the valuation of profit-making firms. Finally, the use of an extended model, relative to the basic valuation model with current earnings and book value, supports the main conclusions, except that some of the expectations for the coefficients for book value are not supported.

This study makes several contributions to the literature. First, this study extends the prior research that investigates the forecasting of earnings. Most of the prior literature concentrates on examining the forecasting of earnings for all firms together, while only a few studies concentrate on loss-making firms only. Further, recent studies develop cross-sectional models based on fundamental accounting items to forecast earnings. They show that these models outperform analysts' earnings forecasts in terms of accuracy. Our focus on profit-making firms allows us to investigate whether the usefulness of the cross-sectional earnings prediction models for all firms, and loss-making firms, specifically extends to profit-making firms. Therefore, our study complements the prior earnings forecast literature by providing an earnings forecast modelling approach for profit-making firms specifically. Further, we provide evidence that the accounting items reported in the valuation literature are useful for predicting next year earnings.

Second, we contribute to the prior valuation literature by investigating an issue that has not been fully explored. In particular, we examine the direct and indirect value relevance of our earnings forecasts for profit-making firms. The majority of the prior literature focuses on testing the value relevance of current earnings and book value only, whilst other research concentrates on testing the value relevance of other accounting items that indirectly capture the future prospects of firm. Thus, prior studies ignore earnings forecasts that are a direct measure of firms' future prospects in considering valuation models, despite earnings forecasts being associated with valuation according to theoretical valuation frameworks. We report that our earnings forecasts have information content incremental to current earnings and book value. Further, we add to the existing literature by providing evidence that the information content of our earnings forecasts, current earnings, and book value is conditional upon whether or not a firm's profit is going to persist in the next year.

The remainder of this study proceeds as follows. Section 3.2 discusses the relevant literature and develops the hypotheses. Section 3.3 discusses our research design, including the earnings forecasting model, testing the predictive power and the validity of our earnings forecast model, and the valuation models that are used in this study. Section 3.4 discusses the data and sample selection. Section 3.5 describes the empirical results, including the main results and robustness checks. Section 3.6 concludes.

3.2 Relevant Prior Studies and Hypotheses Development

Ohlson (1995) provides a valuation framework that theoretically links accounting and non-accounting information with the firm value. The valuation model developed by Ohlson (1995) is based on three key assumptions. These are the present value of expected dividends, the clean surplus relationship, and linear information dynamics. The main contribution of Ohlson's (1995) residual-income valuation framework is the modeling of the linear information dynamics that is proposed to explain the valuation multipliers. The linear information dynamics assumes that the expected future abnormal earnings is a linear function of the current abnormal earnings and 'other information'. Ohlson (1995) deduces firm value as a linear function of accounting information (i.e., current earnings, book value of equity, and net shareholder cash flows) and non-accounting information (i.e., 'other information').

Empirically, the prior valuation research uses extended restricted version of the residual-income based valuation model in Ohlson (1995), where market value of equity is defined as a linear function of current earnings and book value, and includes a constant term and an error term in the model to capture variables omitted from the model. Most of these studies focus on investigating the value relevance of earnings and book value without considering the sign of net income (i.e., profit and loss-making firms separately) (e.g., Easton and Harris, 1991; Barth et al., 1993; Kothari and Zimmerman, 1995; Feltham and Ohlson, 1995; Ohlson, 1995; Francis and Schipper, 1996; Collins et al., 1997; Barth et al., 1998; Barth et al., 1999).

Previous research, however, provides evidence that the earnings-return association is insignificant for loss-making firms and significant and highly positive for profit-making firms. This suggests that profit-making firms are valued as going concerns, while loss-making firms are valued based on their abandonment option value (Hayn, 1995). Therefore, subsequent research examines the differences on the value relevance of earnings and book value between profit and loss-making firms (e.g., Burgstahler and Dichev, 1997b; Collins et al., 1999). These studies classify firms according to the sign of current earnings or return-on-equity. Collins et al. (1999) argue that book value has a less essential role in valuing profit-making firms compared to loss-making firms for two reasons. First, book value can act as a proxy for expected future normal earnings when a firm makes a loss (Ohlson, 1995). Second, it can act as a proxy for the abandonment/adaptation option value when a firm chooses to exercise the option (Berger et al., 1996; Burgstahler and Dichev, 1997b; Hayn, 1995).

Another stream of research focuses on investigating the value relevance of other items besides earnings and book value that contain information on future earnings. First, a large number of studies in the UK and the US report evidence that RD expenditures are value relevant for all firms (e.g., Hirschey, 1982; Hirschey and Weygandt, 1985; Hirschey and Spencer, 1992; Green et al.,1996; Sougiannis, 1994; Lev and Sougiannis, 1996; Lev and Zarowin, 1999; Stark and Thomas, 1998; Barth and Kasznik, 1999; Graham and

Frankenberger, 2000; Akbar and Stark, 2003). Franzen and Radhakrishnan (2009) investigate whether the value relevance of RD is different between profit and loss-making firms. Little attention has been given to advertising expenses in the valuation literature (e.g., Hirschey,1982; Hirschey and Weygandt, 1985; Graham and Frankenberger, 2000; Shah et al., 2009). Second, dividends (*DIV*) and capital contributions (*CC*) have been found to be value relevant for all firms in the UK and the US (e.g., Fama and French, 1998; Rees, 1997; Akbar and Stark, 2003; Hand and Landsman, 2005; Hughes, 2008; Dedman et al., 2009; Shah et al., 2009; Gregoriou, 2010; Dedman et al., 2012). Third, other studies report similar results with respect to capital expenditures (*CE*) in the UK (Dedman et al., 2009; Rees, 1997). Rees and Valentincic (2013) focus on examining the value relevance of dividends by controlling for all variables that are shown to be useful in the prior valuation literature. Initially, they test their model on a sample of all firms, and then they focus on profit- making firms only.

Other research concentrates on the valuation of loss-making firms. Joos and Plesko (2005) examine whether the valuation of loss-making firms is based upon loss persistence, consistent with the abandonment option hypothesis (Hayn, 1995). They classify loss-making firms into persistent and transitory losses, using a loss-reversal model. They argue that RD expenditures are the main reason for the increase in the number of listed loss-making firms. Firms with high RD expenditures can report losses in the current period, even though they are in a good financial health. Darrough and Ye (2007) claim that loss-making firms that are engaged in activities such as RD are expected to report profit in the future, therefore they are not considered as being in financial distress or facing liquidation and bankruptcy. Consequently, they identify additional value drivers that are useful to capture the future prospects of this category of loss-making firms, which are RD expenditures, nonrecurring charges, growth strategy and sustainability. Jiang and Stark (2013) concentrate on the role of book value in the valuation of loss-making firms that are RD intensive and/or dividend paying. They find that book value has a more important role in valuing low-R&D loss-making (non-dividend paying) firms compared with high-R&D loss-making (dividend paying) firms. A similar study is conducted in Australia by Wu et al. (2010).

As mentioned above, the empirical valuation research has ignored “other” information in the residual-income based valuation model in Ohlson (1995). Theoretically, Ohlson (2001) investigates including one period-ahead residual income forecasts to reflect the other information in the Ohlson (1995) model. Liu and Ohlson (2000) use one period-ahead forecasts of residual income and operating assets to estimate the other information in Feltham and Ohlson (1995). Begely and Feltham (2002) assume that accounting number are not sufficient to provide value relevant information for investors. Therefore, market value is a function of accounting numbers and other information. Building on Feltham and Ohlson (1996), Begely and Feltham (2002) include one and two period- ahead analysts’ forecasts as a means of reflecting “other” information about future revenues from past investments and about future growth opportunities. They express the valuation model in term of current operating income, current operating assets, current capital investment, and one and two period- ahead analysts’ forecasts. They argue that the analysts’ forecasts are value relevant. In particular, they find that the coefficient of the two period-ahead forecasts is significantly positive and this coefficient is increasing in the expected growth in investment opportunity and the persistence in cash receipts. Whereas they find that the coefficient of the one period-ahead forecasts is significantly negative and they argue that this indicates that there is sufficient persistence in income before depreciation. Further, they find that the coefficient of the sum of one and two period-ahead forecasts is positive.

The focus of our analyses in this chapter is the role of earnings forecasts in the valuation of profit-making firms. As mentioned above, the prior valuation research has largely tended to focus on the valuation of all firms (i.e., profit and loss-making firms) or loss-making firms only. The first issue we investigate is whether our earnings forecasts have incremental value relevance over and above current earnings and book value in the valuation of profit-making firms. Akbar and Stark (2003), Shah et al. (2009) and Rees and Valentincic (2013), among others, include accounting items that provide information on future earnings in their models besides current earnings and book value such as RD expenditures, dividends and capital contributions. We do not consider these variables as we are initially interested in a simple valuation model involving current earnings and book value to investigate the implications of using a one year-ahead earnings forecasts in the valuation of profit-making firms.

In theory, scholars link earnings forecasts to valuation. The usefulness of financial information is associated with its capability to obtain efficient and precise earnings forecasts of a company and its related risks, which allows investors to make correct decisions (Richardson et al., 2010). The International Accounting Standard Board (IASB) Conceptual Framework for Financial reporting argues for the following qualitative characteristics of useful financial statement information. For information to be useful, it should be both relevant and provide a faithful representation. Financial information is considered relevant if it has an impact on decisions made by users due to its predictive value or confirmatory value (IASB, 2018). Prior earnings forecasting studies suggest that analysts are overly optimistic in their forecasts, despite being widely used by researchers (e.g., Mendenhall, 1991; Brown, 1993;

Francis and Philbrick, 1993; Dugar and Nathan, 1995; McNichols and O'Brien, 1997; Das et al., 1998; Lin and McNichols, 1998; Easton and Sommers, 2007). In addition, there are issues about the coverage of analysts' forecasts (e.g., La Porta, 1996; Hong et al., 2000; Diether et al., 2002). As mentioned above, recent research on earnings forecasts shows that certain accounting fundamentals help to forecast future earnings (e.g., Hou et al, 2012; Li and Mohanram, 2014). Therefore, our earnings forecasts are based upon financial statement items that are shown to be useful in the valuation and earnings prediction literature. Based on that, we expect that the one year-ahead earnings forecasts will be value relevant because it is a direct and comprehensive measure of firm's future prospects. Particularly, we expect that our one year-ahead earnings forecasts will reflect the information in the value-relevant items that are used to generate this forecast, if these items have predictive power.

Our first hypothesis, stated in null form, is:

H1: our earnings forecasts are value irrelevant for profit-making firms.

The associated alternative hypothesis is that the earnings forecasts are value relevant, with an implied positive relationship.

The second issue we investigate is the ability of our earnings forecasts to distinguish between profit-making firms that will report profits (persistent profit-making firms) in the next year from those that are expected to report a loss (transitory profit-making firms). Franzen and Radhakrishnan (2009) test whether the value relevance of RD reported for loss-making firms extends to profit-making firms. Therefore, they investigate the valuation role of

RD expenditures in both profit and loss-making firms. Based on RD intensity, they categories firms into high, medium and low RD expenditures. They find that the valuation multiplier on RD expenditure is negative for all categories of profit-making firms and positive for all categories of loss-making firms. The reason is that the linear information dynamics assumption of the residual income model is more likely to be met for profit-making firms as profits are likely to reflect the potential future profitability from RD activity. This is not the case for loss-making firms, however. Although they classify profit-making firms into different categories, the classification is not based on the persistence of profits. Instead they exclude non-RD firms and classify firms based on one accounting item (i.e., RD expenditures) that captures partially and indirectly the firms' future prospects and the financial health. They do so because the main purpose of their study is to test whether the valuation role of RD reported for loss-making firms extends to profit-making firms. Therefore, they focus on the coefficient of RD in their analysis between different categories of profit-making firms.

To test our second issue, we examine the role of profit-making firms' status within the basic earnings and book value valuation model. We place profit-making firms into persistent or transitory categories based upon our earnings forecasts. In particular, a profit-making firm is defined as persistent if the earnings forecasts positive, and transitory otherwise. Based on the arguments above, we predict our earnings forecasts will have different valuation roles conditional upon profit persistence. In particular, we expect that our earnings forecasts will have more prominence in the valuation of persistent profit-making firms than it does in the valuation of transitory profit-making firms. Persistent profit-making firms are more likely to be valued as going concerns (Hayn, 1995; Collin et al, 1999). By contrast, transitory profit-making firms are more likely to be valued as distressed loss-making firms (e.g., Joos and

Plesko, 2005; Darrough & Ye, 2007). In addition, we expect that capital markets place more weight on earnings forecasts for profit-making firms classified as persistent, relative to those classified as transitory.

The discussions above lead to the following hypotheses, stated in null form:

H2(a): capital markets do not price the earnings forecasts of profit-making firms conditional upon whether a profit is going to persist in the next year;

H2(b): capital markets do not price the earnings forecasts of profit-making firms classified as transitory; and

H2(c): capital markets do not price the earnings forecasts of profit-making firms classified as persistent.

The alternative hypotheses are that the *difference* in the pricing of earnings forecasts for profit-making firms classified as persistent relative to those classified as transitory is positive; the pricing of earnings forecasts for profit-making firms classified as transitory is positive; and the pricing of earnings forecasts for profit-making firms classified as persistent is positive.

Building on Burgstahler and Dichev (1997b), Collins et al. (1997), and Wysocki (1997), Barth et al. (1998) examine the association between the pricing multiples and the incremental explanatory power of earnings (book value) and the firm's financial health. Barth et al. (1998) report that the importance of earnings decreases, and the importance of book value increases as financial health decreases. Barth et al. (1998) define the financial health using two measures which are: intertemporal changes and cross-sectional differences. First, they choose a sample of firms that thereafter report bankruptcy and they investigate the association between market value and earnings and book value for each year prior the bankruptcy. Second, they categorise firms into two financial health categories (i.e., less and more financially healthy firms) using effective bond ratings. Barth et al. (1998) claim that allowing the coefficient of earnings to vary for loss-making firms, provides findings that have an impact incremental to those reflected by a positive (negative) earnings classifications (Collins et al., 1997; Wysocki, 1997).

Rabier (2018) investigates whether the role of adaptation in equity valuation documented in the capital markets extends to the merger market. Building on the theoretical framework of Burgstahler and Dichev (1997b), Rabier (2018) reports that the relationship between the target's earnings and the acquirers' bid price is decreasing in expected adaptation. Rabier (2018) documents the same findings when using a sample of profit targets only before the acquisition, which indicates that results are not driven by firm-level adaptation that is already reflected in losses (Barth et al., 1998; Collins et al., 1999). The approach in Rabier (2018) differs from that in Franzen and Radhakrishnan (2009). First, they investigate the valuation of profit-making firms in different markets. The former focuses on merger markets, while Franzen and Radhakrishnan (2009) focus on capital markets. Second, Franzen and Radhakrishnan (2009) model the distinction between different categories of profit-making firms by classifying them based on RD intensity and without allowing the coefficients of earnings to vary between them. Rabier (2018) models the distinction by considering the expected adaptation and allowing the valuation of earnings to differ based on that. Third, Franzen and Radhakrishnan (2009) use a basic book value and earnings valuation model and extend it by including RD expenditures only, while Rabier (2018) uses an extended model following the prior research in the merger setting.

Based on the arguments above, we predict earnings will have different valuation role conditional upon profit persistence. That is, we expect that earnings will have more prominence in the valuation of persistent profit-making firms than transitory profit-making firms. The linear information dynamic is more likely to be met for persistent profit-making firms. In particular, the profits of persistent profit-making firms are more likely to contain information on the future (Franzen and Radhakrishnan, 2009). By contrast, the linear information dynamics assumption is not likely to be satisfied for transitory profit-making firms, as current profits do not reflect the future prospects of the firms. This indicates that these profit-making firms are more likely to exercise the abandonment/adaptation option instead of reporting losses, thus they are valued as distressed loss-making firms. Further, we expect that capital markets place more weight on earnings for the profit-making firms classified as persistent, relative to those classified as transitory.

The discussions above lead to the following hypotheses, stated in null form:

H3(a): capital markets do not price the current earnings of profit-making firms conditional upon whether a profit is going to persist in the next year;

H3(b): capital markets do not price the current earnings of profit-making firms classified as transitory; and

H3(c): capital markets do not price the current earnings of profit-making firms classified as persistent:

The alternative hypotheses are that the *difference* in the pricing of current earnings for profit-making firms classified as transitory relative to those classified as persistent is positive; the pricing of current earnings for profit-making firms classified as transitory is positive; and the pricing of current earnings for profit-making firms classified as persistent is positive.

Ciftci and Darrough (2015) argue that the role of book value in valuing firms is different across profit and loss-making firms. Using a basic earnings and book value valuation model, and sorting profit and loss-making firms into groups based on RD intensity, Ciftci and Darrough (2015) propose that that book value is less value relevant for low RD profit-making firms than low RD loss-making firms, consistent with the abandonment/adaptation option argument. However, there is no evidence that book value is more value relevant for high RD loss-making firms than high RD profit-making firms. Although they classify profit-making firms into different categories, they use profit-making firms as a benchmark to examine the role of book value in the valuation of loss-making firms. Therefore, they focus on comparing the different categories of profit and loss-making firms, based on RD intensity, with each other, without considering the role of book value on the different categories of profit-making firms specifically. In a merger setting, the analysis in Rabier (2018) shows that the relationship between book value and the acquirers' bid price is increasing in expected adaptation. The results remain the same after excluding the loss targets from the sample.

Based on the arguments above, we predict that capital markets price book value conditional upon profit persistence, because it captures a firm's future prospects more directly. In particular, we expect that book value will have more prominence in the valuation of transitory profit-making firms than of persistent profit-making firms. As discussed previously, transitory profits indicate that these profit-making firms are more likely to exercise the abandonment/adaptation option and, thus, book value plays an important role to reflect the value of adopting the abandonment/adaptation option.

This leads to the following null hypotheses:

H4(a): capital markets do not price the book value of profit-making firms conditional upon whether a profit is persistent or transitory;

H4(b): capital markets do not price the book value of profit-making firms classified as transitory; and

H4(c): capital markets do not price the book value of profit-making firms classified as persistent:

The alternative hypotheses are that the *difference* in the pricing of book value for profit-making firms classified as transitory, relative to those classified as persistent, is negative; the pricing of book value for profit-making firms classified as transitory is positive; and the pricing of book value for profit-making firms classified as persistent is positive.

3.3 METHODOLOGY

In this section, we describe first the earnings forecast approach used to produce our earnings forecasts for profit-making firms. We examine the incremental value relevance of these forecasts above the primary financial statement measures (i.e., current earnings and book value). We also used these forecasts to classify a profit-making firm as transitory or persistent. Then, we describe our valuation approach used to value transitory and persistent profit-making firms.

3.3.1 Developing the Earnings Forecasting Model for Profit-Making Firms

In order to develop an earnings prediction model for profit-making firms, we begin from the earnings forecasting model introduced by Hou et al. (2012) (HDZ). This model is an extension of the cross-sectional profitability model in Fama and French (2000) and has been commonly employed in prior literature recently. The model is specified as:

$$Forecast_{t+1} = \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 NegE_t + \alpha_6 Accruals_t \quad (1)$$

The parameters of the model are estimated by setting $Forecast_{t+1}$ equal to earnings before extraordinary items for year *t+1* and running a regression of it on the variables in the model. *Forecasts* are generated by applying the model to firms out of sample. More specific details of how the forecasting model is used are provided below. For the independent variables in the model above, TA_t is total assets in year *t*; Div_t is the amount of any dividend payment in year *t*; $DivDum_t$ is an indicator variable equal to one for firms that pay dividends in year *t* and otherwise equals zero; $NIEI_t$ is earnings before extraordinary items in year *t*; $NegE_t$ is an indicator variable equal to one for firms that report negative earnings in year *t* and equal to zero otherwise; and $Accruals_t$ is total accruals in year *t*.

Building on their model, we propose the following earnings forecasting model for profit-making firms:

$$
\begin{aligned}
Forecast_{t+1} = {} & \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 Accruals_t + \\
& \alpha_6 Size_t + \alpha_7 BM_t + \alpha_8 SGR_t + \alpha_9 NegSGR_t + \alpha_{10} SG_t + \alpha_{11} NegSG_t + \\
& \alpha_{12} FirstProfit_t + \alpha_{13} ProfitSeq_t + \alpha_{14} DivStop_t + \alpha_{15} Cash_t + \alpha_{16} CC_t + \\
& \alpha_{17} LagCC_t + \alpha_{18} DbtIss_t + \alpha_{19} RD_t + \alpha_{20} IncLTD_t + \alpha_{21} BV_t + \alpha_{22} EI_t + \\
& \alpha_{23} CE_t + \alpha_{24} AbsNegSpI_t + \alpha_{25} SpI_t
\end{aligned} \tag{2}
$$

We extend the HDZ model by adding all variables that are shown to be useful in prior literature either to predict future earnings or to be value relevant for firms in the UK and the US or both. We consider the value drivers that are shown to be useful to capture the future economic prospects for loss-making firms (e.g., Joos and Plesko, 2005; Darrough and Ye, 2007). As a consequence, we include these variables in our earnings forecasting model as they could have the potential to forecast future earnings for profit-making firms as well. Consistent with prior studies (e.g., Hayn, 1995; Joos & Plesko, 2005; Barth et al., 1998; Francis and Schipper, 1999; Shah et al., 2009; Li, 2011), $NIEI_t$ is defined as income before extraordinary items. The model is estimated on profit-making firms only. Therefore, $NegE_t$ is removed from the HDZ model.

The first category of explanatory variables measures size and a firm's growth prospects. We include $Size_t$, measured as the log of market value of equity, following the earnings forecasting models of Fama and French (2000) and Li (2011). We include BM_t, the ratio of book value to the market value of equity, following the earnings forecasting models of Fama and French (2006) and So (2013). Further, following the valuation models of Darrough & Ye (2007) and Jiang and stark (2013) respectively, we include the sales growth ratio (SGR_t); a dummy variable capturing whether the sales growth ratio is negative ($NegSGR_t$); change in sales (SG_t); and a dummy capturing whether the change in sales is negative ($NegSG_t$).

Our second category of explanatory variables measures the incidence and frequency of previous profits. We add two variables that give an indication about the past profit to complement the prior explanatory variables. $FirstProfit_t$ is an indicator variable equal to 1, if the current year's profit is the first in a sequence, and otherwise zero, following Joos and Plesko (2005) and Li (2011). $ProfitSeq_t$ is a count of the number of sequential profits over the past five years before the current profit, following Joos and Plesko (2005).

Our third category of explanatory variables measures a firm's stability and conservatism. Since previous studies link a firm's future earnings with dividend policy (e.g., Healy and Palepu, 1988; DeAngelo et al., 1992), we add $DivStop_t$ an indicator variable equal to 1 if a firm stops paying dividends in the current year, and 0 otherwise, following Joos and Plesko (2005). The sum of cash and short-term investments ($Cash_t$); capital contributions (CC_t), lagged capital contributions ($LagCC_t$); cash proceeds from issuing debt ($DebtIss_t$); and research and development expense (RD_t) are added, following Darrough and Ye (2007). Further, the increase in the long-term debt ($IncLTD_t$) is added following Jiang and Stark (2013).

Our final category includes different measures. These are: (i) the book value of equity (BV_t); (ii) extraordinary items (EI_t); (iii) capital expenditures (CE_t), following Jiang and

Stark (2013); (iv) the absolute value of negative special items ($AbsNegSpI_t$), following Darrough and Ye (2007); and (v) total special items (SpI_t) following Li (2011).

Following Gerakos and Gramacy (2013), we estimate equation (2) using forward stepwise regression approach using a 1% significant level. The regression is estimated after deflating all variables (except for BM_t, $Size_t$, $FirstProfit_t$, $ProfitSeq_t$, $DivDum_t$, $DivStop_t$, SGR_t, $NegSGR_t$, and $NegSG_t$) by opening total assets (*OTA*). The estimations of the equations are performed after including industry-specific dummies based on SIC industry classifications.

To estimate the cross-sectional earnings forecast model for *t+1*, we apply the approach of Hou et al. (2012) and Li and Mohanram (2014). For each year between 1970 to 2014, we estimate our cross-sectional model using all available observations over the past 10 years. For example, if 2002 is year t, we use data from 1992 to 2001 to estimate the coefficients that will be used to predict the earnings for firms in 2003 (year *t+1*), using firm data for 2002 (year *t*). This approach needs firms to have non-missing values for all independent variables to predict their future earnings. Then, we examine the value relevant of the generated earnings forecasts by including it in our valuation model. Further, we use them to classify firms into transitory or persistent profit-making firms. Particularly, profit-making firm *i* is classified as transitory in year *t* if the earnings forecast for year *t+1* made for profit-making firm *i* in year *t* is negative; otherwise it is classified as persistent.

3.3.2 The Predictive Power and the Validity of our Earnings Forecasting Model

Given that we use the forward stepwise approach to estimate our earnings prediction models, the explanatory variables that appear in the final prediction model could be different in each of the years from 1981 to 2015. Therefore, we document the properties of our earnings prediction model by counting the number of years in which each explanatory variable is shown to be useful for predicting next year earnings in our forecast period from 1981 to 2015. In addition, we report these numbers as a percentage of the total period. We focus our attention on the variables that are not in the HDZ valuation model. We do so to investigate whether our model can be subsumed within what has become a well-used earnings prediction model.

We then test the accuracy of our model-based earnings forecasts in terms of classifying profit-making firms into persistent or transitory profit-making firms. For companies with analysts' forecasts, we also compare our model-based earnings forecasts with consensus analysts' earnings forecasts in terms of their respective abilities to classify firms into persistent and transitory profit-making firms. To do this, we use a sub-sample of profit-making firms that are followed by at least three analysts for the comparison.

We then apply four specific tests. First, we examine the accuracy of our model-based earnings forecasts using the full sample of profit-making firms. We define the overall accuracy of our model-based earnings forecasts as the ratio (expressed as a %) of the sum of the number of correctly classified transitory and persistent profit-making firm-year observations to the total number of profit-making firm-year observations. Further, we define the persistent (transitory) profits accuracy percentage rate as the percentage ratio of the number of correctly classified persistent (transitory) profit-making firm-year observations to the total number of persistent (transitory) profit-making firm-year observations.

Second, we replicate the same test for a sub-sample of profit-making firms that are followed by at least three analysts. Third, we compare the classification of firms into persistent or transitory profit-making firms based on our earnings forecasts with those based on the use of the consensus analysts' earnings forecasts. Finally, we examine the accuracy of analysts' earnings forecasts in terms of classifying profit-making firms into persistent or transitory profit-making firms using the same accuracy definitions that we use to test the accuracy of our-model based earnings forecasts.

3.3.3 The Valuation Models for Profit-Making Firms

Following prior studies on value relevance (e.g., Francis and Schipper, 1996; Burgstahler and Dichev, 1997b; Collins et al., 1997; Barth et al., 1998; Brown et al., 1999; Barth et al., 1999; Shah et al., 2009), we use a valuation model that is based upon earnings and book value as our baseline model. We estimate market value regressions rather than return regressions as the market value regressions are more likely to capture the value relevance compared with return regressions (Barth et al., 2001; Ciftci and Darrough, 2015). The baseline model is as follows:

$$MV_t = \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \varepsilon_t \qquad (3)$$

where MV_t is the market value of equity at three months following the fiscal year-end of year t. We use market value three months after the fiscal year-end to provide correspondence with fiscal year-end reporting of earnings and book values (Ashton and Wang, 2013).

We predict that our earnings forecasts have an incremental value relevance above the two primary measures from the financial statements, which are earnings and book value of equity. To examine our first hypothesis, we extend equation (3) by including one year-ahead earnings forecasts (*Forecast*) that are generated from our earnings prediction model:

$$MV_t = \alpha_0 + \alpha_1\, NIEI_t + \alpha_2\, BV_t + \alpha_3\, Forecast_{\,t+1} + \varepsilon_t \qquad (4)$$

We examine our hypothesis using the statistical significance of the coefficient of *Forecast*, α_3, relative to a null hypothesis that it equals 0. We use a two-tailed test.

To test whether our earnings forecasts are value relevant for different categories of profit-making firms, we distinguish between transitory profit-making firms and persistent profit-making firms based upon the sign of our earnings forecasts, as mentioned above. We develop a dummy variable, *D1*, equal to 1 if a profit-making firm-year is classified as persistent; and 0 otherwise. We then include *D1*, and its interactions with our earnings forecasts into equation (4). This allows the weight of earnings forecasts to vary across the two categories of profit-making firms (i.e., persistent and transitory) and provides an initial insight on whether our earnings forecasts are useful to classify profit-making firms into different categories. This produces the following valuation model:

$$MV_t = \alpha_0 + \alpha_1\, NIEI_t + \alpha_2\, BV_t + \alpha_3\, Forecast_{t+1} + \alpha_4\, D1 + \alpha_5\, D1.Forecast_{t+1} + \varepsilon_t \qquad (5)$$

We test our second hypotheses focusing on the coefficients of *Forecast*, using the statistical significance of α_3 (the coefficient of the earnings forecasts for transitory profit-making firms), α_5 (the difference between the coefficients of the earnings forecasts for transitory and persistent profit-making firms), and the sums of α_3 and α_5 (the coefficient of the earnings forecasts for persistent profit-making firms) relative to a null hypothesis that they equal 0. We again use two-tailed tests.

To test the value relevance roles of earnings and book value, we include *D1*, and its interactions with earnings and book value of equity into the baseline model (equation (3)). This allows the weights of earnings and book value of equity to vary across the two categories of profit-making firms. This produces the following valuation model:

$$MV_t = \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 D1 + \alpha_4\, D1.NIEI_t + \alpha_5\, D1.BV_t + \varepsilon_t \quad (6)$$

We examine our third and fourth hypotheses, focusing on the coefficients of *NIEI* and *BV*, and how they differ between persistent and transitory profit-making firms, using the statistical significance of α_1 (the coefficient of earnings for transitory profit-making firms), α_2 (the coefficient of book value for transitory profit-making firms), α_4 (the difference between the coefficient of earnings for transitory and persistent profit-making firms), α_5 (the difference between the coefficient of book value for transitory and persistent profit-making firms), and the sums of α_1 and α_4 (the coefficient of earnings for persistent profit-making firms), and the sum of α_2 and α_5 (the coefficient of book value for persistent profit-making) relative to a null hypothesis that they equal 0. We again use two-tailed tests.

Following prior studies (e.g., Darrough and Ye, 2007; Ciftici and Darrough, 2015), we estimate cross-sectional regressions (equation (3)-(6)) for each year and produce the mean coefficients and p-values based on the variation of yearly estimates using the Fama-MacBeth (1973) approach. All variables are scaled by OTA when estimating yearly regressions. All the estimations of the equations are performed after including industry-specific dummies based on SIC industry classifications.

3.4 DATA AND SAMPLE SELECTION

3.4.1 Sample Construction

We generate our annual financial statement data from the Compustat fundamentals annual file, and market value data from the Compustat security monthly file. Our sample includes firm–year observations of US firms that are listed on the NYSE, Amex, or Nasdaq stock exchanges between 1970 and 2015. We end our analysis in 2015 because we require one year-ahead earnings and market value of equity 3 months after the fiscal year end. Further, for the robustness checks we perform, we need two and three year-ahead earnings. Given this data period, we are able to estimate our valuation models for the period 1981 to 2014. We require all firm-years to have the Compustat data for calculating all variables outlined in Table 1. Similar to prior studies, we exclude financial institutions (SIC codes 6000–6999), and utilities (SIC codes 4900–4999).

We exclude firm–year observations with zero or missing values for market value of equity and opening total assets. Consistent with, Barth et al. (1999), Fama and Franch (2000), and Darrough and Ye (2007), we deflate accounting variables by opening total assets and winsorize small amounts of opening total assets (*OTA*) to $10 million to avoid possible deflation issues arising from small firms. In addition, we exclude the top and bottom 1% of the firm-year observations for each of the deflated variables of our valuation models, to avoid the impact of extreme observations. Table 1 outlines the definitions of all variables that are used in either the earnings forecasting model or the valuation models, or both.

Insert Table 1 here

Table 2 presents our sample construction for profit-making firms. The initial sample includes 215,723 profit-making firm-year observations for the period 1981 to 2014. Requiring a firm-year to be listed on the NYSE, Amex and Nasdaq, along with excluding financial services firms and utilities, reduces the sample size substantially. Then, the requirement of the availability of a one year-ahead earnings forecasts reduces the sample by 6,468 profit-making firm-year observations. Finally, our trimming rule reduces the sample by 4,571 profit-making firm-year observations. The sample selection criteria discussed above yields an overall final sample of 63,316 firm-year observations.

Insert Table 2 here

3.4.2 Descriptive Statistics

Tables 3 and 4 present descriptive statistics for our sample. Table 3 provides descriptive statistics of the frequency and distribution of profits within our sample. Table 3 reports the total number of firms available for the period from 1981 to 2014 before and after we trim the data, by year and in total. Each year from 1981 to 2014 constitutes 2% to 4% profit observations from the total of profit observations. Further, Table 3 reports the distribution of the annual number of observations in the two profit categories classified, but based on the *actual* next year earnings. A profit-making firm is defined as persistent, if the actual next year earnings positive, and transitory otherwise. The majority (88%) of profit firms-years report profits in the next year (persistent profit-making firms), while 12% report losses in the next year (transitory profit-making firms).

Insert Table 3 here

Figure 1, Panel A, presents the annual number of observations of profit-making firms as a percentage of all firms (i.e., profit and loss-making firms). Panel A shows that the percentage of profit-making firms is quite stable over most of our sample period. In particular, it decreases slightly in some years, which are 2001, 2002, 2008, and 2009. Panel B presents the annual number of observations of the profit categories as a percentage of all profit-making firms. The percentage of both transitory and persistent profit-making firms fluctuate over our sample period.

Insert Figure 1 here

Table 4 presents the distribution of the profit-making firm-year observations across various industry categories. The majority of profit-making firm-year observations are in the manufacturing sector (54%). The Agriculture, Forestry and Fishing sector provides only 0.37% of our total profit-making firm-year observations.

Insert Table 4 here

Table 5 presents the descriptive statistics of key variables used in the valuation regressions for all profit-making firms. Panel A reports distributional statistics for all profit-making firm-year observations, and Panel B contains distributional statistics across persistent and transitory profit-making firm-year observations. Note that all variables are scaled by OTA. In particular, Panel B shows that the average of variables differs across persistent and transitory profit-making firm-year observations. On average, market value of equity (*MV*), and the current earnings (*NIEI*) are higher for persistent profit years and lower for transitory profit years.

Insert Table 5 here

Table 6 reports Pearson correlations between the variables used in the main valuation regressions. Panel A contains Pearson correlation for all profit-making firm-year observations, and Panel B contains the correlations for persistent and transitory profit-making firm-year observations. Panel A and B show that all the correlations are significant between the variables at the 1% significant level. Panel B also shows that the magnitude of these correlations is smaller for transitory profit firms-year observations compared with persistent profit-making firm-year observations. The association between *Forecast* and the dependent and independent variables (*MV*, *BV*, and *NIEI*) is positive for both transitory and persistent profit-making firm-year observations.

Insert Table 6 here

3.5 EMPIRICAL RESULTS

3.5.1 Main Results

We present the estimation results of our cross-sectional earnings forecasting model (equation (2)) in Table 7. As mentioned previously, we use the forward stepwise approach to estimate equation (2). Consequently, we are not able to report the average coefficients from the regressions estimated each year from 1970 to 2015 because the independent variables included in the final prediction model are different across years. Table 7 reports the number of times that each independent variable is shown to be useful in predicting next year earnings, together with the number of times expressed as a percentage of the total years in our forecast period (1981 to 2015).

Insert Table 7 here

In Table 7, we classify the independent variables in our cross-sectional earnings forecasting model into variables that are included in the HDZ model and not in the basic valuation model (Panel A), in the basic valuation model and not in the HDZ model, (Panel B), in both the HDZ and the basic valuation models (Panel C), and other variables (Panel D). The results show that all variables are useful for explaining next year earnings at least in some years of our forecast period, except for *NegSG*. This latter result might be due to the correlation between *NegSG* and *NegSGR*. Panel B shows that *BV* is useful for explaining next year earnings more than the variables that are included in the HDZ model, except *Accruals* (49% of our forecast period). Panel C shows that the coefficient of *NIEI* is significant in each year from 1981 to 2014 (100% of the total years). This is consistent with the prior studies in that current earnings are highly persistent (e.g., Fama and French, 2006; Hou and Robinson, 2006; Hou and van Dijk, 2011, Hou et al., 2012; Li and Mohanram, 2014). Nonetheless, Panel D reports that many variables that are not included in both the HDZ and the basic valuation models, are useful for explaining next year's earnings, and apparently more than the variables in the HDZ model, such as *SGR*, *SG*, *RD*, *AbsNegSpI*, *SpI*, *IncLTD*, *Cash*, *CC*, *LagCC*, and *BM*.

Tables 8 presents descriptive statistics for our sample based on classifying profits into persistent and transitory using our own earnings forecasts. As mentioned previously, a profit-making firm is defined as persistent if the earnings forecasts positive, and transitory otherwise. Table 8 is similar to Table 3, except that the annual number of observations of profit categories are based upon the sign of the *predicted* next year's earnings rather than the *actual* next year's earnings. The majority (95%) of profit firms-years are expected to continue reporting profit in the next year (persistent profit-making firms), while 5% only are expected to report loss in the next year (transitory profit-making firms).

Insert Table 8 here

We then examine the accuracy of our model-based earnings forecasts in terms of dividing profit-making firms into transitory (*D1= 0*) or persistent profit-making firms (*D1=1*) using our full sample of profit-making firms and a sub-sample of firms that are followed by at least three analysts, which permits us to compare the accuracy of our model-based earnings forecasts with the accuracy of the consensus analysts' earnings forecasts. We present the results in Table 9.

As mentioned before, we define the overall accuracy percentage of our model-based earnings forecasts as the sum of the number of transitory and persistent profit-making firm-year observations that are classified correctly using our earnings forecasts, scaled by the total number of profit-making firm-year observations. In addition, we define the persistent profits accuracy percentage as the number of persistent profit-making firm-year observations that are classified correctly using our own earnings forecasts, scaled by the total number of persistent profit-making firm-year observations. Further, we define the transitory profits accuracy percentage as the number of transitory profit-making firm-year observations that are classified correctly using our own earnings forecasts, scaled by the total number of transitory profit-making firm-year observations. For all accuracy measures, a higher percentage is indicative of a more accurate earnings forecasting method. Panel A of Table 9 reports that 90% of persistent profit-making firms are correctly classified using our model-based earnings forecasts, whereas 36% of transitory profit-making firms are correctly classified using our model-based earnings forecasts. Further, Panel A reports that the overall accuracy percentage of our -model-based earnings forecasts is approximately 87%.

Insert Table 9 here

We then examine the accuracy of our model-based forecasts on a sub-sample of firms that are followed by at least three analysts. Consequently, the sample size becomes 30,383. Then, we compare the classification accuracy of our model-based forecasts with the classification accuracy of analysts' earnings forecasts. We obtain the consensus analysts' earnings per share (EPS) forecasts (median estimates) and analyst coverage from I/B/E/S Summary History files. We define the analysts' forecasts as the first available consensus analysts' EPS forecasts (median estimates) for *t+1* after the earnings announcement date of year *t*. We multiply the analysts' EPS forecasts by the number of shares outstanding to generate the one year-ahead earnings forecasts, and we scale the generated earnings forecasts by OTA. We then use the analysts' earnings forecasts to define whether a profit-making firm in the sub-sample is classified as persistent or transitory. We report the results in Panel B of Table 9. Panel B of Table 9 shows that the persistent profits accuracy percentage, the transitory profits accuracy percentage, and the overall accuracy percentage, for our model-based earnings forecasts are 91%, 36%, and 90% respectively on this reduced sample. This is similar to the accuracy of our model-based earnings forecasts using the full sample of profit-making firms.

In addition, Panel B shows that more profit-making firms are classified as transitory when using our own earnings forecasts than when using analysts' earnings forecasts. Specifically, 781 firm-year observations are expected to report losses in the next year (transitory profit-making firms) using our model-based earnings forecasts, whereas only 67 are expected to report losses in the next year using analysts' earnings forecasts. On the other hand, 29,602 firm-year observations are expected to continue reporting profits in the next year (persistent profit-making firms) using our model-based earnings forecasts, whereas 30,316 are expected to report profits in the next year using analysts' earnings forecasts.

When we test the accuracy of analysts' earnings forecasts, we define the accuracy percentages in the same way as when using our model-based earnings forecasts. In particular, we define the overall accuracy percentage of analysts' earnings forecasts as the sum of the number of transitory and persistent profit-making firm-year observations that are classified correctly using analysts' earnings forecasts, scaled by the total number of profit-making firm-year observations. In addition, we define the persistent profits accuracy percentage as the number of persistent profit-making firm-year observations that are classified correctly using the analysts' earnings forecasts, scaled by the total number of persistent profit-making firm-year observations. Finally, we define the transitory profits accuracy percentage as the number of transitory profit-making firm-year observations that are classified correctly using the analysts' earnings forecasts, scaled by the total number of transitory profit-making firm-year observations.

Panel B of Table 9 identifies that 70% of transitory profit-making firms are correctly classified using analysts' earnings forecasts, which is twice the transitory profits accuracy percentage when using our model-based earnings forecasts. In contrast, 91% of persistent profit-making firms are correctly classified using analysts' earnings forecasts, the same as the persistent profits accuracy percentage when using our model-based earnings forecasts. Further, Panel B of Table 9 notes that the analysts' earnings forecasts are a little more accurate overall than our model-based earnings forecasts, but only by 1% (the percentage of the overall accuracy is approximately 90%). The results in Table 9 suggest that our model-based earnings forecasts have similar accuracy to analysts' earnings forecasts, using our sub-sample of firms that are followed by at least three analysts. Further, the results suggest that analysts' forecasts are not very useful for classifying profit-making firms into transitory or persistent profits, because only a few firms are classified as transitory profit-making firms. Overall, these results suggest that our model-based earnings forecasts are superior to analysts' earnings forecasts for our general purposes, given that they are similar in terms of overall accuracy, but the coverage of profit-making firms is substantially higher.

Tables 10 and 11 present the estimation results of examining the value relevance of our earnings forecasts. The tables present the average coefficients for each variable from estimating the regressions annually, with their p-values in parentheses.

Insert Table 10 here

The estimation results of our benchmark model (equation (3)), which is a basic model with only earnings and book value as explanatory variables are reported in column (2) of Table 10. The estimation results show that the coefficients of both earnings (*NIEI*) and book value (*BV*) are significantly positive. In addition, the coefficient of *NIEI* is higher compared to the coefficient of *BV*. This is consistent with prior studies (e.g., Barth et al., 1998; Collins et al., 1999) that report the same results for profit-making firms.

We estimate equation (4) to investigate our first hypothesis on the incremental value relevance of the one year-ahead earnings relative to current earnings and book value. We report the estimation results in the third column of Table 10. The estimation results show that the coefficient of *Forecast* is significantly positive. This suggests that our earnings forecasts have incremental value relevance relative to current earnings and book value, supporting our first hypothesis.

The coefficients of both earnings (*NIEI*) and book value (*BV*) remain significantly positive as in the estimation results of the benchmark model. The coefficient of *NIEI*, however, is smaller compared to the coefficient of *NIEI* when *Forecast* is omitted from the valuation model. In particular, the coefficient of *NIEI* declines by 44% approximately (12.058 and 6.755 respectively). Further, there is a slight increase in the average R^2 (47% and 49% respectively).

We then estimate equation (5) and report the results in the fourth column of Table 10. The results show that the coefficient of the interaction term (*D1.Forecast*) is significantly positive. This suggests that the valuation role of our earnings forecasts is conditional upon whether a profit-making firm is classified as making a persistent or a transitory profit. The coefficient of the earnings forecasts for transitory profit-making firms is the coefficient of *Forecast*, while the sum of *Forecast* and *D1.Forecast* is the coefficient of earnings forecasts for persistent profit-making firms. The results show that the coefficient of the earnings forecasts is significantly positive for persistent profit-making firms only. This is consistent with our second hypothesis in that the value relevance of our earnings forecasts is conditional upon profit persistence. We find that the capital markets do not price the earnings forecasts for profit-making firms classified as transitory, however. These results provide an initial indication that our earnings forecasts are useful for classifying profit-making firms into different categories.

Insert Table 11 here

To test our third and fourth hypotheses on whether capital markets price earnings and book value conditional upon profit persistence, we estimate equation (6) on all profit-making firms. We present the estimation results in Table 11, Panel A. Our main focus is to investigate the differences between persistent and transitory profit-making firms. Therefore, we rearrange the results and report them for persistent and transitory profit-making firms separately (the second and the third columns of Panel A respectively). Further, we present in the fourth column the difference in the coefficients between persistent and transitory profit-making firms.

The estimation results show that the coefficients of current earnings for both persistent and transitory profit-making firms are significantly positive. The coefficient of current earnings is significantly higher for profit-making firms classified as persistent than for profit-making firms classified as transitory. The difference between the two coefficients is significantly positive. These results confirm our alternative hypotheses. Consistent with our expectations, the coefficients of book value for both persistent and transitory profit-making firms are significantly positive. In addition, the coefficient of book value is significantly lower for profit-making firms classified as persistent than for profit-making firms classified as transitory. The difference between the two coefficients is significantly negative. These results support our alternative hypotheses.

Overall, these results support our alternative hypotheses. Our earnings forecasts are useful for valuing the market value of profit-making firms. This indicates that our earnings forecasts have information content over and above current earnings and book value. Our earnings forecasts are useful for valuing persistent profit-making firms, however. The earnings coefficients for both persistent and transitory profit-making firms are significantly positive, and significantly *higher* for persistent profit-making firms. The coefficients of book value for both persistent and transitory profit-making firms are significantly positive, and significantly *lower* for persistent profit-making firms. This is consistent with prior literature that reports that the importance of earnings (book value) decreases (increases) as financial health decreases (e.g., Barth et al., 1998). These results suggest that transitory profit-making firms are valued more like firms that might have to exercise abandonment/adaptation options, while persistent profit-making firms are valued as going concerns.

3.5.2 Additional Tests

As robustness checks, we apply alternative empirical choices regarding valuation models, estimation methods, sample specifications, and classifications of profit-making firms.

First, we include *Forecast* and its interaction with our profit persistence dummy variable (*D1.Forecast*) into equation (6). Specifically, we permit equation (4) to be estimated separately for persistent and transitory profit-making firms using the sample of all profit-making firms. We present the estimation results in Table 11, Panel B. The coefficient of *Forecast* is significantly positive for persistent profit-making firms only. This is consistent with the results in Table 10. The difference between the two coefficients is significantly positive. Overall, the results are consistent with our main findings and support our alternative hypotheses of *NIEI* and *BV*, consistent with Panel A of Table 11. The results show that the coefficient of *NIEI* is significantly positive for both categories of profit-making firms, and significantly *higher* than the corresponding coefficient for persistent profit-making firms. The difference between the coefficients of *NIEI* is significantly positive. However, the inclusion of *Forecast* and *D1.Forecast* reduces the coefficient of *NIEI* for persistent profit-making firms. Further, the coefficients of *BV* for both categories of profit-making firms are significantly positive and significantly *lower* for persistent profit-making firms. The difference between the coefficients of *BV* is significantly negative.

While our main tests of hypotheses are based on estimating the valuation models using the Fama-MacBeth (1973) approach, we also use the OLS approach with industry and year dummies to estimate the valuation models as part of our robustness checks. We report the estimation results in Tables 12 and 13. The empirical findings are robust with respect to using different estimation technique.

Insert Tables 12 and 13 here

As part of our robustness checks, we also use a more stringent classification for profit-making firms to test our hypotheses. We divide profit-making firms into persistent or transitory using one, two, and three years-ahead earnings forecasts instead of the one year-ahead earnings forecasts only. In particular, a profit-making firm is defined as persistent if the one, two, and three years-ahead earnings forecasts are positive, and transitory otherwise. Overall, the results are the same as the main results, except that including *Forecast* and *D1.Forecast* weakens the support for some of our *NIEI* hypotheses, as shown in Tables 14 and 15. Further, the coefficient of *Forecast* becomes significantly positive for both persistent and transitory profit-making firms, which provides more support to our second hypothesis than the main results.

Insert Tables 14 and 15 here

Another robustness check considers a sub-sample of firms followed by at least three analysts. This allows us to test the effectiveness of our cross-sectional earnings forecasting model on firms that are well followed by analysts. Prior research suggests that our model might not be as useful as analysts' forecasts for these firms. Therefore, we rerun our tests on this sub-sample using both analysts' forecasts and our own forecasts. We report the estimation results in Tables 16 and 17. As mentioned above, we obtain the consensus median analysts' earnings per share (EPS) forecasts and analyst coverage from the I/B/E/S Summary History files. We multiply the analysts' EPS forecast by the number of shares outstanding and we then scale the generated earnings forecasts by OTA. Our definition of the analyst forecasts is the first available consensus analysts' EPS forecasts (median estimates) for $t+1$ after the earnings announcement date of year t.

The estimation results in Table 16 show that analysts' earnings forecasts are value relevant for profit-making firms when added into the basic model with earnings and book value, as shown in the third column of Table 16. We also find that our earnings forecasts are value relevant for the whole sub-sample when added into the basic model with earnings and book value, as shown in the fourth column of Table 16.

Insert Tables 16 and 17 here

We then define whether a profit-making firm is classified as persistent or transitory using our own earnings forecasts. We do not define the profit categories using analysts' forecasts, because they only classify a few firms as transitory profit-making firms (0.22% of the total profit-making firms with at least three analysts), as shown in Table 9. We then estimate equation (6) and report the results in the Panel A of Table 17. The coefficient of *NIEI* for persistent profit-making firms is significantly positive and higher than those for transitory profit-making firms, but the coefficient for transitory profit-making firms is insignificant. There is a significant difference between the two coefficients. The coefficients of *BV* are as expected in terms of sign, significance and size for both categories, but with no significant difference between the two coefficients. We report the estimation results of adding *Forecast* and *D1.Forecast* into equation (6) in Panel B of Table 17. We find that our forecasts are value relevant for persistent profit-making firms only within the sub-sample. The difference between the coefficients of the forecasts for persistent and transitory profit-making firms is significant. The results for *NIEI* and *BV* remain the same, except that there is no significant difference between the coefficients of *NIEI*.

In the main analysis, we investigate the value relevance of earnings forecasts for all profit-making firms. As part of our additional tests, we change our 'bright line' approach for defining profit-making firms by moving our 'bright line' upwards. We define 'large' profit-making firms consistent with the definition used by Burgstahler and Dichev (1997a) and Dechow et al. (2003). We scale income before extraordinary items by beginning market value of equity, hereafter *NIEI_lagMV*. We then delete firm–year observations with *NIEI_lagMV* lower than 0.010, which are more likely to be financially distressed. Consequently, the sample size becomes 60,422. We report the estimation results in Tables 18 and 19. Overall, the results are the same as the main results, except that the results in the fourth column of Table 18 show that there is no significant difference in the coefficient of the earnings forecasts between the two categories of profit-making firms. Further, including *Forecast* and *D1.Forecast* weakens the support for the valuation role of *NIEI* and *BV* as shown in Panel B of Table 19. The difference in the coefficient of our earnings forecasts between the two categories, however, becomes positive and marginally significant and the coefficient of our earnings forecasts is significantly positive for persistent profit-making firms only.

Insert Tables 18 and 19 here

Further, we consider a sub-sample of 'healthy' profit-making firms only. Given that prior research suggests that the valuation importance of earnings and book value is conditional based upon the financial health of a firm, we rerun our tests on a sub-sample of 'healthy' firms. To define a 'healthy' firm, we calculate z-scores using the revised model developed by Altman (1993). A firm with z-score higher than 2.60 is considered as a healthy firm. The sample size is 47,067 after deleting the unhealthy firms. We report the estimation results in Tables 20 and 21. Overall, the results are the same as using all profit-making firms, except that the results in fourth column of Table 20 show that there is no significant difference in the coefficient of the earnings forecasts between the two categories of profit-making firms. Further, including *Forecast* and *D1.Forecast* weakens the support for the valuation role of *NIEI* as shown in Panel B of Table 21 . The difference in the coefficient of our earnings forecasts between the two categories, however, becomes positive and marginally significant and the coefficient of our earnings forecasts is significantly positive for persistent profit-making firms only. In untabulated results, we use a more restricted definition for profit categories for this subsample and then re-run our tests. In particular, a profit-making firm is defined as persistent if the one year-ahead earnings forecasts higher than 0.05, and transitory otherwise. Our results are consistent with all the main findings.

Insert Tables 20 and 21 here

We then use an extended valuation model to test our hypotheses instead of a simple model with earnings and book value. Given that prior research reports evidence that a number of financial statement items are value relevant in the UK and the US for all firms, we add these items into our valuation model for comparability with prior studies. Following the prior literature, we include *RD*, *CC*, *CE*, and *DIV* into the valuation model alongside *NIEI* and *BV*. We report the estimation results in Tables 22 and 23.

The results show that the coefficients of all variables are significantly positive before adding our forecasts into the model. When we add *Forecast* to our extended model, all variables remain significant, except *DIV*. We find that our forecast remains value relevant after including the additional variables in the model. This suggests that our earnings forecasts possess incremental information content over and above the other variables in the extended model that intended to capture aspects of the future economic prospects of the firm. The coefficients of *NIEI* are as expected in terms of sign, significance and size for both categories of profit-making firms. The coefficient of *BV* is significantly positive for both persistent and transitory profit-making firms, but with no significant difference between them. When we add *Forecast* and *D1.Forecast* to our extended model, the coefficient of our earnings forecasts is significant for persistent profit-making firms only, with a significant difference between the coefficients of the two categories. The difference between the coefficients of *NIEI* (*BV*) for persistent and transitory profit-making firms is now significantly negative (positive).

Insert Tables 22 and 23 here

Our main analysis is based on estimating the valuation models using Fama-MacBeth (1973) approach. In this section, we adjust the standard errors of Fama-McBeth (1973) approach by applying the Newey-West procedure to produce more reliable statistics. We present the results in Tables 24 and 25. Our results are consistent with all the main findings. In particular, our earnings forecasts have information content over and above current earnings and book value. Our earnings forecasts are useful for valuing persistent profit-making firms, however. The coefficients of *NIEI* for both persistent and transitory profit-making firms are significantly positive, and significantly higher for persistent profit-making firms. The coefficients of *BV* for both persistent and transitory profit-making firms are significantly positive, and significantly lower for persistent profit-making firms.

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Insert Tables 24, and 25 here

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Finally, we consider other different deflating procedures for the valuation models. First, we use unscaled date and re-run our tests. We present the results in Tables 26 and 27. Overall, the results are the same as the main results, except that the coefficient of the *Forecast* is significantly negative for transitory profit-making firms, as shown in the fourth column of Table 26. Further, including *Forecast* and *D1.Forecast* weakens the support for some of our *NIEI* hypotheses, as shown in Panel B of Table 27.

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Insert Tables 26, and 27 here

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Second, we use opening book value as the deflator for our valuation models. We present the results in Tables 28 and 29. Overall, the results are the same as the main results, except that the coefficient of *NIEI* for transitory profit-making firms is insignificant, when *Forecast* and *D1.Forecast* are included in the model.

Insert Tables 28, and 29 here

3.6 Conclusions

We investigate the value relevance of the model-based ahead earnings forecasts for valuing profit-making firms, whether directly or indirectly. Prior studies in valuation tend to investigate the valuation role of current earnings and book value only, or other financial statement items that capture some aspects of the future prospects of firms. We first develop a cross-sectional earnings forecasting model for profit-making firms, taking into consideration the accounting items that could capture a firm's future prospects as shown in the existing earnings forecast and valuation literature. We then generate our earnings forecasts using the developed model and classify profit-making firms into persistent and transitory groups according to the sign of their earnings forecasts.

We examine the direct value relevance of our earnings forecasts by adding them to a basic valuation model with just current earnings and book value as the explanatory variables. We find that our earnings forecasts have incremental value relevance for profit-making firms alongside current earnings and book value. We then investigate their indirect value relevance by allowing the coefficients of our earnings forecasts, current earnings and book value to vary across persistent and transitory profit-making firms. We find that our earnings forecasts are useful for classifying profit-making firms into two categories. In particular, we find that the valuation role of our earnings forecasts is conditional upon profit persistence. Our earnings forecasts are value relevant for persistent profit-making firms only. Further, we provide evidence that the valuation role of current earnings and book value is conditional upon profit persistence.

We hold the same results when we estimate the valuation models using the OLS estimation approach, rather than the Fama-MacBeth (1973) estimation approach. The results are also robust when we use different sub-samples which restrict the sample to either ‘large’ profit-making firms, or profit-making firms defined as healthy using the Altman (1993) model. Further, the results remain the same when using a different classification for our profit persistence dummy. In particular, we use one, two, and three years-ahead earnings forecasts to define persistent and transitory profit-making firms. Overall the results are robust when using a sub-sample of profit-making firms that are followed by at least three analysts, except that some of the hypotheses for book value are not supported. Further, when using analysts’ earnings forecasts instead of our model-based earnings forecasts, we find that the analysts’ forecasts are value relevant for the whole sub-sample of profit-making firms. In addition, the results are maintained when using an extended valuation model, except that some of the hypotheses covering book value are not supported. In addition, the results remain the same when using other deflating procedures for our valuation models, and applying the Newey-West procedure to adjust the standard errors of Fama-McBeth (1973) approach.

Overall, our research adds to the existing literature of both earnings forecasting and the valuation of firms. The findings provide evidence on the importance of earnings forecasts in understanding the valuation of profit-making firms. Further, the findings extend insight into the relative importance of accounting information based upon whether profit-making firms are persistent or not.

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TABLE 1

Variable Definitions for Variables Used in Earnings Forecast and Valuation Models

Variable	*Definition*
$NIEI_t$	Earnings before extraordinary items in year *t* (Compustat code: IB)
MV_t	Market value of equity at three months following fiscal year end, calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO)
BV_t	Book value of equity at year *t* (Compustat code: CEQ)
TA_t	Total assets at year *t* (Compustat code: AT)
$Accruals_t$	Accruals, the change in the current assets (Compustat code: ACT) excluding the change in cash (Compustat code: CHE) less the change in current liabilities (Compustat code: LCT) plus the change in the short-term debts (Compustat code: USTDNC) plus the Depreciation and Amortizations (Compustat code: DP)
RD_t	Research and development expenses for year *t* (Compustat code: XRD)
EI_t	The total of extraordinary items for year *t* (Compustat code: XI)
SpI_t	Special items for year *t* (Compustat code: SPI)
$AbsNegSpI_t$	The absolute value of the negative special items for year *t* (Compustat code: SPI)
SGR_t	Growth rate of sales for year *t* (sales is Compustat code: SALE)
$NegSGR_t$	Equals SGR_t if SGR_t lower than zero; zero otherwise

(Continued on next page)

TABLE 1 (CONTINUED)	
Variable	*Definition*
SG_t	Change of sales for year *t*, deflated by opening total assets for year *t*
$NegSG_t$	Equals SG_t if SG_t lower than zero and zero otherwise
CE_t	Capital expenditures - the capital associated with purchase of fixed assets other than those related to acquisitions in year *t* (Compustat code: CAPX)
$Cash_t$	The sum of cash and short-term investments at year *t* (Compustat Code: CHE)
CC_t	Capital contributions in year *t* (Compustat Code: SSTK)
$LagCC_t$	Capital contributions in year *t-1* (Compustat Code: SSTK)
$DbtIss_t$	New debt issues in year *t* (Compustat code: DLTIS)
$IncLTD_t$	The change in long term debt between year *t* and year *t-1* (Long term debt is Compustat code: DLTT)
Div_t	Total cash dividends paid to the common stockholders in year *t* (Compustat code: DV)
$DivDum_t$	Equals one for firms that pay dividends in year *t* and otherwise equals zero
$DivStop_t$	Equal one for firms that stop paying dividends in the loss year; otherwise equals zero
$FirstProfit_t$	Equals one for firms that report profit in year *t* but not in year *t-1*; otherwise equals zero

(Continued on next page)

TABLE 1 (CONTINUED)	
Variable	*Definition*
$ProfitSeq_t$	A count of the number of sequential profits over the past five years before the current profit.
BM_t	Book to market value ratio, calculated by dividing the book value of equity at year *t* (Compustat code: CEQ) by the market value of equity at year *t* (calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO))
$Size_t$	The log of market value of equity at year *t*
$Forecast_{t+1}$	One year-ahead earnings forecasts generated from the cross-sectional earnings prediction model for year *t*

Notes: This table provides definitions for all variables used in both the earnings forecast and the valuation models.

TABLE 2

The Sample Selection Steps for the Sample (1981-2014)

Steps	*Number of observations*
All US profit-making firms from Compustat	215,723
Require firms to be listed on NYSE, Amex or Nasdaq	131,815
Less financial and utilities firms	(51,616)
Less observations with zero market value, or zero opening total assets	(5)
Less observations with missing values for any variable	(5,839)
Less observations with missing values for the earnings forecasts	(6,468)
Less observations lost from trimming at 1% and 99%	(4,571)
Final sample	63,316

Notes: This table provides the data deletion procedure to construct the profit-making firms' sample for the period 1981-2014.

TABLE 3				
Profit Observations by Year and the Distribution of Profit-Making Firms Between Transitory and Persistent				
	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the actual next year earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
1981	1,784	1,681	166	1,515
1982	1,722	1,618	133	1,485
1983	1,731	1,623	86	1,537
1984	1,815	1,694	197	1,497
1985	1,727	1,618	236	1,382
1986	1,612	1,504	154	1,350
1987	1,732	1,608	161	1,447
1988	1,787	1,664	175	1,489
1989	1,788	1,666	197	1,469
1990	1,785	1,665	234	1,431
1991	1,776	1,654	203	1,450
1992	1,885	1,754	206	1,548
1993	1,971	1,830	166	1,664
1994	2,181	2,031	217	1,814

(Continued on next page)

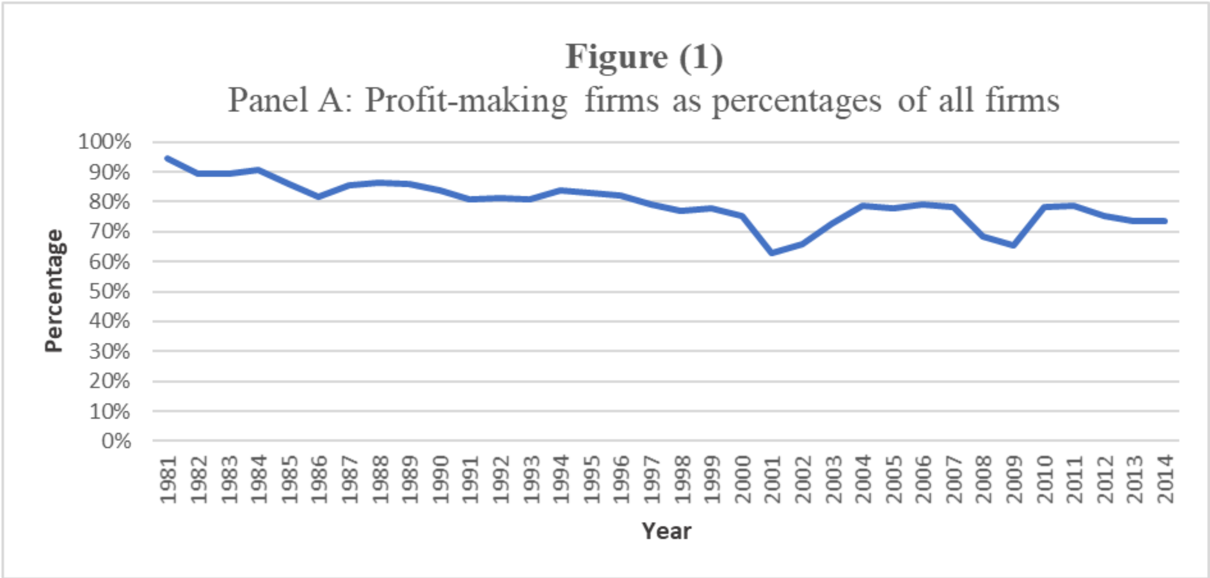
TABLE 3 (CONTINUED)				
	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the actual next year earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
1995	2,309	2,149	254	1,894
1996	2,374	2,217	272	1,945
1997	2,442	2,280	345	1,935
1998	2,314	2,153	265	1,888
1999	2,253	2,102	259	1,843
2000	2,193	2,053	426	1,627
2001	1,951	1,815	287	1,528
2002	2,007	1,874	181	1,693
2003	2,156	2,015	148	1,867
2004	2,284	2,138	197	1,941
2005	2,233	2,082	173	1,909
2006	2,192	2,045	200	1,845
2007	2,175	2,028	395	1,633
2008	1,920	1,783	387	1,396

(Continued on next page)

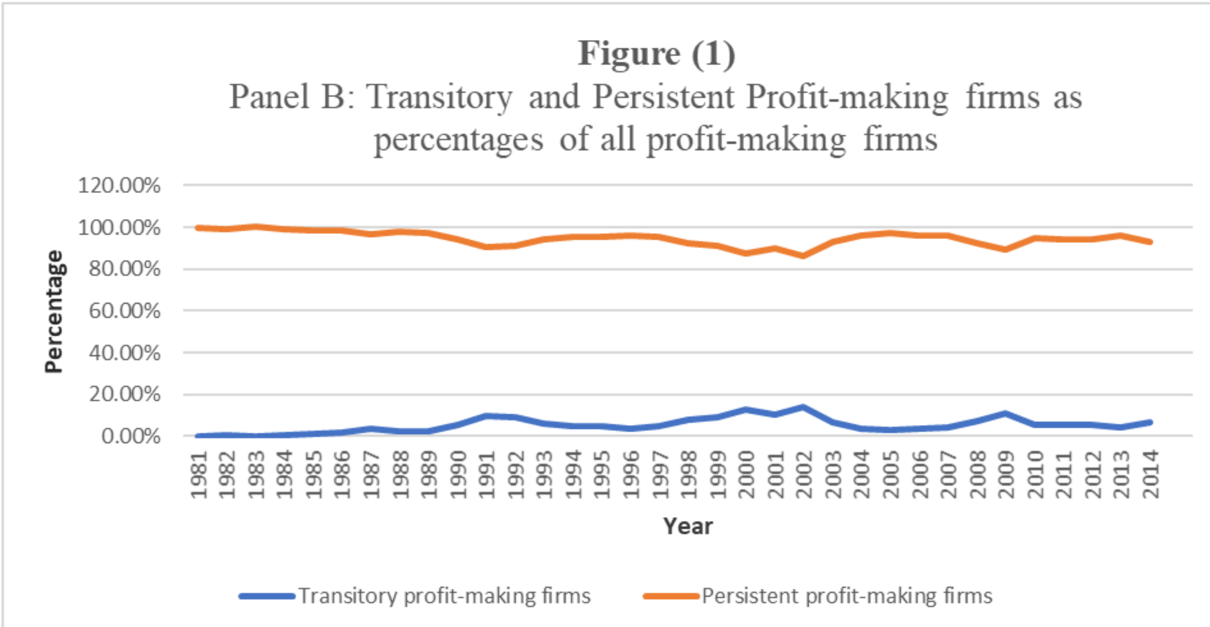
TABLE 3 (CONTINUED)				
	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the actual next year earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
2009	1,767	1,651	132	1,519
2010	2,072	1,926	174	1,752
2011	2,102	1,950	225	1,725
2012	1,989	1,859	224	1,635
2013	1,928	1,793	163	1,630
2014	1,930	1,793	286	1,507
Total	**67,887**	**63,316**	**7,524**	**55,790**

Notes: The explanations for this table are as follows:

1. *Total profit-making firms* - a company is defined as profit-making firms if its earnings before extraordinary items is higher than zero in a year *t*;
2. *After trimming* - the sample size after trimming all variables at 1% and 99%;
3. *Transitory profit-making firms* shows the number of transitory profit-making firms – a firm is classified as a transitory profit- making firm if its actual next year earning is negative; and
4. *Persistent profit-making* firms shows the number of persistent profit-making firms – a firm is classified as a persistent profit- making firms if its actual next year earning is positive.



Notes: Figure 1, Panel A, shows the number of all profit-making firms annually as percentages of all firms.



Notes: Figure 1, Panel B, shows the number of the categories of profit-making firms annually as percentages of all profit-making firms. Note that the classification of profit categories is based on the actual next year earnings.

TABLE 4			
Industry Breakdown of the Sample			
Compustat SIC code	*Industry name*	*Firm-year observations*	*%*
0100-0999	Agriculture, Forestry and Fishing	236	0.37%
1000-1499	Mining	3,849	6.08%
1500-1799	Construction	958	1.51%
2000-3999	Manufacturing	34,444	54.40%
4000-4999	Transportation, Communications, Electric, Gas and Sanitary Services	4,603	7.27%
5000-5199	Wholesale Trade	2,910	4.60%
5200-5999	Retail Trade	5,186	8.19%
7000-8999	Services	11,130	17.58%
Total		**63,316**	**100.00%**

Notes: This table provides the distribution of our sample across the different industries.

TABLE 5							
Descriptive Statistics for Profit-Making Firms							
Panel A							
All profit-making firms (N=63,316)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
MV_t	1.636	0.667	1.143	1.981	1.678	0.071	34.072
$NIEI_t$	0.082	0.039	0.069	0.110	0.061	0.001	0.523
BV_t	0.598	0.416	0.578	0.765	0.266	-0.304	2.816
$Forecast_{t+1}$	0.083	0.039	0.073	0.115	0.065	-0.224	0.418
Panel B							
Persistent Profit-making firms (N= 55,790)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
MV_t	1.685	0.705	1.194	2.052	1.674	0.077	33.533
$NIEI_t$	0.086	0.043	0.072	0.113	0.061	0.001	0.523
BV_t	0.597	0.417	0.578	0.764	0.262	-0.304	2.816
$Forecast_{t+1}$	0.088	0.045	0.078	0.120	0.064	-0.224	0.418

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TABLE 5 (CONTINUED)							
Panel B							
Transitory profit-making firms (N=7,526)							
Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
MV_t	1.268	0.468	0.799	1.417	1.660	0.071	34.072
$NIEI_t$	0.057	0.020	0.040	0.074	0.056	0.001	0.501
BV_t	0.606	0.409	0.579	0.780	0.291	-0.294	2.623
$Forecast_{t+1}$	0.046	0.011	0.037	0.255	0.060	-0.211	0.399

Notes: This table provides the summary statistics for all variables used in the valuation models. Panel A shows the summary statistics for all profit-making firms for the period 1981-2014. Panel B shows the summary statistics for persistent and transitory profit-making firms.

TABLE 6			
Pearson Correlation Coefficients Between Independent and Dependent Variables in the Valuation Models			
Panel A			
All profit-making firms (N=63,316)			
	MV	*NIEI*	*BV*
$NIEI_t$	0.573***		
BV_t	0.487***	0.463***	
$Forecast_{t+1}$	0.510***	0.865***	0.326***
Panel B			
Persistent Profit-making firms (N= 55,790)			
	MV	*NIEI*	*BV*
$NIEI_t$	0.589***		
BV_t	0.497***	0.476***	
$Forecast_{t+1}$	0.530***	0.878***	0.352***

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TABLE 6 (CONTINUED)			
Panel B			
Transitory profit-making firms (N=7,526)			
	MV	*NIEI*	*BV*
$NIEI_t$	0.408***		
BV_t	0.442***	0.201***	
$Forecast_{t+1}$	0.313***	0.726***	0.223***

Notes: This table provides the Pearson correlation coefficients for all variables used in the valuation models. Panel A shows the Pearson correlation for all profit-making firms for the period 1981-2014. Panel B shows the Pearson correlation for persistent and transitory profit-making firms. *** indicates that the correlation is significant at 1% significant level.

TABLE 7											
Summary for Estimating the Forecast Model Using the Forward Stepwise Approach											
(The number of times and the percentage of significant of each independent variable in the earnings forecasting model)											
Years (1981-2015)- 35 Years											
Panel A			**Panel B**			**Panel C**			**Panel D**		
HDZ model variables and not in the basic valuation model			*Basic valuation model variables and not in HDZ model*			*Variables in both the HDZ and the basic valuation model*			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
$DivDum_t$	3	9%	BV_t	17	49%	$NIEI_t$	35	100%	SGR_t	25	71%
Div_t	12	34%							SG_t	34	97%
TA_t	14	40%							$NegSGR_t$	12	34%
$Accruals_t$	21	60%							$NegSG_t$	0	0%
									RD_t	31	89%
									$AbsNegSpI_t$	35	100%
									SpI_t	35	100%
									EI_t	8	23%

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TABLE 7 (CONTINUED)											
Panel A			**Panel B**			**Panel C**			**Panel D**		
HDZ model variables and not in the basic valuation model			*Basic valuation model variables and not in HDZ model*			*Variables in both the HDZ and the basic valuation model*			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
									CE_t	19	54%
									$IncLTD_t$	23	66%
									$Cash_t$	22	63%
									CC_t	33	94%
									$LagCC_t$	34	97%
									$DbtIss_t$	13	37%
									$FirstProfit_t$	6	17%
									$DivStop_t$	3	9%
									BM_t	35	100%
									$Size_t$	6	17%
									$ProfitSeq_t$	17	49%

Notes: This table provides a Summary for estimating the forecast model using the forward stepwise approach. The table shows the number of times and the percentage of significant of each variable. The forecast period is 35 years, from 1981 to 2015. Panel A shows variables that are included in the HDZ model and not in the basic valuation model. Panel B shows the variables in the basic valuation model and not in the HDZ model. Panel C shows the variables in both HDZ and the basic valuation models. Panel D shows other variables.

TABLE 8

Profit Observations by Year and the Distribution of Profit-Making Firms Between Transitory and Persistent

	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the forecasted earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
1981	1,784	1,681	3	1,678
1982	1,722	1,618	12	1,606
1983	1,731	1,623	0	1,623
1984	1,815	1,694	13	1,681
1985	1,727	1,618	22	1,596
1986	1,612	1,504	27	1,477
1987	1,732	1,608	54	1,554
1988	1,787	1,664	39	1,625
1989	1,788	1,666	45	1,621
1990	1,785	1,665	93	1,572
1991	1,776	1,654	157	1,497
1992	1,885	1,754	157	1,597
1993	1,971	1,830	109	1,721
1994	2,181	2,031	97	1,934
1995	2,309	2,149	100	2,049
1996	2,374	2,217	86	2,131

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TABLE 8 (CONTINUED)

	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the forecasted earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
1997	2,442	2,280	109	2,171
1998	2,314	2,153	166	1,987
1999	2,253	2,102	191	1,911
2000	2,193	2,053	259	1,794
2001	1,951	1,815	187	1,628
2002	2,007	1,874	259	1,615
2003	2,156	2,015	141	1,874
2004	2,284	2,138	84	2,054
2005	2,233	2,082	63	2,019
2006	2,192	2,045	78	1,967
2007	2,175	2,028	81	1,947
2008	1,920	1,783	135	1,648
2009	1,767	1,651	180	1,471
2010	2,072	1,926	100	1,826

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TABLE 8 (CONTINUED)				
	The distribution of profit-making firms		*Transitory and persistent profit-making firms based on the forecasted earnings*	
Year	*Total profit-making firms*	*After trimming*	*Transitory profit-making firms*	*Persistent profit-making firms*
2011	2,102	1,950	111	1,839
2012	1,989	1,859	105	1,754
2013	1,928	1,793	73	1,720
2014	1,930	1,793	125	1,668
Total	**67,887**	**63,316**	**3,461**	**59,855**

Notes: The explanations for this table are as follows:

1. *Total profit-making firms* - a company is defined as profit-making if its earnings before extraordinary items is higher than zero in a year *t*;
2. *After trimming* - the sample size after trimming all variables at 1% and 99%;
3. *Transitory profit-making firms* shows the number of transitory profit-making firms – a firm is classified as a transitory profit- making firm if its earnings forecast is negative; and
4. *Persistent profit-making* firms shows the number of persistent profit-making firms – a firm is classified as a persistent profit- making firms if its earnings forecast is positive.

TABLE 9

Test the Accuracy Based on the Classification of Profit-Making Firms into Transitory Profits (*D1=0*) and Persistent Profits (*D1=1*)

Panel A

Using full sample of profit-making firms (N=63,316)

		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Model-based earnings forecasts	**0**	1,241	2,220	3,461	35.86%
	1	6,285	53,570	59,855	89.50%
	Total	7,526	55,790	63,316	86.57%

Panel B

Using sub-sample: Firms followed by at least three analysts (N=30,383)

		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Model-based earnings forecasts	**0**	282	499	781	36.11%
	1	2,561	27,041	29,602	91.35%
	Total	2,843	27,540	30,383	89.93%

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TABLE 9 (CONTINUED)					
Panel B					
Using sub-sample: Firms followed by at least three analysts (N=30,383)					
		Consensus Analysts' earnings forecasts (Median)			
	D1	**0**	**1**	**Total**	
Model-based earnings forecasts	**0**	18	763	781	
	1	49	29,553	29,602	
	Total	67	30,316	30,383	
		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Consensus Analysts' earnings forecasts (Median)	**0**	47	20	67	70.15%
	1	2,796	27,520	30,316	90.78%
	Total	2,843	27,540	30,383	90.73%

Notes: This table provides test of the accuracy of our model-based and analysts' earnings forecasts based on the classification of profit-making firms into transitory profits (*D1=0*) and persistent profits (*D1=1*). Panel A is based on our main sample (i.e., all profit-making firms), while Panel B is based on using a sub-sample of profit-making firms that are followed by at least three analysts.

TABLE 10			
The Valuation of Profit-Making Firms			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Constant	**-0.407*** **	**-0.466*** **	**-0.230*** **
	(0.000)	**(0.000)**	**(0.008)**
NIEI	**12.058*** **	**6.755*** **	**5.548*** **
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.536*** **	**1.650*** **	**1.659*** **
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**5.363*** **	-1.499
		(0.000)	(0.404)
D1			**-0.299*** **
			(0.000)
D1.Forecast			**8.564*** **
			(0.000)

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TABLE 10 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.470	0.488	0.493
Industry dummies	Yes	Yes	Yes
Observations	63,316		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 11

The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms

	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.406*****	**-0.420*****	0.014	**-0.512*****	**-0.410*****	-0.102
	(0.000)	**(0.000)**	(0.832)	**(0.000)**	**(0.001)**	(0.171)
NIEI	**12.403*****	**3.665*****	**8.738*****	**5.904*****	**3.076*****	**2.828*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.001)**	**(0.003)**
BV	**1.482*****	**2.060*****	**-0.578*****	**1.620*****	**2.050*****	**-0.430*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.003)**

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TABLE 11 (CONTINUED)

Variable	**Panel A:** *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
	Persistent profit-making firms	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**6.797***	0.131	**6.666***
				(0.000)	(0.945)	**(0.002)**
Average R^2	0.475			0.494		
Industry dummies	Yes			Yes		
Observations	59,855	3,461		59,855	3,461	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 12			
The Valuation of Profit-Making Firms			
(OLS estimation approach with year and industry dummies)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Constant	**-1.278*** **	**-1.410*** **	**-1.200*** **
	(0.000)	**(0.000)**	**(0.000)**
NIEI	**12.171*** **	**7.324*** **	**6.225*** **
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.698*** **	**1.814*** **	**1.813*** **
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**4.998*** **	1.134
		(0.000)	(0.189)
D1			**-0.260*** **
			(0.000)
D1Forecast			**5.355*** **
			(0.000)

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TABLE 12 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Adjusted R^2	0.431	0.439	0.442
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Observations	63,316		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using OLS approach including industry and year dummies, for the period 1981–2014. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 13							
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
(OLS estimation approach with year and industry dummies)							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-1.264***** **(0.000)**	**-1.439***** **(0.000)**	**0.175**** **(0.050)**		**-1.436***** **(0.000)**	**-1.483***** **(0.000)**	0.047 (0.599)
NIEI	**12.500***** **(0.000)**	**4.254***** **(0.000)**	**8.246***** **(0.000)**		**6.559***** **(0.000)**	**4.369***** **(0.000)**	**2.190**** **(0.019)**
BV	**1.632***** **(0.000)**	**2.387***** **(0.000)**	**-0.755***** **(0.000)**		**1.759***** **(0.000)**	**2.387***** **(0.000)**	**-0.628***** **(0.000)**

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TABLE 13 (CONTINUED)

Variable	**Panel A:** *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
	Persistent profit-making firms	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**6.279*****	0.941	**5.338*****
				(0.000)	(0.269)	**(0.000)**
Adjusted R^2	0.433			0.442		
Industry dummies	Yes			Yes		
Year dummies	Yes			Yes		
Observations	59,855	3,461		59,855	3,461	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using OLS approach, for the period 1981–2014. Panel A shows the results of estimating the benchmark model. Panel B shows the results of estimating the benchmark model after adding *Forecast* into the model. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 14			
The Valuation of Profit-Making Firms			
(Profit persistence dummy is classified using one, two, and three years-ahead earnings forecasts)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Constant	**-0.393***** **(0.000)**	**-0.453***** **(0.000)**	-0.039 (0.597)
NIEI	**12.233***** **(0.000)**	**6.981***** **(0.000)**	**5.622***** **(0.000)**
BV	**1.528***** **(0.000)**	**1.640***** **(0.000)**	**1.614***** **(0.000)**
Forecast		**5.256***** **(0.000)**	**3.896***** **(0.006)**
D1			**-0.515***** **(0.000)**

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TABLE 14 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
D1Forecast			**3.496****
			(0.027)
Average R^2	0.475	0.492	0.499
Industry dummies	Yes	Yes	Yes
Observations	55,333		
Number of time periods	33	33	33

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and defining profit persistence dummy (*D1*) based on one, two, and three years-ahead earnings forecasts, for the period 1981–2014. *D1* is equal to 1 if the one, two, and three years-ahead earnings forecasts are positive (persistent profit-making firms), and zero if one, two, and three years-ahead earnings forecasts are negative (transitory profit-making firms). Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 15							
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
(Firms are classified to persistent & transitory based on one, two, and three years-ahead earnings forecasts)							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.396*****	**-0.247****	**-0.149****		**-0.524*****	-0.164	**-0.366*****
	(0.000)	**(0.030)**	**(0.027)**		**(0.000)**	(0.133)	**(0.000)**
NIEI	**12.827*****	**6.000*****	**6.827*****		**5.690*****	**4.813*****	0.877
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	(0.392)
BV	**1.415*****	**1.814*****	**-0.399*****		**1.561*****	**1.795*****	**-0.234***
	(0.000)	**(0.000)**	**(0.009)**		**(0.000)**	**(0.000)**	**(0.091)**

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TABLE 15 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**7.444***	**4.592***	**2.852**
				(0.000)	**(0.000)**	**(0.021)**
Average R^2	0.480			0.501		
Industry dummies	Yes			Yes		
Observations	51,104	4,229		51,104	4,229	
Number of time periods	33			33		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression and defining profit persistence dummy (*D1*) based on one, two, and three years-ahead earnings forecasts, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if one, two, and three years-ahead earnings forecasts are positive (persistent profit-making firms) and zero otherwise (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 16			
The Valuation of Profit-Making Firms			
(Sub-sample analysis – firms with at least three analysts' earnings forecasts)			
Variable	*Simple valuation model*	*Simple valuation model plus analysts' earnings forecast*	*Simple valuation model plus our earnings forecasts*
Constant	**-0.497*****	**-0.530*****	**-0.546*****
	(0.000)	**(0.000)**	**(0.000)**
NIEI	**14.044*****	**12.026*****	**5.597*****
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.687*****	**1.576*****	**1.764*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**3.282*****	**8.524*****
		(0.000)	**(0.000)**
Average R^2	0.534	0.555	0.549
Industry dummies	Yes	Yes	Yes
Observations	30,383		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of firms that followed by at least three analysts, for the period 1981–2014. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the consensus median analysts' earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast). Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 17							
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms ***(Sub-sample analysis - firms with at least three analysts' earnings forecasts)***							
(Persistent/transitory loss status defined by mechanical forecast)							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.495*****	**-0.372****	-0.123		**-0.564*****	**-0.344***	-0.220
	(0.000)	**(0.024)**	(0.396)		**(0.000)**	**(0.051)**	(0.157)
NIEI	**14.296*****	3.933	**10.363*****		**5.341*****	1.774	3.567
	(0.000)	(0.227)	**(0.004)**		**(0.001)**	(0.642)	(0.368)
BV	**1.647*****	**2.066*****	-0.419		**1.731*****	**1.994*****	-0.263
	(0.000)	**(0.000)**	(0.248)		**(0.000)**	**(0.000)**	(0.453)

(Continued on next page)

TABLE 17 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**9.132*****	-9.300	**18.432****
				(0.000)	(0.184)	**(0.014)**
Average R^2	0.538			0.554		
Industry dummies	Yes			Yes		
Observations	29,602	781		29,602	781	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression and using a sub-sample of firms that followed by at least three analysts, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and one year-ahead forecasts (*Forecast)* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 18			
The Valuation of 'Large' Profit-Making Firms			
(Classified as large when NIEI_lagMV is higher than or equal 0.010)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Constant	**-0.442*****	**-0.503*****	**-0.307*****
	(0.000)	**(0.000)**	**(0.001)**
NIEI	**12.776*****	**7.407*****	**6.545*****
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.417*****	**1.534*****	**1.547*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**5.480*****	2.938
		(0.000)	(0.197)
D1			**-0.238*****
			(0.000)
D1.Forecast			3.691
			(0.124)

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TABLE 18 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.499	0.518	0.520
Industry dummies	Yes	Yes	Yes
Observations	60,422		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of large profit-making firms, for the period 1981–2014. A firm is considered large when income before extraordinary items scaled by lagged market value (*NIEI_lagMV*) is higher than or equal 0.010. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 19							
The Valuation of 'Large' Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
(Classified as large when NIEI_lagMV is higher than or equal 0.010)							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	-0.435	**-0.462*****	0.027		**-0.535*****	**-0.429*****	-0.106
	(0.000)	**(0.000)**	(0.729)		**(0.000)**	**(0.001)**	(0.229)
NIEI	**12.921*****	**7.097*****	**5.824*****		**6.681*****	**6.995*****	-0.314
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	(0.791)
BV	**1.393*****	**1.709*****	**-0.316****		**1.526*****	**1.735*****	-0.209
	(0.000)	**(0.000)**	**(0.031)**		**(0.000)**	**(0.000)**	(0.175)

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TABLE 19 (CONTINUED)

	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**6.530***	1.221	**5.309***
				(0.000)	(0.646)	**(0.059)**
Average R^2	0.503			0.521		
Industry dummies	Yes			Yes		
Observations	57,972	2,450		57,972	2,450	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression and using a sub-sample of large profit-making firms, for the period 1981–2014. A firm is considered large when income before extraordinary items scaled by lagged market value *(NIEI_lagMV)* is higher than or equal 0.010. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 20			
The Valuation of 'Healthy' Profit-Making Firms			
(Classified as healthy firms based on Altman (1993))			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Constant	**-0.772*****	**-0.886*****	**-0.573*****
	(0.000)	**(0.000)**	**(0.000)**
NIEI	**12.899*****	**6.941*****	**6.169*****
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.773*****	**1.935*****	**1.934*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**6.012*****	17.033
		(0.000)	(0.265)
D1			**-0.355*****
			(0.000)
D1.Forecast			-9.866
			(0.516)

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TABLE 20 (CONTINUED)

Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.477	0.495	0.498
Industry dummies	Yes	Yes	Yes
Observations	47,067		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of healthy profit-making firms, for the period 1981–2014. A Firm with Altman (1993) z-score higher than 2.60 is considered as a healthy firm. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level

TABLE 21							
The Valuation of 'Healthy' Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
(Classified as healthy firms based on Altman (1993))							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.758***** **(0.000)**	**-1.072***** **(0.000)**	**0.314*** **(0.061)**		**-0.905***** **(0.000)**	**-1.068***** **(0.000)**	0.163 (0.400)
NIEI	**13.162***** **(0.000)**	**5.552***** **(0.000)**	**7.610***** **(0.000)**		**6.328***** **(0.000)**	**4.840***** **(0.000)**	1.488 (0.132)
BV	**1.713***** **(0.000)**	**2.597***** **(0.000)**	**-0.884***** **(0.001)**		**1.891***** **(0.000)**	**2.616***** **(0.000)**	**-0.725***** **(0.010)**

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TABLE 21 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**7.084*****	1.832	**5.252***
				(0.000)	(0.526)	**(0.068)**
Average R^2	0.481			0.500		
Industry dummies	Yes			Yes		
Observations	45,334	1,733		45,334	1,733	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression and using a sub-sample of healthy profit-making firms, for the period 1981–2014. A Firm with Altman (1993) z-score higher than 2.60 is considered as a healthy firm. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 22			
The Valuation of Profit-Making Firms ***(Using an extended valuation model)***			
Variable	*Extended valuation model*	*Extended valuation model plus earnings forecasts*	*Extended valuation model plus earnings forecasts & interaction term*
Constant	**-0.342*** **	**-0.405*** **	**-0.270*** **
	(0.000)	**(0.000)**	**(0.000)**
NIEI	**11.779*** **	**2.732*** **	**1.056* **
	(0.000)	**(0.000)**	**(0.083)**
BV	**1.049*** **	**1.140*** **	**1.150*** **
	(0.000)	**(0.000)**	**(0.000)**
RD	**5.352*** **	**6.871*** **	**7.062*** **
	(0.000)	**(0.000)**	**(0.000)**
CC	**2.159*** **	**2.483*** **	**2.501*** **
	(0.000)	**(0.000)**	**(0.000)**
CE	**0.853*** **	**1.013*** **	**1.024*** **
	(0.000)	**(0.000)**	**(0.000)**
DIV	**1.728*** **	0.668	0.471
	(0.004)	(0.132)	(0.293)

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TABLE 22 (CONTINUED)			
Variable	*Extended valuation model*	*Extended valuation model plus earnings forecasts*	*Extended valuation model plus earnings forecasts & interaction term*
Forecast		**9.351*** **	-1.750
		(0.000)	(0.514)
D1			**-0.201*** **
			(0.000)
D1.Forecast			**13.314*** **
			(0.000)
Average R^2	0.512	0.546	0.552
Industry dummies	Yes	Yes	Yes
Observations	61,510		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. Model 1 presents the results of estimating an extended model to our benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the extended model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the extended model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 23							
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
	Panel A: *Extended valuation model*				**Panel B:** *Extended valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.332*** **	**-0.171** **	**-0.161** **		**-0.499*** **	-0.091	**-0.408*** **
	(0.000)	**(0.021)**	**(0.038)**		**(0.000)**	(0.240)	**(0.000)**
NIEI	**11.888*** **	**3.202*** **	**8.686*** **		0.232	**2.828*** **	**-2.596** **
	(0.000)	**(0.001)**	**(0.000)**		(0.760)	**(0.003)**	**(0.036)**
BV	**1.050*** **	**0.924*** **	0.126		**1.182*** **	**0.931*** **	**0.251** **
	(0.000)	**(0.000)**	(0.333)		**(0.000)**	**(0.000)**	**(0.042)**
RD	**5.575*** **	**5.568*** **	0.007		**7.629*** **	**5.757*** **	**1.872** **
	(0.000)	**(0.000)**	(0.992)		**(0.000)**	**(0.000)**	**(0.026)**
CC	**2.073*** **	-2.527	4.600		**2.465*** **	-2.716	5.181
	(0.000)	(0.708)	(0.496)		**(0.000)**	(0.688)	(0.443)
CE	**0.837*** **	**0.909** **	-0.072		**1.100*** **	**0.724** **	0.376
	(0.000)	**(0.012)**	(0.856)		**(0.000)**	**(0.044)**	(0.336)

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TABLE 23 (CONTINUED)							
	Panel A: *Extended valuation model*				**Panel B:** *Extended valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
DIV	**1.591*****	0.472	1.119		0.472	1.209	-0.737
	(0.006)	(0.848)	(0.656)		(0.308)	(0.717)	(0.823)
Forecast					**12.347*****	0.344	**12.003*****
					(0.000)	(0.866)	**(0.000)**
Average R^2	0.520				0.557		
Industry dummies	Yes				Yes		
Observations	58,289	3,221			58,289	3,221	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the extended valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The model in Panel A includes all the variables in the extended model together with their interactions with *D1*. The model in Panel B includes all the variables in the extended model and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms.

TABLE 24			
The Valuation of Profit-Making Firms			
(Using Newey-West to Adjust Fama-MacBeth statistics)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*
Constant	**-0.407*****	**-0.466*****	**-0.217***
	(0.002)	**(0.000)**	**(0.077)**
NIEI	**12.058*****	**6.755*****	**5.548*****
	(0.000)	**(0.000)**	**(0.000)**
BV	**1.536*****	**1.650*****	**1.659*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**5.363*****	-1.499
		(0.000)	(0.224)
D1			**-0.313*****
			(0.000)
D1.Forecast			**8.564*****
			(0.000)

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TABLE 24 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.470	0.488	0.493
Industry dummies	Yes	Yes	Yes
Observations	63,316		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses based on Newey-West corrected Fama-MacBeth (1973) statistics, for the period 1981–2014. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 25							
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms							
(Using Newey-West to Adjust Fama-MacBeth statistics)							
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecast*		
Variables	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-0.406****	**-0.407*****	0.001		**-0.485*****	**-0.396*****	**-0.116***
	(0.011)	**(0.005)**	(0.994)		**(0.003)**	**(0.009)**	**(0.088)**
NIEI	**12.403*****	**3.665*****	**8.738*****		**5.904*****	**3.076*****	**2.828*****
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.001)**	**(0.005)**
BV	**1.482*****	**2.060*****	**-0.578*****		**1.620*****	**2.050*****	**-0.430*****
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	**(0.001)**

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TABLE 25 (CONTINUED)

Variable	**Panel A:** *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
	Persistent profit-making firms	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**6.797*** **	0.131	**6.666*** **
				(0.000)	(0.935)	**(0.001)**
Average R^2	0.475			0.494		
Industry dummies	Yes			Yes		
Observations	59,855	3,461		59,855	3,461	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses for persistent and transitory profit-making firms based on Newey-West corrected Fama-MacBeth (1973) statistics, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 26			
The Valuation of Profit-Making Firms			
(Using Unscaled Data to Estimate the Valuation Models)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*
Constant	-225.474	-138.032	**-300.809****
	(0.145)	(0.308)	**(0.046)**
NIEI	**12.511*****	**3.326*****	**3.291*****
	(0.000)	**(0.001)**	**(0.001)**
BV	**0.633*****	**0.561*****	**0.560*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**9.171*****	**-9.440****
		(0.000)	**(0.010)**
D1			**156.651*****
			(0.006)
D1.Forecast			**18.654*****
			(0.000)

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TABLE 26 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.825	0.841	0.841
Industry dummies	Yes	Yes	Yes
Observations	63,640		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. The results are based on estimating unscaled valuation models. Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 27								
The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms								
(Using Unscaled Data to Estimate the Valuation Models)								
	Panel A: *Simple valuation model*				**Panel B:** *Simple valuation model plus earnings forecast*			
Variables	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*		*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	
Constant	-207.985	**-447.137*** **	**239.152*** **		-144.851	**-366.468** **	**221.617*** **	
	(0.175)	**(0.010)**	**(0.001)**		(0.292)	**(0.019)**	**(0.001)**	
NIEI	**12.525*** **	**3.038* **	**9.487*** **		**3.322*** **	**3.093* **	0.229	
	(0.000)	**(0.086)**	**(0.000)**		**(0.001)**	**(0.066)**	(0.882)	
BV	**0.630*** **	**1.201*** **	**-0.571*** **		**0.556*** **	**1.201*** **	**-0.645*** **	
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	**(0.000)**	

(Continued on next page)

TABLE 27 (CONTINUED)

Variable	**Panel A:** *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
	Persistent profit-making firms	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**9.204*****	-0.340	**9.238*****
				(0.000)	(0.988)	**(0.000)**
Average R^2	0.826			0.842		
Industry dummies	Yes			Yes		
Observations	59,971	3,669		59,971	3,669	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The results are based on estimating unscaled valuation models. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 28			
The Valuation of Profit-Making Firms			
(Using BVlag as the Deflator for the Valuation Models)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*
Constant	**-1.459*****	**-1.627*****	**-1.231*****
	(0.000)	**(0.000)**	**(0.000)**
NIEI	**10.714*****	**5.958*****	**5.473*****
	(0.000)	**(0.000)**	**(0.000)**
BV	**2.216*****	**2.389*****	**2.378*****
	(0.000)	**(0.000)**	**(0.000)**
Forecast		**4.643*****	0.235
		(0.000)	(0.865)
D1			**-0.450*****
			(0.000)
D1.Forecast			**5.099*****
			(0.001)

(Continued on next page)

TABLE 28 (CONTINUED)			
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts & interaction term*
Average R^2	0.425	0.447	0.449
Industry dummies	Yes	Yes	Yes
Observations	62,164		
Number of time periods	34	34	34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. The valuation models are scaled by opening book value of equity *(BVlag).* Model 1 presents the results of estimating the benchmark model (a basic model with earnings and book value). Model 2 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating the benchmark model after adding *Forecast*, profit persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). *Constant* is the intercept, and the definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 29

The Valuation of Profit-Making Firms – Persistent and Transitory Profit-Making Firms

(Using BVlag as the Deflator for the Valuation Models)

	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecast*		
Variables	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Constant	**-1.373*** **	**-2.057*** **	0.684	**-1.571*** **	**-2.210*** **	0.639
	(0.000)	**(0.001)**	(0.229)	**(0.000)**	**(0.000)**	(0.153)
NIEI	**10.987*** **	**1.522** **	**9.465*** **	**5.818*** **	1.199	**4.619*** **
	(0.000)	**(0.049)**	**(0.000)**	**(0.000)**	(0.126)	**(0.000)**
BV	**2.103*** **	**3.226*** **	**-1.123** **	**2.261*** **	**3.395*** **	**-1.134*** **
	(0.000)	**(0.000)**	**(0.046)**	**(0.000)**	**(0.000)**	**(0.010)**

(Continued on next page)

TABLE 29 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Simple valuation model plus earnings forecasts*		
Variable	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*	*Persistent profit-making firms*	*Transitory profit-making firms*	*Coefficient differences between persistent and transitory profit-making firms*
Forecast				**5.145*****	-0.661	**5.806*****
				(0.000)	(0.628)	**(0.000)**
Average R^2	0.431			0.452		
Industry dummies	Yes			Yes		
Observations	58,908	3,256		58,908	3,256	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory profit-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The valuation models are scaled by opening book value of equity *(BVlag)*. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes *NIEI*, *BV*, and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (persistent profit-making firms) and zero if the earnings forecasts are negative (transitory profit-making firms). The columns show the coefficients of the valuation model for persistent profit-making firms, transitory profit-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

CHAPTER 4

EARNINGS FORECASTS AND THE VALUATION OF LOSS-MAKING FIRMS [1]

4.1 INTRODUCTION

In this chapter, we first develop an earnings forecasting model for loss-making firms, and then separate these loss-making firms into transitory and persistent loss categories, based upon the sign of their forecasted earnings. A transitory (persistent) loss-making firm is one for which forecasted earnings are positive (negative). Using the valuation framework of Darrough and Ye (2007) as the baseline model, our first research question asks whether earnings forecasts are incrementally value relevant relative to the Darrough and Ye (2007) model. Our second research question then asks whether the valuation role of the earnings forecasts is conditional upon loss persistence. In particular, we ask whether the valuation weight placed on the earnings forecasts is higher for transitory than for persistent loss-making firms. Our third research question asks whether the valuation role of current earnings and book value within the Darrough and Ye (2007) model is conditional upon loss persistence, an indirect way of considering the value relevance of our earnings forecasts. In particular, we ask whether the valuation weight placed on book value is higher for persistent than for transitory loss-making firms, with the reverse being true for earnings.

By way of context, it is well documented that listed firms reporting losses are prevalent in the US, UK and Australian stock markets (e.g., Hayn, 1995; Joos and Plesko, 2005; Darrough and Ye, 2007; Li, 2011 for the US; Jiang and Stark, 2013; Jiang et al., 2015, for the UK; Wu et al., 2010, for Australia).

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[1] Earlier versions of this study, co-authored with my supervisors, Doctor Wei Jiang and Professor Andrew Stark, have been presented at the 2018 EAA Congress and the 2018 AAA Annual Meetings.

Given the prevalence of listed loss-making firms, identifying the determinants of value for loss-making firms has attracted attention from researchers.

Loss-making firms are thought to be difficult to value because negative earnings have limited information content for future earnings (e.g., Hayn, 1995; Burgstahler and Dichev, 1997; Collins et al., 1999). Building on Hayn, (1995), Joos and Plesko (2005) then argue that the earnings of loss-making firms are not homogenous in terms of information content. Further, they argue, and demonstrate, that understanding the likelihood that a current loss will persist (i.e., loss persistence) is important to its contribution to valuation. In particular, Joos and Plesko (2005) develop a loss reversal model to predict loss persistence and provide evidence that the earnings response coefficient (ERC), as a proxy for the valuation role of losses, is lower for the persistent than for the transitory loss group.

Darrough and Ye (2007) identify important value drivers (such as non-recurring charges, research and development, growth strategy, and business sustainability), in addition to book value and earnings, for loss-making firms. The additional value drivers are derived from the characteristics of the different categories of loss-making firms found in the loss-making firms' populations. Their strategy of dealing with this heterogeneity is to expand the set of explanatory variables in the loss-making firm's valuation model, as opposed to explicitly allowing the roles of explanatory variables in valuation to vary across categories of loss-making firms. Jiang and Stark (2013), building on the idea that loss-making firms are heterogeneous in Darrough and Ye (2007), then suggest that the role of book value in valuing loss-making firms will vary according to how likely loss-making firms are to exercise their abandonment/adaptation option. They find higher valuation weights placed on book value for those firms classified as more likely to exercise their abandonment/adaptation option.

Given the importance of loss-making firms, and the research evidence suggesting that there is heterogeneity in loss persistence, it is first important to develop a model to improve the prediction of future earnings and loss persistence. On the one hand, while prior research on earnings forecasts provides evidence that certain accounting fundamentals help to predict future earnings (e.g., Hou et al, 2012; Li and Mohanram, 2014), it has not addressed the specific effectiveness of such models for predicting forecasted earnings for loss-making firms, because the earnings forecasting models in these studies are developed and tested on both profit and loss-making firms. On the other hand, the earnings prediction models developed specifically for loss-making firms (e.g., Joos and Plesko, 2005; Li, 2011; Jiang et al., 2015) exclude accounting fundamentals that are shown to contain information on future earnings for all firms in the existing earnings forecast literature. They also exclude the value drivers identified by Darrough and Ye (2007) that may help predict earnings. Hence, we first build a model to predict earnings for loss-making firms based on the totality of firm characteristics that have been found to be predictors of earnings for all firms, or only for loss-making firms, or value relevant for loss-making firms. We investigate the properties of the predicted earnings numbers by examining their value relevance and by categorising loss-making firms into two categories - persistent and transitory – in order to investigate whether the roles of our earnings forecasts, current earnings, and book value differ between the two categories of loss-making firms.

To investigate the possible roles played by the earnings forecasts in valuing loss-making firms, we extend the Darrough and Ye (2007) cross-sectional valuation model to including the forecasted earnings measure. We find that this forward-looking information plays an important role in valuing loss-making firms, even in the presence of the value drivers identified by Darrough and Ye (2007) that may capture a firm's potential economic future. We then interact a loss persistence dummy with the earnings forecasts and include the loss persistence dummy, together with its interaction, in the extended valuation model. We find that the earnings forecasts play an important role in valuing both transitory and persistent loss-making firms, even in the presence of the value drivers identified by Darrough and Ye (2007). Further, we find that capital markets place more weight on the earnings forecasts for the loss-making firms classified as transitory, relative to those classified as persistent. We then interact a loss persistence dummy with all value determinants included in the Darrough and Ye (2007) model. We find that the loss persistence classifications help differentiate between loss-making firms in the predicted ways with respect to book value and earnings. In particular, we find that capital markets place more weight on current earnings (book value) for the loss-making firms classified as transitory (persistent), relative to those classified as persistent (transitory).

In subsidiary tests, our results are robust to alternative empirical choices. In particular, the results are the same when we estimate the valuation model using the OLS approach with industry and year dummies, rather than using Fama-MacBeth (1973) approach. The results are also robust when we limit the sample only to loss-making firms with forecasted earnings not immediately adjacent to zero. Further, the results are consistent when using one, two, and three years-ahead earnings forecasts to define persistent and transitory loss-making firms.

We also use a sub-sample of loss-making firms that are followed by at least three analysts. We use both analysts' earnings forecasts and our own earnings forecasts to test our hypotheses on this sub-sample. As analysts normally follow mature and profit-making entities, small firms and financial distressed firms (which are likely to be loss-making entities) are underrepresented in the I/B/E/S database (Diether et al., 2002; Hou et al., 2012). Therefore, we lose approximately 59% of firm-year observations in our sample when undertaking this analysis. Nonetheless, the use of the analysts' forecasts data generally shows that both our model-based and analysts' earnings forecasts have incremental information content relative to the value drivers in the Darrough and Ye (2007) valuation model. Further, the results generally support the conclusions based upon the use of our own earnings forecasts to define the categories of loss-making firms. The results are also robust when we use another deflator (i.e. opening book value) for our valuation models.

This chapter contributes to the literature along two main dimensions. First, despite the extensive accounting literature examining the forecasting of earnings, there are few studies that specifically examine the forecasting of earnings for loss-making firms. Model-based earnings forecasts are especially important for loss-making firms relative to profit-making firms. This is because analysts' forecasts, as an alternative measure, are not widely available for loss-making firms. Also, recent research shows that cross-sectional models based upon historical financial statement items produce more accurate forecasts of earnings and profitability, especially for firms with a poorer information environment (smaller younger firms, firms with lower analyst coverage, more volatile earnings and higher idiosyncratic volatility), often characteristics of loss-making firms (e.g., Fama and French, 2000, 2006; Hou et al., 2012; Li and Mohanram, 2014). Therefore, our study contributes by providing an earnings prediction process for loss-making firms, the test of the effectiveness of which is that it proves useful in understanding the valuation of loss-making firms.

Second, we add to the existing literature on the valuation of loss-making firms by investigating the direct and indirect value relevance of our one year-ahead earnings forecasts.

Although, in theory, scholars link earnings forecasts to valuation, earnings forecasts are often omitted from cross-sectional valuation models, which could be a serious problem for loss-making firms for which the link between current and future earnings is weaker than for profit-making firms. We provide positive evidence on the incremental information content of our earnings forecasts relative to other value determinants included in a comprehensive valuation model of loss-making firms developed by Darrough and Ye (2007). Further, we contribute to the literature by providing positive evidence on the incremental information content of our earnings forecasts to both categories of loss-making firms. By testing the indirect value relevance of our earnings forecasts, we contribute to the debate on the information content of current earnings and book value for loss-making firms and how information content varies by the category of loss-making firm.

The rest of the chapter proceeds as follows. Section 4.2 provides discussions of relevant research that has a bearing on the development of our hypotheses. Section 4.3 describes our research methodology, including the earnings forecasting model, testing the predictive power and the validity of our earnings forecasting model, and the valuation models that are used in this study. Section 4.4 describes the data and sample selection. Section 4.5 presents the empirical results of our analysis, including the main results and details of additional tests performed. Section 4.6 concludes.

4.2 RELEVANT PRIOR STUDIES AND HYPOTHESES DEVELOPMENT

Previous research on loss-making firms has concentrated on the valuation of current earnings and book value. In this respect, Hayn (1995) reports a lower earnings response coefficient (ERC) for loss-making firms relative to profit-making firms and suggests that negative earnings are less informative about a firm's future prospects than positive earnings. Collins et al. (1999) then argue that book value plays an important role in valuing loss-making firms for two reasons. First, book value can act as a proxy for expected future normal earnings when a firm makes a loss (Ohlson, 1995). Second, it can act as a proxy for the abandonment/adaptation option value when a firm chooses to exercise the option (Berger et al., 1996; Burgstahler and Dichev, 1997; Hayn, 1995).

In addition to earnings and book value, Darrough and Ye (2007) identify other value drivers that could capture a loss-making firm's future prospects. A key part of their study is the argument that the inclusion of these value drivers will eliminate the finding in previous studies that the coefficient of earnings is negative, a finding that they argue is anomalous. Their study does indeed produce a non-negative estimated coefficient for earnings for loss-making firms, as well as significant associations with market value for their additional value drivers.

Empirically, the valuation research has ignored "other" information in the residual-income based valuation model in Ohlson (1995). They define the market value of equity as a linear function of current earnings and book value, and includes a constant term and an error term in the model to capture variables omitted from the model. Ohlson (2001) considers the use of one period-ahead residual income forecasts to reflect the other information about cash receipts in the Ohlson (1995) model. Building on Feltham and Ohlson (1995), Liu and Ohlson (2000) investigate the use of one period-ahead forecasts of residual income and operating assets to estimate the other information in Feltham and Ohlson (1995). Begely and Feltham (2002) argue that accounting number are not sufficient to provide the value relevant information for investors. Begely and Feltham (2002) expand Feltham and Ohlson (1996) model by including one and two period- ahead analysts' forecasts to capture "other" information about future revenues from past investments and about future growth opportunities. They define firm's value as a function of the current operating income, current operating assets, current capital investment, and one and two period- ahead analysts' forecasts. They report that the analysts' forecasts have useful information content for valuing firms. In particular, they find that the coefficient of the two period-ahead forecasts is significantly positive and this coefficient is increasing in the expected growth in investment opportunity and the persistence in cash receipts. Whereas they find that the coefficient of the one period-ahead forecasts is significantly negative and they claim that this indicates that there is sufficient persistence in income before depreciation. In addition, they find that the coefficient of the sum of one and two period-ahead forecasts is positive.

Our study considers the valuation role played by earnings forecasts for loss-making firms. As mentioned above, analysts normally follow mature and profit-making entities, small firms and financial distressed firms (which are likely to be loss-making entities) are underrepresented in the I/B/E/S database (Diether et al., 2002; Hou et al., 2012). We separately consider two possibilities. First, we ask if a one year-ahead earnings forecasts are value relevant when added in to the Darrough and Ye (2007) valuation model. Noting that this model includes accounting fundamentals to proxy for a loss-making firm's future general prospects, we specifically consider the value relevance of a more direct, and short-term, measure of a loss-making firm's future – an earnings forecasts based upon financial statement information. It is not clear whether the short-term earnings forecasts will be value relevant because it might merely replicate the information about future prospects already contained in the variables employed in the Darrough and Ye (2007) model. Essentially, the earnings forecasts will only be value relevant if it contains some value relevant information that is not contained in the variables already included in that model.

Our first hypothesis, expressed in null form, is:

H1: Our earnings forecasts are value irrelevant for loss-making firms.

The associated alternative hypothesis is that the earnings forecasts are value relevant, with an implied positive relationship.

Our second possibility is that the earnings forecasts help discriminate between loss-making firms that have persistent losses from those that have transitory losses. In this regard, and building on Hayn (1995), Joos and Plesko (2005) report a significantly positive ERC for firms classified as having transitory losses, and a significantly negative ERC for firms classified as having persistent losses. Joos and Plesko (2005) classify firms into those that have persistent losses and those that have transitory losses using a probabilistic model of loss reversal (a particular type of earnings prediction model). Joos and Plesko (2005) then categorise firms classified as having persistent losses into those without research and development expenditures (*RD*) and those with RD. Using a returns-earnings model, they find a zero ERC for firms with persistent losses that do not spend on RD, and positive coefficients for both the RD and non-RD components of earnings for RD firms with persistent losses.

Joos and Plesko (2005) explain their findings as follows. Transitory losses indicate that such firms are likely to continue its current business models and therefore, earnings and returns reflect similar information about a firm's performance (i.e., the larger the losses, the more negative the return). By contrast, persistent losses indicate that these loss-making firms are likely to exercise the abandonment/adaptation option instead of bearing continuous losses. Therefore, the persistent losses are not informative about the future prospects of the firm but rather whether abandonment/adaptation is attractive. As such, the coefficients of earnings before RD are insignificant.

The approach in Joos and Plesko (2005) contrasts with that in Darrough and Ye (2007). First, although they both allow for distinctions to be made between different categories of loss-making firms, the distinctions differ between the two papers. The former distinguishes between loss-making firms with persistent and transitory losses and, within those loss-making firms classified as persistent, those that do and do not have RD activities. Darrough and Ye (2007) make no distinction between firms based upon the properties of their earnings. Instead they distinguish firms on the basis of non-recurring charges, RD, growth strategy and sustainability. They do so because they reject the stereotype of the loss-making firms as one that is operationally distressed and whose value is based upon an abandonment/adaptation option. Second, whereas Joos and Plesko (2005) model the distinction between different categories of loss-making firms by allowing the valuation of earnings to differ between them, Darrough and Ye (2007) model their distinctions *via* including additional value drivers into a basic earnings and book value valuation model. They assume a common ERC across all categories of loss-making firms, with an associated expectation that the coefficient will be non-negative. Implicit in such an expectation is that there would be a non-negative ERC irrespective of whether a loss-making firm is classified as being persistent or transitory.

For our second set of tests, then, we consider the role of loss-making status within the Darrough and Ye (2007) model. We use our earnings forecasts to define whether a loss-making firm is classified as persistent or transitory. In particular, if the earnings forecast is positive, a loss-making firm is classified as transitory, and is classified as persistent otherwise. We first hypothesise that the valuation role of our earnings forecasts will differ based on whether a loss-making firm is classified as persistent or transitory. Based upon Darrough and Ye (2007), we expect that the earnings forecasts of loss-making firms will be priced conditional upon whether a loss is going to persist in the next year, and that the pricing of the earnings forecasts for transitory loss-making firms will be positive if the variables included in the Darrough and Ye (2007) do not reflect perfectly activities that have been engaged by firms to improve future earnings. The pricing of the earnings forecasts of persistent loss-making firms is less clear. Based upon Joos and Plesko (2005), we might expect the pricing of the earnings forecasts of persistent loss-making firms will be positive as well if these firms are spending in activities to improve future earnings. We expect, however, that capital markets place more weight on the earnings forecasts for the loss-making firms classified as transitory, relative to those classified as persistent.

The discussions above result in the following hypotheses, expressed in null form:

H2(a): capital markets do not price the earnings forecasts of loss-making firms conditional upon whether a loss is going to persist in the next year;

H2(b): capital markets do not price the earnings forecasts of loss-making firms classified as transitory; and

H2(c): capital markets do not price the earnings forecasts of loss-making firms classified as persistent.

The alternative hypotheses are that the *difference* in the pricing of the earnings forecasts for loss-making firms classified as transitory relative to those classified as persistent is positive; the pricing of earnings forecasts for loss-making firms classified as transitory is positive; and the pricing of earnings forecasts for loss-making firms classified as persistent is positive.

Moving on to our third set of hypotheses, based upon Joos and Plesko (2005), we expect that the current earnings of loss-making firms will be priced conditional upon whether a loss is going to persist in the next year, and that the pricing of the losses of transitory loss-making firms will be positive. The pricing of the losses of persistent loss-making firms is less clear. If we follow Darrough and Ye (2007), we would predict that the pricing of such losses will be non-negative. Nonetheless, if the magnitude of current losses captures the costs of adaptation conducted by these firms, or arises from other actions that have been taken to improve future earnings, neither perfectly captured by the variables included in the Darrough and Ye (2007), are reflected in market value, we might expect that the larger the loss, the higher the market value, resulting in a negative valuation coefficient for earnings.

The discussions above result in the following hypotheses, expressed in null form:

H3(a): capital markets do not price the current earnings of loss-making firms conditional upon whether a loss is going to persist in the next year;

H3(b): capital markets do not price the current earnings of loss-making firms classified as transitory; and

H3(c): capital markets do not price the current earnings of loss-making firms classified as persistent:

The alternative hypotheses are that the *difference* in the pricing of current earnings for loss-making firms classified as transitory relative to those classified as persistent is positive; the pricing of current earnings for loss-making firms classified as transitory is positive; and, the pricing of current earnings for loss-making firms classified as persistent is different from zero.

Jiang and Stark (2013) argue that the role of book value is also different across various categories of loss-making firms. Within a valuation framework similar to Darrough and Ye (2007), and using RD and dividend payments as proxies for whether a loss-making firm is unlikely to be in financial distress, Jiang and Stark (2013) suggest that book value is less value relevant for high RD and dividend-paying loss-making firms, relative to other loss-making firms, because their value is less reliant on the exercise of the abandonment/adaptation option. The analysis in Ciftci and Darrough (2015) shows a similar result.

As a consequence, we expect capital markets to price book value conditional upon loss persistence, because it captures a firm's future prospects (and more directly and comprehensively than merely using of RD and dividend payments for that purpose). Further, we expect that capital markets place more weight on book value for loss-making firms classified as persistent, relative to those classified as transitory. To reiterate, this is because loss-making firms classified as transitory are less likely to adopt the abandonment/adaptation option – a situation in which book value becomes important by capturing the value gained from exercising the option.

This produces the following null hypotheses:

H4(a): capital markets do not price the book value of loss-making firms conditional upon whether a loss is going to persist in the next year;

H4(b): capital markets do not price the book value of loss-making firms classified as transitory; and

H4(c): capital markets do not price the book value of loss-making firms classified as persistent:

The implied alternative hypotheses are that the *difference* in the pricing of book value for loss-making firms classified as transitory relative to those classified as persistent is negative; the pricing of book value for loss-making firms classified as transitory is positive; the pricing of book value for loss-making firms classified as persistent is positive; and, that capital markets price the book value of loss-making firms classified as transitory lower than for loss-making firms classified as persistent. In general, consistent with prior research, we expect the pricing of book value to be positive.

4.3 METHODOLOGY

Our methodology has three parts. First, we describe the earnings forecasts process used to produce our earnings forecasts for loss-making firms. As argued in the previous section, these forecasts not only could have incremental information content relative to the Darrough and Ye (2007) model, but also are used to define whether a loss-making firm is defined as transitory or persistent in any given year. Second, we describe our approach to testing the predictive power and the validity of our earnings forecasting model. Third, we describe our approach to modelling the value of transitory and persistent loss-making firms.

4.3.1 Developing the Earnings Forecasting Model for Loss-Making Firms

We start from the earnings forecasting model developed by Hou et al. (2012) (HDZ) that has been widely used in recent accounting research. Their model is developed and tested on all firms (i.e., both profit and loss-making firms), and is as follows:

$$Forecast_{t+1} = \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 NegE_t + \alpha_6 Accruals_t \tag{1}$$

The parameters of the model are estimated by setting $Forecast_{t+1}$ equal to earnings before extraordinary items for year *t+1* and running a regression of it on the variables in the model. Forecasts are generated by applying the model to firms out of sample. More specific details of how the forecasting model is used are provided below. For the independent variables in the model above, TA_t is total assets in year *t*; Div_t is the amount of any dividend payment in year *t*; $DivDum_t$ is an indicator variable equal to one for firms that pay dividends in year *t* and otherwise equals zero; $NIEI_t$ is earnings before extraordinary items in year *t*; $NegE_t$ is an indicator variable equal to one for firms that report negative earnings in year *t* and equal to zero otherwise; and $Accruals_t$ is total accruals in year *t*.

To the model described in equation (1), we add additional variables for consideration as predictive variables in the context of loss-making firms. Our strategy is to add in variables that have been used in other studies either to predict earnings (or properties of earnings, such as the likelihood of loss reversal), or to explain the market value of loss-making firms. Initially, following the earnings forecasting models of So (2013) and Fama and French (2000, 2006) respectively, we include the ratio of book value to the market value of equity (BM_t) and the log of the market value of equity ($Size_t$). We then turn our attention to the earnings forecast models developed specifically for loss-making firms by Joos and Plesko (2005) and Li (2011) and further add three dummy variables to equation (1) – the first capturing whether the loss year is preceded by a profit year ($FirstLoss_t$), the second counting the number of sequential losses over the past five years before the current loss ($LossSeq_t$), and the third capturing whether the firm stops paying dividends in the loss year ($DivStop_t$).

Given that the value drivers identified by Darrough and Ye (2007) are intended to capture a loss-making firm's future economic prospects, they could have the potential to forecast future earnings for loss-making firms. Therefore, we add in those currently omitted from consideration as earnings-predictive variables. These are: (i) research and development expense (RD_t); (ii) the absolute value of the negative special items ($AbsNegSpI_t$); (iii) the sales growth ratio (SGR_r); (iv) a dummy variable capturing whether the sales growth ratio is negative ($NegSGR_t$); (v) the sum of cash and short-term investments ($Cash_t$); (vi) capital contributions (CC_t), (vii) lagged capital contributions ($LagCC_t$); and (viii) cash proceeds from issuing debt ($DebtIss_t$). The book value of equity (BV_t); extraordinary items (EI_t); the increase in the long-term debt ($IncLTD_t$); capital expenditures (CE_t); change in sales (SG_t);

and a dummy capturing whether the change in sales is negative ($NegSG_t$) are also included, following Jiang and Stark (2013). Finally, total special items (SpI_t) is added into the model, following Li (2011). We estimate our model on loss-making firms only. As a consequence, $NegE_t$ is excluded from the HDZ model.

The resulting earnings prediction model for loss-making firms is as follows:

$$\begin{aligned} Forecast_{t+1} = {} & \alpha_0 + \alpha_1 TA_t + \alpha_2 Div_t + \alpha_3 DivDum_t + \alpha_4 NIEI_t + \alpha_5 Accruals_t \\ & + \alpha_6 BM_t + \alpha_7 Size_t + \alpha_8 FirsLoss_t + \alpha_9 LossSeq_t + \alpha_{10} DivStop_t \\ & + \alpha_{11} RD_t + \alpha_{12} AbsNegSpI_t + \alpha_{13} SGR_t + \alpha_{14} NegSGR_t + \alpha_{15} Cash_t \\ & + \alpha_{16} CC_t + \alpha_{17} LagCC_t + \alpha_{18} DbtIss_t + \alpha_{19} BV_t + \alpha_{20} EI_t \\ & + \alpha_{21} IncLTD_t + \alpha_{22} CE_t + \alpha_{23} SG_t + \alpha_{24} NegSG_t + \alpha_{25} SpI_t \end{aligned} \qquad (2)$$

When estimated, the model also includes industry-specific dummies, using SIC industry classifications.

In building our earnings prediction model, we pay no attention to whether or not any of the independent variables are either similar from a theoretical perspective and/or are likely to be empirically similar. As a consequence, we estimate equation (2) using forward stepwise regression techniques (with a 1% significant level), similar to the approach used by Gerakos and Gramacy (2013). The regression is estimated after deflating all variables (except for *BM*, *Size*, *FirstLoss*, *LossSeq*, *DivDum*, *DivStop*, *SGR*, *NegSGR*, and *NegSG*) by opening total assets (*OTA*).

We follow the methodology of Hou et al. (2012) and Li and Mohanram (2014) to estimate the cross-sectional earnings forecasting models. Our process is as follows. To develop an earnings prediction for firm i in year *t* for earnings in year *t+1*, we estimate our earnings prediction model using all firm-years with available data for calendar years *t-10* to *t-1*. We then apply the estimated model to the variables for firm *i* for year *t*, producing the forecast of earnings for year *t+1*. For instance, if 2001 is year *t*, we use data from 1991 to 2000 to estimate the coefficients that will be used to forecast the earnings for firms in 2002 (year *t+1*), using firm data for year *t*. Only firm-year observations with non-missing values for all the independent variables are used in the estimation.

As indicated above, we use the earnings forecasts in our valuation model. We also use them to define whether a loss-making firm in year *t* is denoted as transitory or as persistent. Specifically, if the earnings forecast for year *t+1* made for loss-making firm *i* in year *t* is positive, loss-making firm *i* in year *t* is defined as transitory; otherwise, it is defined as persistent bin. Such a practice is followed by Li (2011).

4.3.2 The Predictive Power and the Validity of our Earnings Forecasting Model

Given that we use the forward stepwise approach to estimate our earnings prediction models, the independent variables that appear in the final prediction model could be different in each of the years from 1981 to 2015. Therefore, we document the properties of our earnings prediction model by counting the number of years in which each independent variable is shown to be useful for explaining next year earnings in our forecast period from 1981 to 2015. Further, we report these numbers as a percentage of the total period. We concentrate our attention on the variables that are not in the HDZ model or the Darrough and Ye (2007) valuation model. We do the former to examine whether our model can be subsumed within what has become a well-used earnings prediction model. We do the latter because our earnings forecast model is unlikely to be value relevant if the set of variables appearing within it are a subset of the variables appearing in the Darrough and Ye (2007) model.

We then test the accuracy of our model-based earnings forecasts in terms of classifying loss-making firms into persistent or transitory loss-making firms. For companies with analyst forecasts, we also compare our model-based earnings forecasts with consensus analysts' earnings forecasts in terms of their respective abilities to classify firms into persistent and transitory loss-making firms. To do this, we use a sub-sample of loss-making firms that are followed by at least three analysts for the comparison.

We then apply four specific tests. First, we investigate the accuracy of our model-based earnings forecasts using the full sample of loss-making firms. We define the overall accuracy of our model-based earnings forecasts as the ratio (expressed as a %) of the sum of the number of correctly classified transitory and persistent loss-making firm-year observations to the total number of loss-making firm-year observations. Further, we define the persistent (transitory) losses accuracy percentage rate as the percentage ratio of the number of correctly classified persistent (transitory) loss-making firm-year observations to the total number of persistent (transitory) loss-making firm-year observations.

Second, we replicate the same test for a sub-sample of loss-making firms that are followed by at least three analysts. Third, we compare the classification of firms into persistent or transitory loss-making firms based on our earnings forecasts with those based on the use of the consensus analysts' earnings forecasts. Finally, we investigate the accuracy of analysts' earnings forecasts in terms of classifying loss-making firms into persistent or transitory loss-making firms using the same accuracy definitions that we use to test the accuracy of our-model based earnings forecasts.

4.3.3 The Valuation Models for Loss-Making Firms

A commonly used valuation model in prior studies is based upon one developed by Ohlson (1995), where market value can be expressed as a linear function of current earnings, book value, net shareholder cash flows, and other information. Prior studies include intercept and error terms in the model to reflect information outside of the model, and omit net shareholder cash flows and other information, leaving only book value and earnings as the basis for the valuation model. Prior studies report that the association between current earnings and market value is negative for loss-making firms when using this simple valuation model (e.g., Burgstahler & Dichev, 1997; Collins et al., 1997), whereas Darrough and Ye, 2007 identify other value drivers that capture a loss-making firm's future prospects and that eliminate the negative relationship as discussed previously.

As mentioned above, we build our hypotheses based on the valuation model developed in Darrough and Ye (2007). Nonetheless, for comparability with prior studies on value relevance that are based upon an earnings and book value model (e.g., Burgstahler & Dichev, 1997; Collins et al., 1997; Barth et al., 1998; Barth et al., 1999; Shah et al., 2009), we first investigate our hypotheses based on a simple valuation model with earnings and book value only:

$$MV_t = \alpha_0 + \alpha_1\, NIEI_t + \alpha_2\, BV_t + \varepsilon_t \qquad (3)$$

where MV_t is the market value of equity three months following the fiscal year-end of year t; and BV_t is the book value of equity.

We test whether our earnings forecasts have information content above current earnings and book value by including the one year-ahead earnings forecasts (*Forecast*) that are generated from our earnings prediction model in the simple valuation model (equation (3)):

$$MV_t = \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 Forecast_{t+1} + \varepsilon_t \qquad (4)$$

We focus on the statistical significance of the coefficient of $Forecast_{t+1}$, α_3, relative to a null hypothesis that it equals 0. We use a two-tailed test.

We then classify loss firm-year observations into transitory losses and persistent losses based upon their forecasted earnings as described above. We construct a dummy variable, *D1*, equal to 1 if a loss firm-year is classified as transitory; and 0 otherwise. We then include *D1*, and its interactions with our earnings forecast, into equation (4) to allows the weight of earnings forecasts to vary across the two categories of loss-making firms (i.e., persistent and transitory loss-making firms). This produces the following valuation model:

$$MV_t = \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 Forecast_{t+1} + \alpha_4 D1 + \alpha_5 D1.Forecast_{t+1} + \varepsilon_t \qquad (5)$$

We focus on the coefficients of $Forecast_{t+1}$, using the statistical significance of α_3 (the coefficient of earnings forecasts for persistent loss-making firms), α_5 (the difference between the coefficient of the earnings forecast for transitory and persistent loss-making firms), and the sum of $\alpha 3$ and $\alpha 5$ (the coefficient of earnings forecasts for transitory loss-making firms), relative to a null hypothesis that they equal 0. We again use two-tailed tests.

We then include *D1*, and its interactions with earnings and book value of equity into the simple valuation model (equation (3)). This allows the weights of current earnings and book value of equity to vary across the two categories of loss-making firms. This produces the following valuation model:

$$MV_t = \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 D1 + \alpha_4 D1.NIEI_t + \alpha_5 D1.BV_t + \varepsilon_t \tag{6}$$

We focus on the coefficients of $NIEI_t$ and BV_t, and how they differ between persistent and transitory loss-making firms, using the statistical significance of α_1 (the coefficient of earnings for persistent loss-making firms), α_2 (the coefficient of book value for persistent loss-making firms), α_4 (the difference between the coefficients of earnings for transitory and persistent loss-making firms), α_5 (the difference between the coefficients of book value for transitory and persistent loss-making firms), the sums of α_1 and α_4 (the coefficient of earnings for transitory loss-making firms), and the sum of α_2 and α_5 (the coefficient of book value for transitory loss-making firms), relative to a null hypothesis that they equal 0. We again use two-tailed tests.

We estimate equations (3) – (6) annually, and use the Fama-MacBeth (1973) approach to produce average coefficient estimates, their t-statistics, and associated p-values. The annual regressions are estimated by deflating all variables in the model by OTA. Also, we include industry-specific dummies based on SIC industry classifications.

We then consider the valuation model developed by Darrough and Ye (2007) as our baseline model:

$$
\begin{aligned}
MV_t = {} & \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 absNegSpI_t + \alpha_4 RD_t + \alpha_5 SGR_t + \alpha_6 NegSGR_t \\
& + \alpha_7 Cash_t + \alpha_8 CC_t + \alpha_9 LagCC_t + \alpha_{10} DbtIss_t + \varepsilon_t
\end{aligned}
\tag{7}
$$

To test our first hypothesis – whether our earnings forecasts possess incremental information content over and above the other variables in the Darrough and Ye (2007) model that are intended to capture the future economic prospects of the firm – we include one year-ahead earnings forecasts ($Forecast_{t+1}$), generated from our earnings prediction model, in the valuation model:

$$
\begin{aligned}
MV_t = {} & \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 absNegSpI_t + \alpha_4 RD_t + \alpha_5 SGR_t + \alpha_6 NegSGR_t \\
& + \alpha_7 Cash_t + \alpha_8 CC_t + \alpha_9 LagCC_t + \alpha_{10} DbtIss_t + \alpha_{11} Forecast_{t+1} + \varepsilon_t
\end{aligned}
\tag{8}
$$

We test our hypothesis using the statistical significance of the coefficient of *Forecast*, α_{11}, relative to a null hypothesis that it equals 0. We use a two-tailed test.

To examine our second hypotheses on whether the valuation role of our earnings forecasts will differ based on whether a loss-making firm is classified as persistent or transitory, we add *D1*, and its interactions with *Forecast*, into equation (8). This leads to the following model:

$$
\begin{aligned}
MV_t = {} & \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 AbsNegSpI_t + \alpha_4 RD_t + \alpha_5 SGR_t + \alpha_6 NegSGR_t \\
& + \alpha_7 Cash_t + \alpha_8 CC_t + \alpha_9 LagCC_t + \alpha_{10} DbtIss_t + \alpha_{11} Forecast_{t+1} + \alpha_{12} D1 \\
& + \alpha_{13} D1.Forecast_{t+1} + \varepsilon_t
\end{aligned}
\tag{9}
$$

We test our hypotheses concerning the coefficient of *Forecast*, and how it differs between persistent and transitory loss-making firms, using the statistical significance of α_{11} (the coefficient of earnings forecasts for persistent loss-making firms), α_{13} (the difference between the coefficient of earnings forecasts for transitory and persistent loss-making firms), and the sum of α_{11} and α_{13} (the coefficient of earnings forecasts for transitory loss-making firms), relative to a null hypothesis that they equal 0. We again use two-tailed tests.

To examine our third and fourth sets of hypotheses on whether the valuation roles of current earnings and book value will differ based on whether a loss-making firm is classified as persistent or transitory, we add *D1*, and its interactions with all the other variables into the Darrough and Ye (2007) model (equation (7)). This allows the coefficients of all variables to vary between transitory and persistent loss-making firms. The valuation model is expressed mathematically as:

$$\begin{aligned} MV_t = {} & \alpha_0 + \alpha_1 NIEI_t + \alpha_2 BV_t + \alpha_3 AbsNegSpI_t + \alpha_4 RD_t + \alpha_5 SGR_t + \alpha_6 NegSGR_t \\ & + \alpha_7 Cash_t + \alpha_8 CC_t + \alpha_9 LagCC_t + \alpha_{10} DbtIss_t + \alpha_{11} D1 + \alpha_{12} D1.NIEI_t \\ & + \alpha_{13} D1.BV_t + \alpha_{14} D1.AbsNegSpI_t + \alpha_{15} D1.RD_t + \alpha_{16} D1.SGR_t \\ & + \alpha_{17} D1.NegSGR_t + \alpha_{18} D1.Cash_t + \alpha_{19} D1.CC_t + \alpha_{20} D1.LagCC_t \\ & + \alpha_{21} D1.DbtIss_t + \varepsilon_t \end{aligned} \tag{10}$$

We test our hypotheses concerning the coefficients of $NIEI_t$ and BV_t, and how they differ between persistent and transitory loss-making firms, using the statistical significance of α_1 (the coefficient of earnings for persistent loss-making firms), α_2 (the coefficient of book value for persistent loss-making firms), α_{12} (the difference between the coefficient of earnings for transitory and persistent loss-making firms), α_{13} (the difference between the coefficient of book value for transitory and persistent loss-making firms), the sums of α_1 and α_{12} (the coefficient of earnings for transitory loss-making firms), and the sum of α_2 and α_{13} (the coefficient of book value for transitory loss-making firms), relative to a null hypothesis that they equal 0. We again use two-tailed tests.

As in Darrough and Ye (2007), we estimate equations (7) – (10) annually, and use the Fama-MacBeth (1973) approach to produce average coefficient estimates, their t-statistics, and associated p-values. The annual regressions are estimated by deflating all variables in the model (except for *SGR*, *NegSGR*) by OTA. Also, we include industry-specific dummies based on SIC industry classifications.

4.4 Data and Sample Selection

4.4.1 Sample Construction

We obtain annual financial statement data for all US loss-making firms from the Compustat fundamentals annual file and market value data from the Compustat security monthly file for the period 1970 to 2015. Our sample includes firms that are listed on the NYSE, Amex, or Nasdaq stock exchanges. Given this data period, we are able to run annual regressions for our valuation equations for the years from 1981 to 2014. As in Darrough and Ye (2007), we define large loss-making firms as those with a book value of equity exceeding or equal to $10 million, and remove observations whose book value of equity is below this value. We also exclude firms in the financial (SIC codes between 6000 and 6999) and utilities industries (SIC codes between 4900 and 4999).

We delete any firm-year observation with a zero or missing value for market value, opening total assets, or lagged sales. Following Darrough and Ye (2007), the sales growth ratio (*SGR*) is winsorised to the interval (-50%, 50%) to avoid possible extreme numbers arising from small revenue bases, and opening total assets (*OTA*) is winsorised at $10 million for firms with smaller total assets. To mitigate the impact of extreme observations, we remove the top and bottom 1% of annual observations for each of the deflated variables. For variables whose lowest values are zero, we delete only the top 1% of annual observations. Table 1 presents the definitions of all variables that are used in either the earnings forecasting process or the valuation models, or both

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Insert Table 1 here

Table 2 shows how our sample membership restrictions work out. The initial sample includes 107,068 loss-making firm-year observations for the period 1981 to 2014. After imposing our data restriction criteria, the final sample consists of 17,179 loss-making firm year observations.

Insert Table 2 here

4.4.2 Descriptive Statistics

Tables 3 and 4 provide descriptive statistics for the sample. Table 3 presents the distribution of the loss-making firm observations by year for the period from 1981 to 2014 before and after we trim the data. Further, Table 3 shows the annual distributions of actual transitory and persistent loss-making firms, classified based on the next year earnings. A loss-making firm is defined as persistent, if the actual next year earnings negative, and transitory otherwise. About 66% of our observations report losses in the next year (persistent loss-making firms), and about 34% report profits in the next year (transitory loss-making firms).

Insert Table 3 here

Figure 1, Panel A, presents the annual number of observations of loss-making firms as a percentage of all firms (i.e., profit and loss-making firms). Panel A shows that the percentage of loss-making firms increases over most of our sample period. However, it decreases slightly from 2004 to 2007, 2010, and 2011. Panel B presents the annual number of observations of loss categories as a percentage of all loss-making firms. The percentage of transitory and persistent loss-making firms are moving in the opposite direction over our sample period.

Insert Figure 1 here

Table 4 provides a breakdown of how the loss-making firm-year observations are distributed across different industries. The manufacturing sector provides approximately 55% of our total loss-making firm-year observations. Loss-making firms are least present in the Agriculture, Forestry and Fishing sector, with only 0.39% of our total loss-making firm-year observations coming from that sector.

Insert Table 4 here

Table 5 presents the descriptive statistics of the variables used in the valuation regressions for all loss-making firms. Note that all variables, except for *SGR* and *NegSGR* are scaled by OTA. We make the following observations. On average, loss-making firms hold 25% of their assets in cash and have a high amount of newly raised equity in both the current loss-making year and the year before it (7% and 10%, respectively). Average debt issuances are about 9% of opening total assets in the loss-making year. The average sales growth rate is about 3%, which is not particularly high, but is maybe due to our use of the Darrough and Ye (2007) winsorizing rule.

Insert Table 5 here

Pearson correlations between the variables used in the valuation regressions are reported in Table 6. The vast majority of the correlations between the variables are significant at the 1% significance level. Nonetheless, the magnitude of these correlations is small. *Forecast* and *NIEI* are particularly highly correlated (0.767), however, and *Forecast* also has correlations above 0.6 with *RD*, *Cash* and *CC*. The association between *NIEI* and other independent variables such as *RD*, *Cash*, *CC*, and *LagCC* is negative, consistent with Darrough and Ye (2007).

Insert Table 6 here

4.5 Empirical Results

4.5.1 Main Results

As mentioned previously, we start by examining the predictive power of our earnings prediction model. We are unable to report the average coefficients from the estimated earnings prediction model as we use the forward stepwise approach to estimate our model each year from 1970 to 2015, resulting in different explanatory variables featuring in the model each year of our estimation period. As a consequence, we present the number of times that each independent variable is shown to be useful for explaining next year earnings in our forecast period (1981 to 2015). In addition, we report the number of times as a percentage of the total period (35 years). We report the estimation results of our cross-sectional earnings forecasting model (equation (2)) in Table 7.

Insert Table 7 here

In Table 7, we divide the variables in our cross-sectional earnings forecasting model into four categories. These are: (i) variables that are included in the HDZ model and not in the Darrough and Ye (2007) valuation model (Panel A); (ii) variables that are included in the Darrough and Ye (2007) valuation model and not in the HDZ model (Panel B); (iii) variables that are included in both the HDZ and the Darrough and Ye (2007) valuation models (Panel C); and (iv) other variables (Panel D). The results report that most of the variables have information contents to explain the next year earnings at least in some of the years of our forecast period, except for four variables which are, *DivDum*, *NegSG*. *EI*, and *FirstLoss.* Panel B reports that all variables that are included in the Darrough and Ye (2007) valuation model and not in the HDZ model, are useful for explaining next year earnings. Panel C reports that *NIEI* has useful information content for explaining next year earnings for each year in our estimation sample from 1981 to 2015 (100% of the total years). Finally, Panel D shows that many variables that are not included in both the HDZ and the Darrough and Ye (2007) valuation models are useful for explaining next year earnings in at least 30% of the years in our estimation period. These variables include *SG, SpI, CE, IncLTD, BM*, and *Size.* Overall, these results suggest that our cross-sectional earning forecasting model has predictive power in generating a one year-ahead earnings forecasts, and our use of a comprehensive set of potential explanatory variables has validity.

Tables 8 presents descriptive statistics for our sample based on classifying loss-making firms into persistent or transitory using our model-based earnings forecasts. As mentioned previously, a loss-making firm is defined as persistent, if the earnings forecasts negative, and transitory otherwise. Table 8 is same as Table 3, except that the annual number of observations of loss categories are based upon the sign of the predicted next year earnings, rather than the actual next year earnings. The majority (80%) of loss firms-years are expected to continue reporting a loss in the next year (persistent loss-making firms), while 20% are expected to report a profit in the next year (transitory loss-making firms).

Insert Table 8 here

We then investigate the accuracy of our model-based earnings forecasts in terms of classifying loss-making firms into persistent (*D1= 0*) or transitory loss-making firms (*D1=1*) using our full sample of loss-making firms and a sub-sample of firms that are followed by at least three analysts, which allows us to compare the accuracy of our model-based earnings forecasts with the accuracy of the consensus analysts' earnings forecasts. We report the results in Table 9.

As stated previously, we define the overall accuracy percentage of our model-based earnings forecasts as the sum of the number of transitory and persistent loss-making firm-year observations that are classified correctly using our earnings forecasts, scaled by the total number of loss-making firm-year observations. Further, we define the persistent losses accuracy percentage as the number of persistent loss-making firm-year observations that are classified correctly using our own earnings forecasts, scaled by the total number of persistent loss-making firm-year observations. In addition, we define the transitory losses accuracy percentage as the number of transitory loss-making firm-year observations that are classified correctly using our own earnings forecasts, scaled by the total number of transitory loss-making firm-year observations. For all accuracy measures, a higher percentage is indicative of a more accurate earnings forecasting method. Panel A of Table 9 shows that 72% of persistent loss-making firms are correctly classified using our model-based earnings forecasts. Further, 59% of transitory loss-making firms are correctly classified using our model-based earnings forecasts. Further, Panel A shows that the overall accuracy percentage of our model- based earnings forecasts is approximately 69%.

Insert Table 9 here

We then test the accuracy of our model-based earnings forecasts on a sub-sample of firms that are followed by at least three analysts. As a consequence, we lose approximately 59% of firm-year observations in our sample. Then, we compare the classification accuracy of our model-based earnings forecasts with the classification accuracy of analysts' earnings forecasts. We obtain the consensus analysts' earnings per share (EPS) forecasts (median estimates) and analyst coverage from I/B/E/S Summary History files. We define the analysts' forecasts as the first available consensus analysts' EPS forecasts (median estimates) for $t+1$ after the earnings announcement date of year t. We multiply the analysts' EPS forecasts by the number of shares outstanding to generate the one year-ahead earnings forecasts and we scale the generated earnings forecasts by OTA. We then use the analysts' earnings forecasts to define whether a loss-making firm in the sub-sample is classified as persistent or transitory. Panel B of Table 9 reports that the persistent losses accuracy percentage, the transitory losses accuracy percentage, and the overall accuracy percentage, for our model-based earnings forecasts are 72%, 61%, and 69% respectively. This is similar to the accuracy of our model-based earnings forecasts using the full sample of loss-making firms. Further, Panel B notes that our forecasts are generally more conservative than analysts' forecasts, in the sense that substantially less loss-making firms are classified as transitory. In particular, 4,142 firm-year observations are expected to report profits in the next year (transitory loss-making firms) using analysts' earnings forecasts, whereas only 1,598 are expected to report profits in the next year using our model-based earnings forecasts. On the other hand, 5,520 firm-year observations are expected to continue reporting losses in the next year (persistent loss-making firms) using our model-based earnings forecasts, whereas only 2,976 are expected to report losses in the next year using analysts' earnings forecasts.

When we test the accuracy of analysts' earnings forecasts, we define the accuracy percentages in the same way as when using our model-based earnings forecasts. In particular, we define the overall accuracy percentage of analysts' earnings forecasts as the sum of the number of transitory and persistent loss-making firm-year observations that are classified correctly using analysts' earnings forecasts, scaled by the total number of loss-making firm-year observations. Further, we define the persistent losses accuracy percentage as the number of persistent loss-making firm-year observations that are classified correctly using the analysts' earnings forecasts, scaled by the total number of persistent loss-making firm-year observations. Finally, we define the transitory losses accuracy percentage as the number of transitory loss-making firm-year observations that are classified correctly using the analysts' earnings forecasts, scaled by the total number of transitory loss-making firm-year observations.

Panel B of Table 9 reports that 91% of persistent loss-making firms are correctly classified using analysts' earnings forecasts, which is higher than the persistent losses accuracy percentage when using our model-based earnings forecasts. In contrast, 55% of transitory loss-making firms are correctly classified using analysts' earnings forecasts, which is lower than the transitory losses accuracy percentage when using our model-based earnings forecasts. Overall, analysts' earnings forecasts are a little more accurate than our model-based earnings forecasts, but only by 1% (the percentage overall forecast accuracy rate is approximately 70%). The results in Table 9 suggest that our model-based earnings forecasts have similar accuracy to analysts' earnings forecasts using our sub-sample of firms that are followed by at least three analysts. Overall, these results suggest that our model-based earnings forecasts are superior to analysts' earnings forecasts for our purposes, given that they are similar in terms of overall accuracy, but the coverage of loss-making firms is substantially higher.

We report on the initial results of our tests of the value relevance of our earnings forecasts in Tables 10 and 11. The tables show the average coefficients for each variable from estimating the regressions with their p-values beneath them in parentheses.

Insert Table 10 here

The second column of Table 10 presents the results of estimating the simple model with earnings and book value only (equation (3)). The coefficient of *NIEI* is significantly negative, while the coefficient of *BV* is significantly positive. This is consistent with the prior valuation literature (e.g., Collins et al., 1999; Darrough and Ye, 2007).

To examine the effect of including the one year-ahead earnings forecasts on the coefficient of *NIEI* and whether the one year-ahead earnings forecasts have information content above current earnings and book value, we estimate equation (4) and present the results in the third column of Table 10. The results show that the coefficient of *NIEI* becomes positive and insignificant. Further, the results show that the coefficient of *Forecast* is negative and significant. We then examine whether the capital markets price our earnings forecasts conditional upon whether a loss-making firm is classified as making a persistent or a transitory loss.

We estimate equation (5) and report the results in the fourth column of Table 10. The coefficient of *NIEI* becomes more positive, but remains insignificant. The coefficient of the interaction term (*D1.Forecast*) is significantly positive, which suggests that the valuation role of our earnings forecasts varies between the two categories of loss-making firms. The coefficient of *Forecast* is negative and significant, which captures the coefficient of earnings forecasts for persistent loss-making firms. The sum of the coefficients of *Forecast* and *D1.Forecast* is significantly positive, which captures the coefficient of earnings forecasts for transitory loss-making firms. The results give the initial insight that our earnings forecasts are useful in classifying loss-making firms into different categories and that the capital markets price the earnings forecasts conditional upon whether a loss-making firm is classified as making a persistent or a transitory loss.

Reported in the fifth column of Table 10 are the results of estimating our benchmark model - the Darrough and Ye (2007) model (equation (7)). Overall the results are consistent with Darrough and Ye (2007) in terms of sign, significance and size. Importantly, the coefficient of *NIEI* is insignificant, consistent with Darrough and Ye (2007). The only substantive difference is that our results produce a negative and insignificant coefficient for *AbsNegSpI*, whereas Darrough and Ye (2007) find a positive and significant effect. Further, the average R^2 for our period (49.4%) is similar to the average R^2 (50.83%) for the period covered by Darrough and Ye (2007). Overall, it appears that our data has properties similar to that used by Darrough and Ye (2007).

To examine our first hypothesis on the value relevance of the one year-ahead earnings in the presence of the variables in the Darrough and Ye (2007) model, we estimate equation (8) and report the results in the sixth column of Table 10. The results show that the coefficient of *Forecast* is positive and significant, suggesting that our earnings forecasts are value relevant, even after controlling for a number of accounting fundamentals that proxy for a firm's future prospects. This supports our first hypothesis. As in the estimates for the baseline model, *RD*, *SGR*, *NegSGR*, *Cash*, *CC*, *LagCC*, and *DbtIss* are still significant and the same sign. Nonetheless, some coefficients change substantively relative to the baseline model. In particular, the coefficients of *NIEI* and *AbsNegSpI* change from being negative and insignificant to significantly negative and substantially larger in absolute terms.

To examine our second hypotheses on whether capital markets price the one year-ahead earnings forecasts conditional upon whether a loss-making firm is classified as making a persistent or a transitory loss, we estimate equation (9) and report the results in the last column of Table 10. The results show that the coefficient of the interaction term

(*D1.Forecast*) is significantly positive. This is consistent with our second hypothesis in that the valuation role of our earnings forecasts is conditional upon whether a loss-making firm is classified as making a persistent or a transitory loss. The coefficient of earnings forecasts for persistent loss-making firms is the coefficient of *Forecast*, while the sum of the coefficients *Forecast* and *D1.Forecast* is the coefficient of earnings forecasts for transitory loss-making firms. The results show that the coefficient of earnings forecasts for persistent loss-making firms is positive and marginally significant. The coefficient of earnings forecasts for transitory loss-making firms is significantly positive as expected. Further, the earnings forecasts coefficient for loss-making firms classified as transitory is significantly higher than that for loss-making firms classified as persistent.

Insert Table 11 here

We now report on our third and fourth hypotheses on whether capital markets price earnings and book value conditional upon whether a loss-making firm is classified as making a persistent or a transitory loss. We estimate equation (6) using a simple valuation model with earnings and book value, and equation (10) using the Darrough and Ye (2007) valuation model on the whole sample. The results are displayed in Table 11. For presentational purposes, and to highlight any differences between the two categories of loss-making firms, we report the estimated coefficients from equation (6) for persistent loss-making firms in the second column, the total coefficients for transitory loss-making firms in the third column, and the differences in coefficients between transitory and persistent loss-making firms in the fourth column. Further, we report in the same way the estimated coefficients from equation (10) in the last three columns of Table 11.

The estimation results of equation (6) show that both coefficients of current earnings for persistent and transitory loss-making firms are significantly negative. The difference between the two coefficients is significantly positive. Further, the coefficient of book value for either persistent or transitory loss-making firms is significantly positive, with a significant difference between the two coefficients. The book value coefficient for loss-making firms classified as transitory is significantly lower than that for loss-making firms classified as persistent. The estimation results of equation (10) show that the coefficient of current earnings for persistent loss-making firms is significantly negative, while the coefficient for transitory loss-making firms is significantly positive. The difference between the two coefficients is significantly positive. The last two outcomes are consistent with our implied alternative hypotheses. The first outcome requires some discussion.

In developing our hypotheses, we point out the tension between the views of Joos and Plesko (2005) and Darrough and Ye (2007) with respect to the expected sign for the coefficient of earnings for persistent loss-making firms. As a consequence, we only proposed a non-directional alternative hypothesis. Given that tension, one implication of a significantly negative coefficient for current earnings for loss-making firms classified as persistent is that the additional value drivers used by Darrough and Ye (2007) are not sufficient to capture the impact on current losses of the costs of adaptation conducted by these firms, and/or other actions that have been taken to improve future earnings, on current losses.

As expected, the coefficient of book value for either persistent or transitory loss-making firms is significantly positive. Further, the book value coefficient for loss-making firms classified as transitory is significantly lower than that for loss-making firms classified as persistent. This is consistent with the implied alternative hypotheses for the book value coefficients.

In sum, we find that the explanatory power for all models that are based on the simple valuation model are less than for the valuation models that based on Darrough and Ye (2007) valuation model, as shown in Tables 10 and 11. Overall, the results are broadly consistent with our expectations when using Darrough and Ye (2007) model as our benchmark valuation model. Our earnings forecasts are value relevant in the expected direction, even in the presence of the complete set of variables in the Darrough and Ye (2007) model. As a consequence, our earnings forecasts add information over and above the variables in the Darrough and Ye (2007) model in explaining market value. The earnings forecasts coefficient for transitory loss-making firms is significantly positive, and significantly *higher* than the corresponding coefficient for persistent loss-making firms. The earnings coefficient for transitory loss-making firms is significantly positive, and significantly *higher* than the corresponding coefficient for persistent loss-making firms. The coefficient of book value for transitory loss-making firms is significantly positive and significantly *lower* than the corresponding coefficient for persistent loss-making firms. For the result for which we have the weakest expectations, the coefficient of earnings for persistent loss-making firms is significantly negative, consistent with the Darrough and Ye (2007) model not fully capturing the impact on current losses of the costs of adaptation conducted by these firms, and/or other actions that have been taken to improve future earnings, on current losses, at least for loss-making firms classified as persistent.

4.5.2 Additional Tests

In additional tests, we apply alternative empirical choices regarding valuation models, estimation methods, classifications of loss-making firms, and sample specifications. First, we add *Forecast* and its interaction with our dummy variable capturing whether a loss-making firm is classified as persistent or transitory into equation (6) and (10). Essentially, we allow equation (4) and (8) to be estimated separately for persistent and transitory loss-making firms, but using the full sample of loss-making firms as the basis for both sets of estimated valuation weights. We report the estimation results in Table 12.

When we include *Forecast* and its interaction with the loss persistent dummy (*D1.Forecast*) into equation (6), the coefficient of *Forecast* is positive and significant for transitory loss-making firms and negative and significant for persistent loss-making firms, with a significant difference between the two coefficients. When we include *Forecast* and its interaction with the loss persistent dummy (*D1.Forecast*) into equation (10), the coefficients of *Forecast* are positive and significant for both persistent and transitory loss-making firms, with no difference between the coefficients. The inclusion of these two variables reduces the coefficients of *NIEI*, similar to the results reported in Table 10. The coefficient of *NIEI* is now negative, but insignificant, for transitory loss-making firms, more negative and significant for persistent loss-making firms, and the difference between the coefficients for transitory and persistent loss-making firms is positive and significant. The coefficients of *BV* are positive, as expected, with a significant difference between the two coefficients. Overall, including *Forecast* and its interaction with the loss persistent dummy weakens the support for the alternative versions of some of our *NIEI* hypotheses.

Insert Table 12 here

In this section we use the OLS approach with industry and year dummies to test our hypotheses instead of Fama-MacBeth (1973) approach. We present the results in Tables 13, 14, and 15. Overall, the results are the same as the main results, except that the coefficient of *NIEI* becomes positive and marginally significant after including *D1*, *Forecast,* and *D1.Forecast* into the simple valuation model (equation (5)) as shown in Table 13. Further, when we include *Forecast* and *D1.Forecast* into equation (10), the coefficient of *Forecast* is positive and significant for persistent loss-making firms only, with no difference between the two coefficients as shown in the last three columns of Table 15.

Insert Tables 13, 14, and 15 here

In the previous section we use the one year-ahead earnings forecasts to classify loss-making firms into persistent or transitory loss-making firms. As part of our additional tests, we classify loss-making firms into two categories based upon the one, two, and three years-ahead earnings forecasts. Specifically, a loss-making firm is considered as persistent loss-making firm if the one, two, and three years-ahead earnings forecasts are negative, and transitory otherwise. We present the results in Tables 16, 17, and 18. Overall, the results are consistent with our main results.

Insert Tables 16, 17, and 18 here

We then consider a sub-sample of firms followed by at least three analysts. Notwithstanding the fact that our model-based forecasts appear at least as good as analysts' earnings forecasts in classifying firms into persistent and transitory categories, we rerun our tests on this sub-sample using both analysts' forecasts and our model-based forecasts. The main concern is to investigate which of the two forecasts has more useful information content for valuing loss-making firms. As mentioned above, we obtain the consensus median analysts' earnings per share (EPS) forecasts and analyst coverage from the I/B/E/S Summary History files. We generate an earnings forecast by multiplying the analysts' EPS forecast by the number of shares outstanding and we scale the generated earnings forecasts by OTA. Our definition of the analyst forecasts is the first available consensus analysts' EPS forecasts (median estimates) for *t+1* after the earnings announcement date of year *t*. We then use the resulting earnings forecasts to define whether a loss-making firm in the sub-sample is classified as persistent or transitory.

Our results show that analysts' earnings forecasts are value relevant for the whole sub-sample, and for transitory loss-making firms only, within the sub-sample when added into the simple valuation model, as shown in the third and fourth columns of Table 19. Further, our results show that analysts' forecasts are value relevant for whole sub-sample of loss-making firms when added into Darrough and Ye (2007) model, as shown in the sixth column of Table 19. We then estimate equation (6) using a simple valuation model with earnings and book value, and equation (10) using the Darrough and Ye (2007) valuation model on the sub-sample and defining loss-making firms as persistent or transitory using analysts' earnings forecasts. The results are displayed in Table 20. We report the estimated coefficients from equation (6) for persistent loss-making firms in the second column, the estimated coefficients for transitory loss-making firms in the third column, and the differences in estimated coefficients between transitory and persistent loss-making firms in the fourth column. Further, we report in the same way the estimated coefficients from equation (10) in the last three columns of Table 20.

The estimation results of equation (6) show that both coefficients of *NIEI* for persistent and transitory loss-making firms are significantly *negative*. The difference between the two coefficients is insignificant. Further, the coefficient of *BV* is significantly positive for both persistent and transitory loss-making firms, with no significant difference between the two coefficients. The results of estimating equation (10) show that both coefficients of *NIEI* for persistent and transitory loss-making firms are insignificant, with no significant difference between the two coefficients. Further, the coefficient of *BV* for either persistent or transitory loss-making firms is significantly positive, with no significant difference between the two coefficients. The *BV* coefficient for loss-making firms classified as transitory is significantly lower than that for loss-making firms classified as persistent. When we add the analysts' forecasts and its interaction with the loss persistent dummy into equation (10), the untabulated results show that the coefficients of *NIEI* and *BV* are qualitatively similar to those when they are not included, except that the coefficient of *NIEI* is negative and marginally significant for persistent loss-making firms. The coefficient for the analysts' forecasts is positive and significant for transitory loss-making firms, but insignificant for persistent loss-making firms, with a significant difference between the two coefficients.

Insert Tables 19 and 20 here

We then use our own forecasts for this sub-sample and re-run our tests. We find that our earnings forecasts are value relevant for the whole sub-sample, and for transitory loss-making firms only, within the sub-sample when added into the Darrough and Ye (2007) model as shown in last two columns of Table 21. We estimate equation (6) using a simple valuation model with earnings and book value, and equation (10) using the Darrough and Ye (2007) valuation model on the sub-sample and defining loss-making firms as persistent or transitory using our own forecasts. The results are displayed in Table 22. The estimation results of equation (6) show that both coefficients of *NIEI* for persistent and transitory loss-making firms are significantly negative. The difference between the two coefficients is insignificant. Further, the coefficient of *BV* for either persistent or transitory loss-making firms is significantly positive, with a significant difference between the two coefficients. The *BV* coefficient for loss-making firms classified as persistent is significantly higher than that for loss-making firms classified as transitory.

The estimation results of equation (10) show that the coefficient of *NIEI* for transitory loss-making firms is significantly positive and higher than those for persistent loss-making firms as expected. The difference between the coefficient of *NIEI* for persistent and transitory loss-making firms is significant. The coefficients of *BV* are positive and significant, but do not differ between persistent and transitory loss-making firms as shown in the last three columns of Table 22. When we include the *Forecast* and *D1.Forecast* into equation (10), the untabulated results show the same results, except that the coefficient of *NIEI* for transitory loss-making firms is insignificant, the coefficient of *NIEI* for persistent loss-making firms is significantly negative, and the coefficient of *BV* for transitory loss-making firms is insignificant. Further, our earnings forecasts are value relevant for both persistent and transitory loss-making firms individually within the sub-sample, with no significant difference between the two categories.

Insert Tables 21 and 22 here

We then modify our 'bright line' strategy for defining whether a loss-making firm is classified as persistent or transitory. Instead, we require a loss-making firm to have an earnings' forecast a specified distance away from zero on either side before it can be classified as persistent or transitory. We do so because it is not clear how economically different are firms that have earnings forecasts arbitrarily small distances above and below zero.

We consider two sub-samples of loss-making firms. For the first sub-sample, we delete firm-year observations with one year-ahead earnings forecasts, scaled by OTA, falling between -0.005 and 0.005. Consequently, the sample size is 16,148. We then use this sub-sample and re-run our tests. We report the estimation results in Tables 23, 24, and 25. Our results are consistent with all the main findings.

Insert Tables 23, 24, and 25 here

For the second sub-sample, we delete firm-year observations with one year-ahead earnings forecasts, scaled by OTA, falling between -0.010 and 0.010. Therefore, the sample size is 15,221. We then use this sub-sample and re-run our tests. We report the estimation results in Tables 26, 27, and 28. Overall, our results are again consistent with all the main findings.

Insert Tables 26, 27, and 28 here

Our main analysis is based on estimating the valuation model using Fama-MacBeth (1973) approach. In this section, we adjust the standard errors of Fama-McBeth (1973) approach by applying the Newey-West procedure to produce more reliable statistics. We present the results in Tables 29 and 30. The results show that the earnings forecasts are not value relevant for the whole sub-sample, and not value relevant for persistent loss-making firms within the sub-sample when added into the Darrough and Ye (2007) valuation model, as shown in the sixth and seventh columns of Table 29. The other results are robust when adjusting the Fama-McBeth (1973) standard errors. In particular, the coefficient of *NIEI* for transitory loss-making firms is significantly positive, and significantly higher than the corresponding coefficient for persistent loss-making firms. The coefficient of *BV* for persistent loss-making firms is significantly positive and significantly higher than the corresponding coefficient for transitory loss-making firms, as shown in Table 30.

Insert Tables 29, and 30 here

Finally, we consider other different deflating procedures for the valuation models. First, we use unscaled date and re-run our tests. We present the results in Tables 31 and 32. The results show that the earnings forecasts are value relevant for the whole sub-sample, and for transitory loss-making firms only within the sub-sample when added into the Darrough and Ye (2007) valuation model, as shown in the sixth and seventh columns of Table 31. Further, using unscaled date weakens the support for the alternative of some of our *BV* hypotheses. In particular, the results show that there are no significant differences in the coefficient of *BV* between the two categories as shown in Table 32. Second, we use opening book value as the deflator for our valuation models. We present the results in Tables 33 and 34. Our results are consistent with all the main findings.

Insert Tables 31, 32, 33, and 34 here

4.6 Conclusions

Prior studies in the valuation of loss-making firms investigate the valuation role of financial statements items that capture some of the future prospects of the firms. We develop an earnings forecasting model, taking into account the existing earnings forecast studies for all firms (e.g., Hou et al., 2012), or only loss-making firms (e.g., Joos and Plesko, 2005; Li, 2011), and the value drivers identified by Darrough and Ye (2011) and Jiang and Stark (2013) that could capture a firm's future prospects. We then use the model to construct forecasted earnings and the persistence of losses.

We then examine the information content of the one year-ahead earnings forecasts for valuing loss-making firms, whether directly or indirectly. To test the direct value relevance of our earnings forecasts, we add in the forecast to the Darrough and Ye (2007) loss-making firms valuation model and find that our earnings forecasts are always incrementally informative. To test for value relevance indirectly, we use our forecasts to classify loss-making firms into persistent and transitory categories and find that these classifications help in distinguishing between the valuation roles of current earnings and book value for the two categories of firms. Further, our earnings forecasts themselves are value relevant for both categories of firms.

Overall the results are robust when using the OLS approach, as opposed to the Fama-MacBeth (1973) approach, to estimate our valuation models; classifying loss-making firms into transitory or persistent loss-making firms based upon one, two, and three years-ahead earnings forecasts; and creating sub-samples of loss-making firms with clearer separation between persistent and transitory loss-making firms. Further, we find that our model-based earnings forecasts are value relevant for the whole sub-sample and for transitory loss-making firms only within the sub-sample, when using a restricted sample of loss-making firms that are followed by three or more analysts. Overall the results are robust when using a restricted sample of loss-making firms that are followed by three or more analysts, except that we do not observe the difference in the coefficients of book value between transitory and persistent loss-making firms. Further, when using analysts' earnings forecasts instead of our model-based earnings forecasts, we find that the analysts' forecasts are value relevant for the whole sub-sample of loss-making firms. The analysts' forecasts do not help in distinguishing between the valuation role of earnings and book value for persistent and transitory loss-making firms, however. In addition, the results are robust when using opening book value as the deflator.

Overall, our study emphasises the importance of both earnings forecasts and the resulting estimates of loss persistence classifications in understanding the valuation of loss-making firms. Further, our model-based earnings forecasts are useful in this respect, and are available for many more firms than those for which a range of analysts' forecasts are available.

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TABLE 1	
Variable Definitions for Variables Used in Earnings Forecast and Valuation Models	
Variable	*Definition*
$NIEI_t$	Earnings before extraordinary items in year *t* (Compustat code: IB)
MV_t	Market value of equity at three months following fiscal year end, calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO)
BV_t	Book value of equity at year *t* (Compustat code: CEQ)
TA_t	Total assets at year *t* (Compustat code: AT)
$Accruals_t$	Accruals, the change in the current assets (Compustat code: ACT) excluding the change in cash (Compustat code: CHE) less the change in current liabilities (Compustat code: LCT) plus the change in the short-term debts (Compustat code: USTDNC) plus the Depreciation and Amortizations (Compustat code: DP)
RD_t	Research and development expenses for year *t* (Compustat code: XRD)
EI_t	The total of extraordinary items for year *t* (Compustat code: XI)
SpI_t	Special items for year *t* (Compustat code: SPI)
$AbsNegSpI_t$	The absolute value of the negative special items for year *t* (Compustat code: SPI)
SGR_t	Growth rate of sales for year *t* (sales is Compustat code: SALE)
$NegSGR_t$	Equals SGR_t if SGR_t lower than zero; zero otherwise

(Continued on next page)

TABLE 1 (CONTINUED)	
Variable	*Definition*
SG_t	Change of sales for year *t*, deflated by opening total assets for year *t*
$NegSG_t$	Equals SG_t if SG_t lower than zero and zero otherwise
CE_t	Capital expenditures - the capital associated with purchase of fixed assets other than those related to acquisitions in year *t* (Compustat code: CAPX)
$Cash_t$	The sum of cash and short-term investments at year *t* (Compustat Code: CHE)
CC_t	Capital contributions in year *t* (Compustat Code: SSTK)
$LagCC_t$	Capital contributions in year *t-1* (Compustat Code: SSTK)
$DbtIss_t$	New debt issues in year *t* (Compustat code: DLTIS)
$IncLTD_t$	The change in long term debt between year *t* and year *t-1* (Long term debt is Compustat code: DLTT)
Div_t	Total cash dividends paid to the common stockholders in year *t* (Compustat code: DV)
$DivDum_t$	Equals one for firms that pay dividends in year *t* and otherwise equals zero
$DivStop_t$	Equal one for firms that stop paying dividends in the loss year; otherwise equals zero
$FirstLoss_t$	Equals one for firms that report losses in year *t* but not in year *t-1*; otherwise equals zero

(Continued on next page)

TABLE 1 (CONTINUED)	
Variable	*Definition*
$LossSeq_t$	A count of the number of sequential losses over the past five years before the current loss.
BM_t	Book to market value ratio, calculated by dividing the book value of equity at year *t* (Compustat code: CEQ) by the market value of equity at year *t* (calculated as price (Compustat code: PRCCM) * number of shares (Compustat code: CSHO))
$Size_t$	The log of market value of equity at year *t*
$Forecast_{t+1}$	One year-ahead earnings forecasts generated from the cross-sectional earnings prediction model for year *t*

Notes: This table provides definitions for all variables used in both the earnings forecast and the valuation models.

TABLE 2	
The Sample Selection Steps for the Sample (1981-2014)	
Steps	*Number of observations*
All US loss-making firms from Compustat	107,068
Require firms to be listed on NYSE, Amex or Nasdaq	37,167
Require firms to have a book value greater than or equal to $10 m	29,638
Less financial and utilities firms	(4,029)
Less observations with zero market value, zero opening total assets or zero opening sales	(913)
Less observations with missing values for any variable	(2,864)
Less observations with missing values for the earnings forecasts	(2,602)
Less observations lost from trimming at 1% and 99%	(2,051)
Final sample	**17,179**

Notes: This table provides the data deletion procedure to construct the loss-making firms' sample for the period 1981-2014.

TABLE 3

Loss Observations by Year and the Distribution of Loss-Making Firms Between Transitory and Persistent

	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the actual next year earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
1981	106	94	35	59
1982	216	194	88	106
1983	218	193	90	103
1984	191	176	64	112
1985	300	260	106	154
1986	374	337	169	168
1987	302	269	116	153
1988	289	266	117	149
1989	306	272	115	157
1990	348	321	130	191
1991	432	388	177	211
1992	447	405	173	232
1993	476	431	213	218
1994	433	387	161	226
1995	479	436	187	249
1996	528	479	209	270

(Continued on next page)

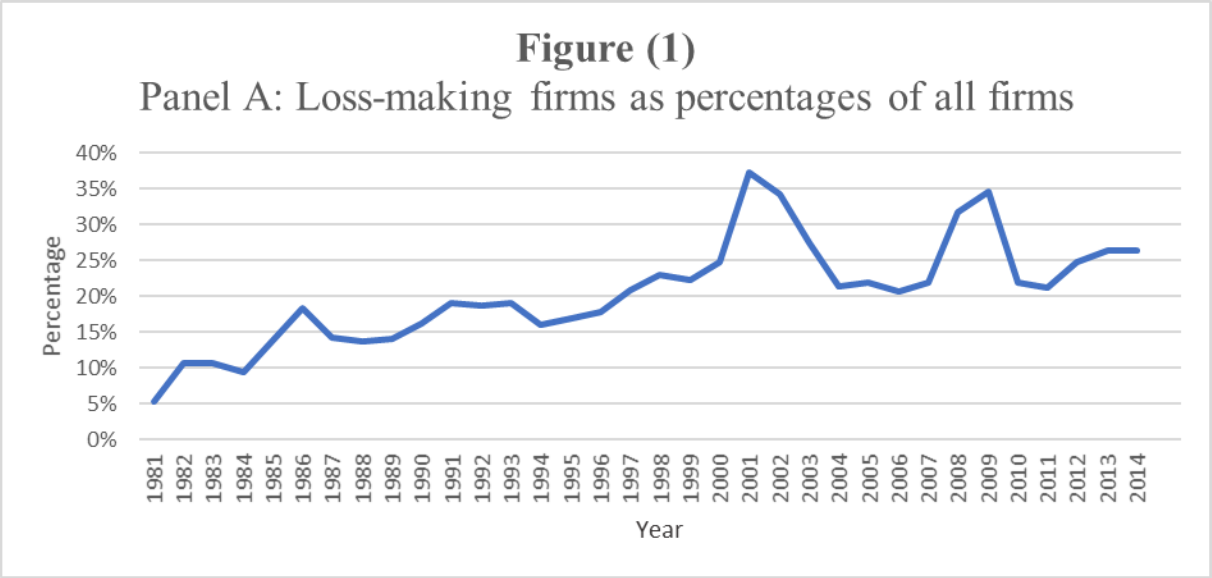
TABLE 3 (CONTINUED)				
	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the actual next year earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
1997	667	600	203	397
1998	722	641	241	400
1999	672	604	216	388
2000	755	677	160	517
2001	1198	1076	291	785
2002	1098	978	284	694
2003	857	760	294	466
2004	647	580	175	405
2005	660	587	188	399
2006	613	534	144	390
2007	640	569	130	439
2008	932	828	239	589
2009	986	875	425	450
2010	604	541	187	354

(Continued on next page)

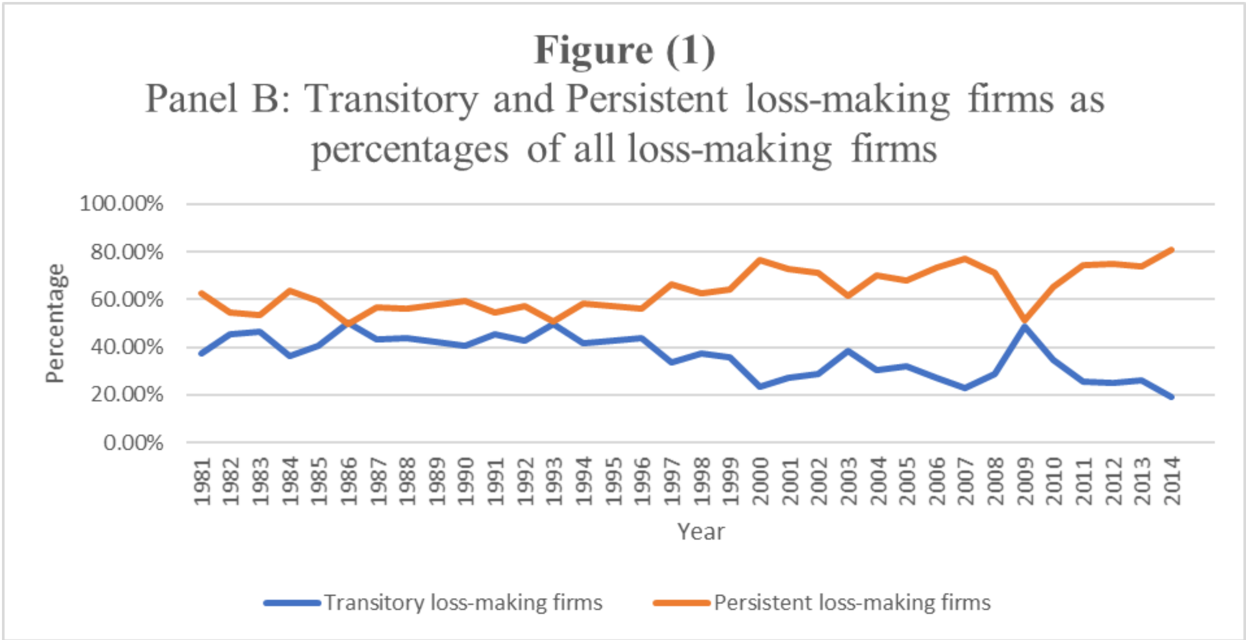
TABLE 3 (CONTINUED)				
	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the actual next year earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
2011	594	527	136	391
2012	680	611	152	459
2013	730	642	167	475
2014	730	641	124	517
Total	**19,230**	**17,179**	**5,906**	**11,273**

Notes: The explanations for this table are as follows:

1. *Total loss-making firms* - a company is defined as loss-making if its earnings before extraordinary items is lower than zero in a year *t*;
2. *After trimming* - the sample size after trimming all variables at 1% and 99%;
3. *Transitory loss-making firms* shows the number of transitory loss-making firms – a firm is classified as a transitory loss- making firm if its actual next year earning is positive; and
4. *Persistent loss-making* firms shows the number of persistent loss-making firms – a firm is classified as a persistent loss- making firms if its actual next year earning is negative.



Notes: Figure 1, Panel A, shows the number of all loss-making firms annually as percentages of all firms.



Notes: Figure 1, Panel B, shows the number of the categories of loss-making firms annually as percentages of all loss-making firms. Note that the classification of loss categories is based on the actual next year earnings.

TABLE 4

Industry Breakdown of the Sample

Compustat SIC code	*Industry name*	*Firm-year observations*	*%*
0100-0999	Agriculture, Forestry and Fishing	67	0.39%
1000-1499	Mining	1,397	8.13%
1500-1799	Construction	263	1.53%
2000-3999	Manufacturing	9,443	54.97%
4000-4999	Transportation, Communications, Electric, Gas and Sanitary Services	1,154	6.72%
5000-5199	Wholesale Trade	386	2.25%
5200-5999	Retail Trade	759	4.42%
7000-8999	Services	3,710	21.60%
Total		**17,179**	**100.00%**

Notes: This table provides the distribution of our sample across the different industries.

TABLE 5

Descriptive Statistics for Loss-Making Firms

All loss-making firms (N=17,179)

Variable	*Mean*	*P25*	*Median*	*P75*	*Std. Dev.*	*Min*	*Max*
MV_t	1.371	0.343	0.694	1.475	2.105	0.007	37.144
$NIEI_t$	-0.142	-0.193	-0.081	-0.029	0.167	-2.489	0.000
BV_t	0.526	0.305	0.489	0.693	0.368	-0.273	9.812
$AbsNegSpI_t$	0.046	0.000	0.009	0.057	0.081	0.000	1.054
RD_t	0.088	0.000	0.025	0.131	0.131	0.000	1.275
SGR_t	0.028	-0.143	0.006	0.191	0.271	-0.500	0.500
$NegSGR_t$	-0.093	-0.143	0.000	0.000	0.143	-0.500	0.000
$Cash_t$	0.253	0.038	0.142	0.371	0.308	0.000	4.208
CC_t	0.073	0.000	0.003	0.023	0.224	0.000	4.449
$LagCC_t$	0.103	0.000	0.006	0.054	0.216	0.000	1.234
$DbtIss_t$	0.087	0.000	0.000	0.081	0.197	-0.003	2.223
$Forecast_{t+1}$	-0.101	-0.136	-0.050	-0.008	0.165	-2.761	0.189

Notes: This table provides the summary statistics for all variables used in the valuation models for all loss-making firms for the period 1981-2014.

TABLE 6

Pearson Correlation Coefficients Between Independent and Dependent Variables in the Valuation Models (17,179 firm-year observations)

	MV_t	$NIEI_t$	BV_t	$AbsNegSpI_t$	RD_t	SGR_t	$NegSGR_t$	$Cash_t$	CC_t	$LagCC_t$	$DbtIss_t$
$NIEI_t$	-0.289***										
BV_t	0.461***	-0.138***									
$AbsNegSpI_t$	-0.018***	-0.357***	-0.041***								
RD_t	0.473***	-0.559***	0.314***	0.063***							
SGR_t	0.223***	-0.023***	0.198***	0.020***	0.107***						
$NegSGR_t$	0.056***	0.160***	0.057***	0.014***	-0.042***	0.816***					
$Cash_t$	0.553***	-0.382***	0.589***	-0.061***	0.584***	0.144***	-0.047***				
CC_t	0.487***	-0.402***	0.579***	**-0.011**	0.407***	0.154***	0.013***	0.643***			
$LagCC_t$	0.313***	-0.391***	0.269***	**-0.007**	0.350***	0.223***	0.025***	0.405***	0.287***		
$DbtIss_t$	0.017***	0.056***	-0.082***	0.026***	-0.107***	0.143***	0.101***	-0.073***	**0.009**	-0.025***	
$Forecast_{t+1}$	-0.465***	0.767***	-0.458***	0.133***	-0.654***	-0.110***	0.117***	-0.633***	-0.645***	-0.516***	0.018***

Notes: This table provides the Pearson correlation coefficients for all variables used in the valuation models for all loss-making firms for the period 1981-2014. *** indicates that the correlation is significant at 1% significant level.

TABLE 7											
Summary for Estimating the Forecast Model Using the Forward Stepwise Approach											
(The number of times and the percentage of significant of each independent variable in the earnings forecasting model)											
Years (1981-2015)- 35 Years											
Panel A			**Panel B**			**Panel C**			**Panel D**		
HDZ model variables and not in Darrough and Ye (2007) model			*Darrough and Ye (2007) model variables and not in the HDZ model*			*Variables in both the HDZ and the Darrough and Ye (2007) models*			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
$DivDum_t$	0	0%	BV_t	12	34%	$NIEI_t$	35	100%	SG_t	22	63%
Div_t	12	34%	$AbsNegSpI_t$	7	20%				$NegSG_t$	0	0%
TA_t	24	69%	RD_t	31	89%				SpI_t	30	86%
$Accruals_t$	16	46%	SGR_t	16	46%				EI_t	0	0%
			$NegSGR_t$	8	23%				CE_t	11	31%
			$Cash_t$	20	57%				$IncLTD_t$	13	37%
			CC_t	14	40%				$FirstLoss_t$	0	0%

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TABLE 7 (CONTINUED)											
Panel A			**Panel B**			**Panel C**			**Panel D**		
HDZ model variables and not in Darrough and Ye (2007) model			*Darrough and Ye (2007) model variables and not in the HDZ model*			*Variables in both the HDZ and the Darrough and Ye (2007) models*			*Other variables*		
Variable	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*	*Variable*	*Number of times*	*% based on total years*
			$LagCC_t$	32	91%				$DivStop_t$	1	3%
			$DbtIss_t$	13	37%				BM_t	23	66%
									$Size_t$	14	40%
									LossSeqt	1	3%

Notes: This table provides a summary for estimating the forecast model using the forward stepwise approach. The table shows the number of times and the percentage of significant of variables. Panel A shows variables that are included in the HDZ model and not in the Darrough and Ye (2007) valuation model. Panel B shows the variables in the Darrough and Ye (2007) valuation model and not in the HDZ model. Panel C shows the variables in both the HDZ and the Darrough and Ye (2007) valuation models. Panel D shows other variables.

TABLE 8				
Loss Observations by Year and the Distribution of Loss-Making Firms Between Transitory and Persistent				
	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the forecasted earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
1981	106	94	50	44
1982	216	194	80	114
1983	218	193	65	128
1984	191	176	54	122
1985	300	260	67	193
1986	374	337	53	284
1987	302	269	41	228
1988	289	266	47	219
1989	306	272	48	224
1990	348	321	44	277
1991	432	388	65	323
1992	447	405	76	329
1993	476	431	101	330
1994	433	387	78	309
1995	479	436	124	312

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TABLE 8 (CONTINUED)				
	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the forecasted earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
1996	528	479	127	352
1997	667	600	114	486
1998	722	641	135	506
1999	672	604	104	500
2000	755	677	114	563
2001	1198	1076	184	892
2002	1098	978	164	814
2003	857	760	96	664
2004	647	580	74	506
2005	660	587	91	496
2006	613	534	87	447
2007	640	569	95	474
2008	932	828	299	529
2009	986	875	165	710
2010	604	541	81	460

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TABLE 8 (CONTINUED)				
	The distribution of loss-making firms		*Transitory and persistent loss-making firms based on the forecasted earnings*	
Year	*Total loss-making firms*	*After trimming*	*Transitory loss-making firms*	*Persistent loss-making firms*
2011	594	527	107	420
2012	680	611	141	470
2013	730	642	121	521
2014	730	641	113	528
Total	**19,230**	**17,179**	**3,405**	**13,774**

Notes: The explanations for this table are as follows:

1. *Total loss-making firms* - a company is defined as loss-making if its earnings before extraordinary items is lower than zero in a year *t*;
2. *After trimming* - the sample size after trimming all variables at 1% and 99%;
3. *Transitory loss-making firms* shows the number of transitory loss-making firms – a firm is classified as a transitory loss- making firm if its earnings forecast is positive; and
4. *Persistent loss-making* firms shows the number of persistent loss-making firms – a firm is classified as a persistent loss- making firms if its earnings forecast is negative.

TABLE 9

Test the Accuracy Based on the Classification of Loss-Making Firms into Persistent Losses (*D1=0*) and Transitory Losses (*D1=1*)

Panel A

Using full sample of loss-making firms (N= 17,179)

		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Model-based earnings forecasts	**0**	9,885	3,889	13,774	71.77%
	1	1,388	2,017	3,405	59.24%
	Total	11,273	5,906	17,179	69.28%

Panel B

Using sub-sample: Firms followed by at least three analysts (N=7,118)

		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Model-based earnings forecasts	**0**	3,964	1,556	5,520	71.81%
	1	626	972	1,598	60.83%
	Total	4,590	2,528	7,118	69.35%

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TABLE 9 (CONTINUED)					
Panel B					
Using sub-sample: Firms followed by at least three analysts (N=7,118)					
		Consensus Analysts' earnings forecasts (Median)			
	D1	**0**	**1**	**Total**	
Model-based earnings forecasts	**0**	2,795	2,725	5,520	
	1	181	1,417	1,598	
	Total	2,976	4,142	7,118	
		Actual next year earnings			
	D1	**0**	**1**	**Total**	**% of Accurate**
Consensus Analysts' earnings forecasts (Median)	**0**	2,712	264	2,976	91.13%
	1	1,878	2,264	4,142	54.66%
	Total	4,590	2,528	7,118	69.91%

Notes: This table provides test of the accuracy of our model-based and analysts' earnings forecasts based on the classification of loss-making firms into persistent losses (*D1=0*) and transitory losses (*D1=1*). Panel A is based on our main sample (i.e., all loss-making firms), while Panel B is based on using a sub-sample of loss-making firms that are followed by at least three analysts.

TABLE 10

The Valuation of Loss-Making Firms

Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
Constant	**-0.419*** **	-0.137	-0.169	0.090	0.032	0.020
	(0.003)	(0.188)	(0.112)	(0.339)	(0.738)	(0.841)
NIEI	**-2.647*** **	0.160	0.566	-0.252	**-1.796***	**-1.737***
	(0.000)	(0.643)	(0.108)	(0.173)	**(0.070)**	**(0.082)**
BV	**2.333*** **	**1.796*** **	**1.756*** **	**1.090*** **	**1.125*** **	**1.130*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				-0.139	**-2.069***	**-2.207***
				(0.549)	**(0.076)**	**(0.058)**
RD				**2.606*** **	**3.506*** **	**3.458*** **
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.065*** **	**0.970*** **	**0.959*** **
				(0.000)	**(0.000)**	**(0.000)**
NegSGR				**-0.944*** **	**-0.963*** **	**-0.946*** **
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 10 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast, loss persistence dummy, and interaction term*
Cash				**1.184*****	**1.346*****	**1.325*****
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.241*****	**1.330*****	**1.284*****
				(0.000)	**(0.000)**	**(0.000)**
LagCC				**0.680*****	**0.945*****	**0.940*****
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.292*****	**0.421*****	**0.419*****
				(0.000)	**(0.000)**	**(0.000)**
Forecast		**-4.005*****	**-5.040*****		**3.819****	**3.610***
		(0.000)	**(0.000)**		**(0.039)**	**(0.058)**
D1			-0.000			-0.044
			(0.996)			(0.101)

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TABLE 10 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1.Forecast			**9.179*** **			**3.720*** **
			(0.000)			**(0.000)**
Average R^2	0.339	0.375	0.387	0.494	0.507	0.512
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,179					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). The definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 11							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.467*****	-0.082	**0.385*****		0.004	**0.221*****	**0.217*****
	(0.001)	(0.410)	**(0.001)**		(0.969)	**(0.006)**	**(0.009)**
NIEI	**-2.715*****	**-1.121****	**1.594****		**-0.607*****	**1.821*****	**2.428*****
	(0.000)	**(0.020)**	**(0.012)**		**(0.007)**	**(0.002)**	**(0.000)**
BV	**2.409*****	**1.512*****	**-0.897*****		**1.162*****	**0.753*****	**-0.409*****
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	**(0.006)**
AbsNegSpI					**-0.821****	**1.877*****	**2.698*****
					(0.028)	**(0.003)**	**(0.000)**
RD					**2.442*****	**3.629*****	**1.187****
					(0.000)	**(0.000)**	**(0.046)**
SGR					**1.135*****	**0.556*****	**-0.579*****
					(0.000)	**(0.000)**	**(0.002)**

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TABLE 11 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.054*** **	**-0.569*** **	**0.485***
					(0.000)	**(0.007)**	**(0.074)**
Cash					**1.182*** **	**1.296*** **	0.114
					(0.000)	**(0.000)**	(0.623)
CC					**1.106*** **	**3.652*** **	**2.546** **
					(0.000)	**(0.001)**	**(0.012)**
LagCC					**0.612*** **	**1.149*** **	0.537
					(0.000)	**(0.002)**	(0.166)
DbtIss					**0.456*** **	0.062	**-0.394** **
					(0.002)	(0.472)	**(0.021)**

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TABLE 11 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.349				0.518		
Industry dummies	Yes				Yes		
Observations	13,774	3,405			13,774	3,405	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation model for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 12							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	-0.172	-0.120	0.052		-0.053	0.118	**0.171****
	(0.112)	(0.244)	(0.539)		(0.612)	(0.199)	**(0.019)**
NIEI	**0.764***	**-0.937****	**-1.701*****		**-2.437****	-0.490	**1.947****
	(0.054)	**(0.025)**	**(0.002)**		**(0.019)**	(0.653)	**(0.016)**
BV	**1.771*****	**1.459*****	**-0.312***		**1.216*****	**0.797*****	**-0.419*****
	(0.000)	**(0.000)**	**(0.053)**		**(0.000)**	**(0.000)**	**(0.003)**
AbsNegSpI					**-3.140****	-0.696	**2.444*****
					(0.011)	(0.571)	**(0.008)**
RD					**3.430*****	**4.363*****	0.933
					(0.000)	**(0.000)**	(0.133)
SGR					**1.022*****	**0.482*****	**-0.554*****
					(0.000)	**(0.003)**	**(0.002)**

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TABLE 12 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.069*****	**-0.476****	**0.593****
					(0.000)	**(0.019)**	**(0.033)**
Cash					**1.333*****	**1.519*****	0.186
					(0.000)	**(0.000)**	(0.432)
CC					**1.268*****	**3.724*****	**2.456*****
					(0.000)	**(0.000)**	**(0.010)**
LagCC					**0.962*****	**1.383*****	0.421
					(0.000)	**(0.001)**	(0.246)
DbtIss					**0.604*****	**0.202***	**-0.402****
					(0.000)	**(0.055)**	**(0.019)**
Forecast	**-5.248*****	**3.208*****	**8.456*****		**4.464****	**5.340*****	0.876
	(0.000)	**(0.000)**	**(0.000)**		**(0.021)**	**(0.002)**	(0.523)

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TABLE 12 (CONTINUED)						
	Panel A: *Simple valuation model plus earnings forecasts*			**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.391			0.531		
Industry dummies	Yes			Yes		
Observations	13,774	3,405		13,774	3,405	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast*) together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 13						
The Valuation of Loss-Making Firms						
(OLS estimation approach with year and industry dummies)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
Constant	**-0.855*****	**-0.489*****	**-0.465*****	-0.047	-0.115	-0.072
	(0.000)	**(0.000)**	**(0.000)**	(0.591)	(0.178)	(0.425)
NIEI	**-2.744*****	0.097	**0.486***	0.329	-0.364	-0.242
	(0.000)	(0.711)	**(0.087)**	(0.165)	(0.277)	(0.477)
BV	**2.348*****	**1.718*****	**1.662*****	**0.835*****	**0.914*****	**0.917*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				0.163	-0.631	**-0.955****
				(0.546)	(0.152)	**(0.032)**
RD				**3.599*****	**3.779*****	**3.791*****
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.255*****	**1.267*****	**1.249*****
				(0.000)	**(0.000)**	**(0.000)**

(Continued on next page)

TABLE 13 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
NegSGR				**-1.138*****	**-1.178*****	**-1.178*****
				(0.000)	**(0.000)**	**(0.000)**
Cash				**1.431*****	**1.442*****	**1.432*****
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.361*****	**1.481*****	**1.436*****
				(0.000)	**(0.000)**	**(0.000)**
LagCC				**0.432*****	**0.504*****	**0.488*****
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.428*****	**0.478*****	**0.471*****
				(0.000)	**(0.000)**	**(0.000)**
Forecast		**-4.015*****	**-4.649*****		**1.017****	**0.811***
		(0.000)	**(0.000)**		**(0.026)**	**(0.083)**

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TABLE 13 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1			**-0.101****			**-0.111*****
			(0.042)			**(0.000)**
D1.Forecast			**9.933*****			**4.142*****
			(0.000)			**(0.000)**
Adjusted R^2	0.311	0.338	0.342	0.436	0.436	0.437
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,179					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using OLS approach including industry and year dummies, for the period 1981–2014. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 14

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(OLS estimation approach with year and industry dummies)

	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.829***	**-0.592***	**0.237**		-0.039	0.066	0.105
	(0.000)	**(0.000)**	**(0.047)**		(0.695)	(0.398)	(0.196)
NIEI	**-2.739***	**-1.261***	**1.478***		0.086	**3.359***	**3.273***
	(0.000)	**(0.000)**	**(0.000)**		(0.744)	**(0.000)**	**(0.000)**
BV	**2.367***	**1.656***	**-0.711***		**0.868***	**0.532***	**-0.336***
	(0.000)	**(0.000)**	**(0.001)**		**(0.000)**	**(0.000)**	**(0.054)**
AbsNegSpI					**-0.836**	**3.766***	**4.602***
					(0.018)	**(0.000)**	**(0.000)**
RD					**3.497***	**5.103***	**1.606***
					(0.000)	**(0.000)**	**(0.095)**
SGR					**1.350***	**0.659***	**-0.691***
					(0.000)	**(0.000)**	**(0.000)**

(Continued on next page)

TABLE 14 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.274*****	**-0.605*****	**0.669****
					(0.000)	**(0.004)**	**(0.026)**
Cash					**1.436*****	**1.497*****	-0.061
					(0.000)	**(0.000)**	(0.822)
CC					**1.282*****	**3.260*****	**1.978****
					(0.000)	**(0.000)**	**(0.023)**
LagCC					**0.397*****	0.604	0.207
					(0.001)	(0.173)	(0.649)
DbtIss					**0.499*****	0.043	**-0.456*****
					(0.000)	(0.683)	**(0.006)**

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TABLE 14 (CONTINUED)

	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Adjusted R^2	0.313				0.439		
Industry dummies	Yes				Yes		
Year dummies	Yes				Yes		
Observations	13,774	3,405			13,774	3,405	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using OLS regression, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation model for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 15

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(OLS estimation approach with year and industry dummies)

	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.425*** **	**0.257*** **	-0.168		-0.118	0.024	**0.142***
	(0.000)	**(0.000)**	(0.167)		(0.212)	(0.764)	**(0.061)**
NIEI	**0.748** **	**-0.572*** **	**-1.620*** **		**-0.793** **	**3.065*** **	**3.858*** **
	(0.030)	**(0.000)**	**(0.000)**		**(0.026)**	**(0.000)**	**(0.000)**
BV	**1.635*** **	**1.627*** **	-0.008		**0.972*** **	**0.560*** **	**-0.412** **
	(0.000)	**(0.000)**	(0.971)		**(0.000)**	**(0.000)**	**(0.014)**
AbsNegSpI					**-1.815*** **	**3.327*** **	**5.142*** **
					(0.000)	**(0.000)**	**(0.000)**
RD					**3.715*** **	**5.271*** **	1.556
					(0.000)	**(0.000)**	(0.120)
SGR					**1.377*** **	**0.643*** **	**-0.734*** **
					(0.000)	**(0.000)**	**(0.000)**

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TABLE 15 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.341*****	**-0.601*****	**0.740****
					(0.000)	**(0.004)**	**(0.014)**
Cash					**1.449*****	**1.362*****	-0.087
					(0.000)	**(0.000)**	(0.746)
CC					**1.432*****	**3.299*****	**1.867****
					(0.000)	**(0.000)**	**(0.033)**
LagCC					**0.485*****	0.633	0.148
					(0.000)	(0.150)	(0.744)
DbtIss					**0.572*****	0.045	**-0.527*****
					(0.000)	(0.665)	**(0.001)**
Forecast	**-4.893*****	**4.012*****	**8.905*****		**1.289*****	0.977	-0.312
	(0.000)	**(0.000)**	**(0.000)**		**(0.009)**	(0.304)	(0.772)

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TABLE 15 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Adjusted R^2	0.343				0.440		
Industry dummies	Yes				Yes		
Year dummies	Yes				Yes		
Observations	13,774	3,405			13,774	3,405	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using OLS regression, for the period 1981–2014. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast*) together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 16						
The Valuation of Loss-Making Firms						
(Loss Persistence Dummy is classified using the one, two, and three years-ahead earnings forecasts)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
Constant	**-0.355*****	-0.090	-0.108	0.139	0.041	0.037
	(0.010)	(0.404)	(0.316)	(0.166)	(0.691)	(0.722)
NIEI	**-2.654*****	0.078	0.457	-0.219	**-2.500****	**-2.440****
	(0.000)	(0.840)	(0.238)	(0.245)	**(0.016)**	**(0.021)**
BV	**2.322*****	**1.809*****	**1.769*****	**1.119*****	**1.189*****	**1.190*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				-0.171	**-2.963****	**-3.042****
				(0.503)	**(0.016)**	**(0.014)**
RD				**2.835*****	**3.912*****	**3.896*****
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.086*****	**0.965*****	**0.959*****
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 16 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
NegSGR				**-0.964***** **(0.000)**	**-0.972***** **(0.000)**	**-0.964***** **(0.000)**
Cash				**1.000***** **(0.000)**	**1.213***** **(0.000)**	**1.202***** **(0.000)**
CC				**1.216***** **(0.000)**	**1.434***** **(0.000)**	**1.405***** **(0.000)**
LagCC				**0.769***** **(0.000)**	**1.148***** **(0.000)**	**1.139***** **(0.000)**
DbtIss				**0.288***** **(0.000)**	**0.501***** **(0.000)**	**0.506***** **(0.000)**
Forecast		**-3.945***** **(0.000)**	**-4.933***** **(0.000)**		**5.095***** **(0.010)**	**4.939**** **(0.016)**

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TABLE 16 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1			**-0.096***			**-0.080*****
			(0.099)			**(0.005)**
D1.Forecast			**9.600*****			**3.720*****
			(0.000)			**(0.000)**
Average R^2	0.342	0.375	0.388	0.499	0.516	0.519
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14,179					
Number of time periods	33					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and defining loss persistence dummy (*D1*) based on the one, two, and three years-ahead earnings forecasts, for the period 1981–2014. *D1* is equal to 1 if the one, two, and three years-ahead earnings forecasts are positive (transitory loss-making firms), and zero if one, two, and three years-ahead earnings forecasts are negative (persistent loss-making firms). Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 17							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
(Loss Persistence Dummy is classified using the one, two, and three years-ahead earnings forecasts)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.384*****	-0.009	**0.375*****		0.079	**0.263*****	**0.184****
	(0.007)	(0.926)	**(0.001)**		(0.473)	**(0.004)**	**(0.021)**
NIEI	**-2.729*****	-0.765	**1.964*****		**-0.431****	**2.166*****	**2.597*****
	(0.000)	(0.077)	**(0.002)**		**(0.039)**	**(0.001)**	**(0.000)**
BV	**2.369*****	**1.438*****	**-0.931*****		**1.159*****	**0.791*****	**-0.368****
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.000)**	**(0.011)**
AbsNegSpI					-0.474	**2.115*****	**2.589*****
					(0.144)	**(0.001)**	**(0.001)**
RD					**2.711*****	**3.290*****	0.579
					(0.000)	**(0.000)**	(0.482)
SGR					**1.179*****	**0.403*****	**-0.776*****
					(0.000)	**(0.002)**	**(0.000)**

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TABLE 17 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.080*****	-0.208	**0.872*****
					(0.000)	(0.220)	**(0.003)**
Cash					**0.978*****	**0.908*****	-0.070
					(0.000)	**(0.000)**	(0.756)
CC					**1.111*****	**3.371*****	**2.260****
					(0.000)	**(0.001)**	**(0.013)**
LagCC					**0.740*****	**1.485*****	0.745
					(0.000)	**0.004**	(0.146)
DbtIss					**0.325*****	**0.183***	-0.142
					(0.000)	**(0.082)**	(0.325)

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TABLE 17 (CONTINUED)

	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.351			0.515		
Industry dummies	Yes			Yes		
Observations	11,613	2,566		11,613	2,566	
Number of time periods	33			33		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and defining loss persistence dummy (*D1*) based on the one, two, and three years-ahead earnings forecasts, for the period 1981–2014. *D1* is equal to 1 if the one, two, and three years-ahead earnings forecasts are positive (transitory loss-making firms), and zero if one, two, and three years-ahead earnings forecasts are negative (persistent loss-making firms). The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. The columns show the coefficients of estimating the valuation model for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 18							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
(Loss Persistence Dummy is classified using the one, two, and three years-ahead earnings forecasts)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	-0.127	-0.083	0.044		-0.004	**0.166***	**0.170****
	(0.259)	(0.446)	(0.634)		(0.971)	**(0.078)**	**(0.023)**
NIEI	0.500	-0.47	**-0.970***		**-2.924*****	-0.006	**2.918*****
	(0.221)	(0.209)	**(0.058)**		**(0.010)**	(0.995)	**(0.001)**
BV	**1.805*****	**1.356*****	**-0.449*****		**1.242*****	**0.841*****	**-0.401*****
	(0.000)	**(0.000)**	**(0.003)**		**(0.000)**	**(0.000)**	**(0.004)**
AbsNegSpI					**-3.641*****	-0.367	**3.274*****
					(0.006)	(0.735)	**(0.002)**
RD					**3.869*****	**4.320*****	0.451
					(0.000)	**(0.000)**	(0.597)
SGR					**1.042*****	**0.355*****	**-0.687*****
					(0.000)	**(0.006)**	**(0.000)**

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TABLE 18 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.084*****	-0.188	**0.896*****
					(0.000)	(0.350)	**(0.004)**
Cash					**1.207*****	**0.972*****	-0.235
					(0.000)	**(0.000)**	(0.283)
CC					**1.343*****	**2.959*****	**1.616***
					(0.000)	**(0.002)**	**(0.052)**
LagCC					**1.185*****	**1.936*****	0.751
					(0.000)	**(0.002)**	(0.201)
DbtIss					**0.544*****	**0.258****	**-0.286***
					(0.000)	**(0.019)**	**(0.057)**
Forecast	**-4.934*****	**4.448*****	**9.382*****		**5.783*****	**4.955*****	-0.828
	(0.000)	**(0.000)**	**(0.000)**		**(0.009)**	**(0.001)**	(0.567)

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TABLE 18 (CONTINUED)

	Panel A: *Simple valuation model plus earnings forecasts*			**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.392			0.531		
Industry dummies	Yes			Yes		
Observations	11,613	2,566		11,613	11,613	
Number of time periods	33			33		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and defining loss persistence dummy (*D1*) based on the one, two, and three years-ahead earnings forecasts, for the period 1981–2014. *D1* is equal to 1 if the one, two, and three years-ahead earnings forecasts are positive (transitory loss-making firms), and zero if one, two, and three years-ahead earnings forecasts are negative (persistent loss-making firms). The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast)* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D1*. The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 19						
The Valuation of Loss-Making Firms						
(Sub-sample analysis – firms with at least three analysts' earnings forecasts)						
(Including analysts' earnings forecasts in the valuation models)						
Variable	*Simple valuation model*	*Simple valuation model plus analysts' forecasts*	*Simple valuation model plus analysts' forecasts & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus analysts' forecasts*	*Darrough and Ye (2007) baseline model plus analysts' forecasts and interaction term*
Constant	**-0.499*****	**-0.518*****	**-0.356****	0.140	0.129	0.099
	(0.001)	**(0.000)**	**(0.012)**	(0.293)	(0.341)	(0.477)
NIEI	**-3.490*****	**-3.790*****	**-3.534*****	0.199	-0.280	-1.028
	(0.000)	**(0.000)**	**(0.000)**	(0.582)	(0.464)	(0.236)
BV	**2.635*****	**2.628*****	**2.498*****	**1.133*****	**1.115*****	**1.106*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				0.155	-0.260	-0.460
				(0.730)	(0.550)	(0.243)
RD				**2.984*****	**2.907*****	**2.534*****
				(0.000)	**(0.000)**	**(0.001)**
SGR				**1.295*****	**1.285*****	**1.179*****
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 19 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus analysts' forecasts*	*Simple valuation model plus analysts' forecasts & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus analysts' forecasts*	*Darrough and Ye (2007) baseline model plus analysts' forecasts and interaction term*
NegSGR				**-1.311***	**-1.231***	**-1.033***
				(0.000)	**(0.002)**	**(0.009)**
Cash				**1.660***	**1.677***	**1.629***
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.003***	**1.034***	**1.553**
				(0.000)	**(0.001)**	**(0.022)**
LagCC				**0.730***	**0.697***	**0.927***
				(0.007)	**(0.010)**	**(0.006)**
DbtIss				**0.430**	**0.405**	**0.389**
				(0.015)	**(0.019)**	**(0.026)**
Forecast		**0.590***	1.105		**0.840***	3.432
		(0.061)	(0.162)		**(0.005)**	(0.210)

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TABLE 19 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus analysts' forecasts*	*Simple valuation model plus analysts' forecasts & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus analysts' forecasts*	*Darrough and Ye (2007) baseline model plus analysts' forecasts and interaction term*
D1			**-0.304*** **			-0.046
			(0.002)			(0.486)
D1.Forecast			**4.236*** **			0.038
			(0.002)			(0.990)
Average R^2	0.443	0.454	0.480	0.609	0.621	0.638
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,118					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of firms that are followed by at least three analysts, for the period 1981–2014. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the consensus analysts' earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the consensus medians of analysts' earnings forecasts are positive (transitory loss-making firms) and zero if the consensus medians of analysts' earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the consensus analysts' earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 20

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(Sub-sample analysis - firms with at least three analysts' earnings forecasts)

(Persistent/transitory loss status defined by analysts' forecasts)

	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.326****	**-0.471*****	-0.145		0.307	0.111	-0.196
	(0.037)	**(0.003)**	(0.348)		(0.103)	(0.337)	(0.225)
NIEI	**-3.520*****	**-2.977*****	0.543		-0.641	0.402	1.043
	(0.000)	**(0.000)**	(0.478)		(0.177)	(0.392)	(0.154)
BV	**2.266*****	**2.601*****	0.335		**1.206*****	**0.925*****	-0.281
	(0.000)	**(0.000)**	(0.209)		**(0.000)**	**(0.000)**	(0.378)
AbsNegSpI					-0.972	0.145	1.117
					(0.211)	(0.768)	(0.283)
RD					**2.179****	**3.722*****	**1.543***
					(0.012)	**(0.000)**	**(0.052)**
SGR					**0.873****	**1.719*****	**0.846***
					(0.042)	**(0.000)**	**(0.053)**

(Continued on next page)

TABLE 20 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR				-0.747	**-1.989*** **	-1.242
				(0.337)	**(0.000)**	(0.111)
Cash				0.447	**2.130*** **	**1.683*** **
				(0.205)	**(0.000)**	**(0.000)**
CC				1.208	**0.942** **	-0.266
				(0.120)	**(0.032)**	(0.758)
LagCC				**0.619** **	**0.670** **	0.051
				(0.040)	**(0.029)**	(0.896)
DbtIss				**0.715* **	**0.237** **	-0.478
				(0.062)	**(0.023)**	(0.259)

(Continued on next page)

TABLE 20 (CONTINUED)								
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*			
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.466				0.699		
Industry dummies	Yes				Yes		
Observations	2,976	4,142			2,976	4,142	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of firms that are followed by at least three analysts, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the consensus medians of analysts' earnings forecasts are positive (transitory loss-making firms) and zero if the consensus medians of analysts' earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 21				
The Valuation of Loss-Making Firms				
(Sub-sample analysis – firms with at least three analysts' earnings forecasts)				
(Including our earnings forecasts in the valuation models)				
Variable	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts and interaction term*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts and interaction term*
Constant	-0.153	-0.158	0.019	0.010
	(0.262)	(0.289)	(0.896)	(0.947)
NIEI	-0.173	0.384	**-3.065****	**-2.549***
	(0.748)	(0.488)	**(0.033)**	**(0.099)**
BV	**2.013*****	**1.954*****	**1.239*****	**1.254*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI			**-3.526****	**-3.732****
			(0.035)	**(0.035)**
RD			**4.584*****	**4.619*****
			(0.000)	**(0.000)**
SGR			**1.189*****	**1.134*****
			(0.000)	**(0.000)**

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TABLE 21 (CONTINUED)				
Variable	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts and interaction term*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts and interaction term*
NegSGR			**-1.267***** **(0.001)**	**-1.211***** **(0.002)**
Cash			**1.748***** **(0.000)**	**1.629***** **(0.000)**
CC			**1.481***** **(0.000)**	**1.193**** **(0.011)**
LagCC			**1.291***** **(0.000)**	**1.096***** **(0.009)**
DbtIss			**0.707***** **(0.001)**	**0.684***** **(0.002)**
Forecast	**-4.635***** **(0.000)**	**-6.053***** **(0.000)**	**7.028***** **(0.010)**	4.912 (0.137)

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TABLE 21 (CONTINUED)				
Variable	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts and interaction term*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts and interaction term*
D1		-0.171		-0.061
		(0.180)		(0.372)
D1.Forecast		**11.095*** **		**5.606** **
		(0.000)		**(0.016)**
Average R^2	0.480	0.496	0.620	0.625
Industry dummies	Yes	Yes	Yes	Yes
Observations	7,118			
Number of time periods	34			

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of firms that are followed by at least three analysts, for the period 1981–2014. Model 1 presents the results of estimating a basic model with earnings and book value after adding the one year-ahead earnings forecasts (*Forecast*). Model 2 presents the results of estimating Model 1 after adding loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecast are negative (persistent loss-making firms). Model 3 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)) after adding the one year-ahead earnings forecasts (*Forecast*). Model 4 presents the results of estimating Model 3 after adding loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 22

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(Sub-sample analysis - firms with at least three analysts' earnings forecasts)

(Persistent/transitory loss status defined by mechanical forecasts)

	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.460*****	**-0.438*****	0.022		0.167	0.116	-0.051
	(0.003)	**(0.004)**	(0.907)		(0.224)	(0.323)	(0.712)
NIEI	**-3.390*****	**-1.888****	1.502		0.252	**2.927*****	**2.675****
	(0.000)	**(0.020)**	(0.162)		(0.480)	**(0.004)**	**(0.015)**
BV	**2.575*****	**2.081*****	**-0.494****		**1.050*****	**1.010*****	-0.040
	(0.000)	**(0.000)**	**(0.041)**		**(0.000)**	**(0.000)**	(0.868)
AbsNegSpI					0.023	**2.737*****	**2.714****
					(0.967)	**(0.004)**	**(0.013)**
RD					**2.998*****	**3.607*****	0.609
					(0.000)	**(0.001)**	(0.616)
SGR					**1.322*****	**1.093****	-0.229
					(0.000)	**(0.029)**	(0.682)

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TABLE 22 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.319*** **	-1.177	0.142
					(0.002)	(0.111)	(0.854)
Cash					**1.407*** **	**1.384*** **	-0.023
					(0.000)	**(0.001)**	(0.958)
CC					**1.202*** **	**3.658*** **	**2.456* **
					(0.001)	**(0.003)**	**(0.051)**
LagCC					**0.723*** **	**2.554** **	1.831
					(0.007)	**(0.037)**	(0.136)
DbtIss					**0.494*** **	0.110	-0.384
					(0.010)	(0.602)	(0.138)

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TABLE 22 (CONTINUED)

	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.460			0.632		
Industry dummies	Yes			Yes		
Observations	5,520	1,598		5,520	1,598	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and using a sub-sample of firms that are followed by at least three analysts, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 23						
The Valuation of Loss-Making Firms						
(Sub-sample analysis - removing observations with earnings forecasts between (-0.005, 0.005))						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
Constant	**-0.461*** **	-0.170	**-0.209***	0.066	0.010	-0.006
	(0.001)	(0.104)	**(0.054)**	(0.488)	(0.919)	(0.953)
NIEI	**-2.640*** **	0.168	0.585	-0.282	**-1.844***	**-1.797***
	(0.000)	(0.636)	(0.111)	(0.134)	**(0.072)**	**(0.084)**
BV	**2.385*** **	**1.835*** **	**1.791*** **	**1.119*** **	**1.150*** **	**1.156*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				-0.168	**-2.147***	**-2.309***
				(0.505)	**(0.076)**	**(0.057)**
RD				**2.569*** **	**3.502*** **	**3.445*** **
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.091*** **	**0.991*** **	**0.978*** **
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 23 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
NegSGR				**-0.964*****	**-0.983*****	**-0.963*****
				(0.000)	**(0.000)**	**(0.000)**
Cash				**1.182*****	**1.346*****	**1.331*****
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.218*****	**1.322*****	**1.269*****
				(0.000)	**(0.000)**	**(0.000)**
LagCC				**0.663*****	**0.939*****	**0.938*****
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.305*****	**0.435*****	**0.435*****
				(0.000)	**(0.000)**	**(0.000)**
Forecast		**-4.011*****	**-5.075*****		**3.889****	**3.746***
		(0.000)	**(0.000)**		**(0.042)**	**(0.061)**

(Continued on next page)

TABLE 23 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecasts*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1			0.005			**-0.055***
			(0.927)			**(0.095)**
D1.Forecast			**9.318*****			**4.004*****
			(0.000)			**(0.001)**
Average R^2	0.343	0.377	0.391	0.495	0.509	0.514
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,148					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.005 and 0.005 is excluded from our sample. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 24

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(Sub-sample analysis - removing observations with earnings forecasts between (-0.005, 0.005))

	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.512*****	-0.126	**0.386*****	-0.023	**0.210****	**0.233*****
	(0.001)	(0.230)	**(0.001)**	(0.830)	**0.010**	**(0.004)**
NIEI	**-2.734*****	**-1.064****	**1.670*****	**-0.665*****	**1.799****	**2.464*****
	(0.000)	**(0.030)**	**(0.010)**	**(0.004)**	**(0.011)**	**(0.000)**
BV	**2.463*****	**1.595*****	**-0.868*****	**1.186*****	**0.775*****	**-0.411*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.003)**
AbsNegSpI				**-1.025*****	**1.768****	**2.793*****
				(0.004)	**(0.017)**	**(0.000)**
RD				**2.395*****	**3.711*****	**1.316****
				(0.000)	**(0.000)**	**(0.032)**
SGR				**1.150*****	**0.525*****	**-0.625*****
				(0.000)	**(0.002)**	**(0.003)**

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TABLE 24 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.071***** **(0.000)**	**-0.511**** **(0.034)**	**0.560*** **(0.078)**
Cash					**1.191***** **(0.000)**	**1.483***** **(0.000)**	0.292 (0.269)
CC					**1.062***** **(0.000)**	**3.131***** **(0.001)**	**2.069**** **(0.030)**
LagCC					**0.596***** **(0.000)**	**1.115**** **(0.012)**	0.519 (0.251)
DbtIss					**0.482***** **(0.003)**	0.008 (0.956)	**-0.474**** **(0.029)**

(Continued on next page)

TABLE 24 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.353			0.520		
Industry dummies	Yes			Yes		
Observations	13,216	2,932		13,216	2,932	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.005 and 0.005 is excluded from our sample. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 25

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(Sub-sample analysis - removing observations with earnings forecasts between (-0.005, 0.005))

	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.210***	**-0.181***	0.029		-0.076	0.088	**0.164****
	(0.050)	**(0.099)**	(0.736)		(0.468)	(0.362)	**(0.020)**
NIEI	**0.772***	**-0.912****	**-1.684*****		**-2.544****	-0.511	**2.033****
	(0.062)	**(0.030)**	**(0.003)**		**(0.019)**	(0.667)	**(0.023)**
BV	**1.806*****	**1.558*****	**-0.248***		**1.241*****	**0.832*****	**-0.409*****
	(0.000)	**(0.000)**	**(0.086)**		**(0.000)**	**(0.000)**	**(0.002)**
AbsNegSpI					**-3.385*****	-0.782	**2.603*****
					(0.009)	(0.553)	**(0.009)**
RD					**3.404*****	**4.556*****	**1.152***
					(0.000)	**(0.000)**	**(0.088)**
SGR					**1.028*****	**0.433****	**-0.595*****
					(0.000)	**(0.010)**	**(0.005)**

(Continued on next page)

TABLE 25 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.077*****	**-0.432***	**0.645****
					(0.000)	**(0.064)**	**(0.041)**
Cash					**1.351*****	**1.662*****	0.311
					(0.000)	**(0.000)**	(0.216)
CC					**1.221*****	**3.345*****	**2.124****
					(0.000)	**0.001**	**(0.022)**
LagCC					**0.975*****	**1.383*****	0.408
					(0.000)	**(0.005)**	(0.346)
DbtIss					**0.623*****	0.139	**-0.484****
					(0.000)	(0.356)	**(0.027)**
Forecast	**-5.314*****	**3.247*****	**8.561*****		**4.711****	**5.505*****	0.794
	(0.000)	**(0.001)**	**(0.000)**		**(0.021)**	**(0.002)**	(0.593)

(Continued on next page)

TABLE 25 (CONTINUED)							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.396				0.533		
Industry dummies	Yes				Yes		
Observations	13,216	2,932			13,216	2,932	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.005 and 0.005 is excluded from our sample. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast*) together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 26

The Valuation of Loss-Making Firms

(Sub-sample analysis - removing observations with earnings forecasts between (-0.010, 0.010))

Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
Constant	**-0.465*****	-0.169	**-0.212***	0.073	0.018	-0.005
	(0.002)	(0.116)	**(0.057)**	(0.460)	(0.861)	(0.963)
NIEI	**-2.627*****	0.199	**0.655***	-0.284	**-1.864***	**-1.801***
	(0.000)	(0.596)	**(0.090)**	(0.134)	**(0.074)**	**(0.090)**
BV	**2.386*****	**1.820*****	**1.767*****	**1.098*****	**1.126*****	**1.133*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				-0.125	**-2.135***	**-2.307***
				(0.646)	**(0.077)**	**(0.057)**
RD				**2.537*****	**3.481*****	**3.432*****
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.101*****	**1.005*****	**0.991*****
				(0.000)	**(0.000)**	**(0.000)**

(Continued on next page)

TABLE 26 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
NegSGR				**-0.954*** **	**-0.982*** **	**-0.966*** **
				(0.000)	**(0.000)**	**(0.000)**
Cash				**1.190*** **	**1.357*** **	**1.325*** **
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.235*** **	**1.342*** **	**1.304*** **
				(0.000)	**(0.000)**	**(0.000)**
LagCC				**0.636*** **	**0.919*** **	**0.910*** **
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.313*** **	**0.443*** **	**0.444*** **
				(0.000)	**(0.000)**	**(0.000)**
Forecast		**-3.981*** **	**-5.313*** **		**3.935** **	**3.550* **
		(0.000)	**(0.000)**		**(0.043)**	**(0.079)**

(Continued on next page)

TABLE 26 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1			-0.022			-0.063
			(0.725)			(0.123)
D1.Forecast			**10.243*** **			**4.424*** **
			(0.000)			**(0.001)**
Average R^2	0.341	0.379	0.393	0.498	0.513	0.518
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,221					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973) and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.010 and 0.010 is excluded from our sample. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 27							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
(Sub-sample analysis - removing observations with earnings forecasts between (-0.010, 0.010))							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.500*****	-0.117	**0.383*****		-0.012	**0.239*****	**0.251*****
	(0.001)	(0.263)	**(0.001)**		(0.914)	**(0.005)**	**(0.004)**
NIEI	**-2.681*****	**-0.973***	**1.708****		**-0.664*****	**1.662****	**2.326*****
	(0.000)	**(0.053)**	**(0.012)**		**(0.005)**	**(0.048)**	**(0.005)**
BV	**2.415*****	**1.581*****	**-0.834*****		**1.137*****	**0.732*****	**-0.405*****
	(0.000)	**(0.000)**	**(0.001)**		**(0.000)**	**(0.000)**	**(0.008)**
AbsNegSpI					**-1.160*****	**1.601***	**2.761*****
					(0.002)	**(0.056)**	**(0.001)**
RD					**2.564*****	**4.389*****	1.825
					(0.000)	**(0.001)**	(0.174)
SGR					**1.169*****	**0.486*****	**-0.683*****
					(0.000)	**(0.006)**	**(0.002)**

(Continued on next page)

TABLE 27 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.083*** **	**-0.544** **	0.539
					(0.000)	**(0.048)**	(0.116)
Cash					**1.175*** **	**1.416*** **	0.241
					(0.000)	**(0.000)**	(0.435)
CC					**1.585*** **	**4.818*** **	**3.233***
					(0.003)	**(0.005)**	**(0.069)**
LagCC					**0.479** **	**1.113***	0.634
					(0.024)	**(0.085)**	(0.324)
DbtIss					**0.355*** **	0.056	-0.299
					(0.000)	(0.695)	(0.103)

(Continued on next page)

TABLE 27 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.354				0.522		
Industry dummies	Yes				Yes		
Observations	12,706	2,515			12,706	2,515	
Number of time periods	34				34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.010 and 0.010 is excluded from our sample. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 28							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
(Sub-sample analysis - removing observations with earnings forecasts between (-0.010, 0.010))							
	Panel A: *Simple valuation model plus earnings forecasts*				**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.202***	**-0.195***	0.007		-0.066	0.125	**0.191*****
	(0.072)	**(0.080)**	(0.941)		(0.545)	(0.187)	**(0.009)**
NIEI	**0.870****	**-0.776***	**-1.646*****		**-2.462****	-0.568	**1.894***
	(0.035)	**(0.075)**	**(0.004)**		**(0.026)**	(0.649)	**(0.056)**
BV	**1.748*****	**1.550*****	-0.198		**1.191*****	**0.804*****	**-0.387*****
	(0.000)	**(0.000)**	(0.196)		**(0.000)**	**(0.000)**	**(0.007)**
AbsNegSpI					**-3.164****	-0.874	**2.239****
					(0.016)	(0.489)	**(0.041)**
RD					**3.557*****	**5.128*****	1.571
					(0.000)	**(0.000)**	(0.228)
SGR					**1.048*****	**0.365***	**-0.683*****
					(0.000)	**(0.059)**	**(0.002)**

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TABLE 28 (CONTINUED)						
	Panel A: *Simple valuation model plus earnings forecasts*			**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR				**-1.093*****	-0.299	**0.794****
				(0.000)	(0.277)	**(0.020)**
Cash				**1.324*****	**1.549*****	0.225
				(0.000)	**(0.000)**	(0.454)
CC				**1.631*****	**5.176*****	**3.545****
				(0.000)	**(0.003)**	**(0.038)**
LagCC				**0.854*****	**1.467****	0.613
				(0.001)	**(0.031)**	(0.334)
DbtIss				**0.515*****	0.165	-0.350
				(0.000)	(0.309)	(0.100)
Forecast	**-5.598*****	**3.600*****	**9.198*****	**4.318****	**5.254*****	0.936
	(0.000)	**(0.005)**	**(0.000)**	**(0.037)**	**(0.003)**	(0.554)

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TABLE 28 (CONTINUED)						
	Panel A: *Simple valuation model plus earnings forecasts*			**Panel B:** *Darrough and Ye (2007) model plus earnings forecasts*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.398			0.535		0.398
Industry dummies	Yes			Yes		
Observations	12,706	2,515		12,706	2,515	
Number of time periods	34			34		34

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression and using a sub-sample of loss-making firms, for the period 1981–2014. A firm with earnings forecasts scaled by opening total assets *(OTA)* between -0.010 and 0.010 is excluded from our sample. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast)* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 29						
The Valuation of Loss-Making Firms						
(Using Newey-West to Adjust Fama-MacBeth statistics)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
Constant	**-0.419****	-0.137	-0.169	0.090	0.032	0.020
	(0.013)	(0.311)	(0.212)	(0.414)	(0.773)	(0.862)
NIEI	**-2.647*****	0.160	0.566	-0.252	-1.796	-1.737
	(0.000)	(0.734)	(0.235)	(0.108)	(0.181)	(0.200)
BV	**2.333*****	**1.796*****	**1.756*****	**1.090*****	**1.125*****	**1.130*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				-0.139	-2.069	-2.207
				(0.427)	(0.172)	(0.143)
RD				**2.606*****	**3.506*****	**3.458*****
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.065*****	**0.970*****	**0.959*****
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 29 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
NegSGR				**-0.944*** **	**-0.963*** **	**-0.946*** **
				(0.000)	**(0.000)**	**(0.000)**
Cash				**1.184*** **	**1.346*** **	**1.325*** **
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.241*** **	**1.330*** **	**1.284*** **
				(0.000)	**(0.000)**	**(0.000)**
LagCC				**0.680*** **	**0.945*** **	**0.940*** **
				(0.000)	**(0.001)**	**(0.001)**
DbtIss				**0.292*** **	**0.421*** **	**0.419*** **
				(0.000)	**(0.001)**	**(0.001)**
Forecast		**-4.005*** **	**-5.040*** **		3.819	3.610
		(0.000)	**(0.000)**		(0.135)	(0.167)

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TABLE 29 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecasts*	*Simple valuation model plus earnings forecasts, loss persistence dummy, and interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecasts, loss persistence dummy, and interaction term*
D1			-0.000			-0.044
			(0.997)			(0.119)
D1.Forecast			**9.179*** **			**3.720*** **
			(0.000)			**(0.000)**
Average R^2	0.339	0.375	0.387	0.494	0.507	0.512
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,179					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses based on Newey-West corrected Fama-MacBeth (1973) statistics, for the period 1981–2014. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). The definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 30							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms							
(Using Newey-West to Adjust Fama-MacBeth statistics)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variables	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-0.467*****	-0.082	**0.385*****		0.004	0.221	**0.217*****
	(0.008)	(0.670)	**(0.000)**		(0.973)	(0.129)	**(0.004)**
NIEI	**-2.715*****	-1.121	**1.594****		**-0.607*****	**1.821****	**2.428*****
	(0.000)	(0.112)	**(0.011)**		**(0.004)**	**(0.017)**	**(0.001)**
BV	**2.409*****	**1.512*****	**-0.897*****		**1.162*****	**0.753*****	**-0.409****
	(0.000)	**(0.000)**	**(0.000)**		**(0.000)**	**(0.003)**	**(0.031)**
AbsNegSpI					**-0.821****	**1.877***	**2.698*****
					(0.017)	**(0.056)**	**(0.005)**
RD					**2.442*****	**3.629*****	**1.187****
					(0.000)	**(0.000)**	**(0.021)**
SGR					**1.135*****	**0.556***	**-0.579*****
					(0.000)	**(0.054)**	**(0.003)**

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TABLE 30 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
	Persistent loss-making firms	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR				**-1.054*****	-0.569	**0.485***
				(0.000)	(0.132)	**(0.080)**
Cash				**1.182*****	**1.296*****	0.114
				(0.000)	**(0.001)**	(0.636)
CC				**1.106*****	**3.652*****	**2.546*****
				(0.000)	**(0.000)**	**(0.009)**
LagCC				**0.612*****	**1.149*****	**0.537***
				(0.002)	**(0.003)**	**(0.093)**
DbtIss				**0.456*****	0.062	**-0.394*****
				(0.001)	(0.729)	**(0.004)**

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TABLE 30 (CONTINUED)

	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.349			0.518		
Industry dummies	Yes			Yes		
Observations	13,774	3,405		13,774	3,405	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses for persistent and transitory loss-making firms based on Newey-West corrected Fama-MacBeth (1973) statistics, for the period 1981–2014. The model in Panel A includes *NIEI* and *BV* together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model together with their interactions with *D1*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation model for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 31						
The Valuation of Loss-Making Firms						
(Using Unscaled Data to Estimate the Valuation Models)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
Constant	56.176	62.578	28.202	**81.615****	**75.285****	63.961
	(0.219)	(0.139)	(0.612)	**(0.037)**	**(0.041)**	(0.120)
NIEI	**-1.060*****	**-1.206*****	-0.181	**0.382***	-0.718	-0.268
	(0.000)	**(0.000)**	(0.576)	**(0.066)**	(0.163)	(0.650)
BV	**1.392*****	**1.376*****	**1.263*****	**1.066*****	**1.024*****	**0.977*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				**1.200*****	-0.167	-0.364
				(0.000)	(0.764)	(0.518)
RD				**3.046*****	**3.514*****	**3.568*****
				(0.000)	**(0.000)**	**(0.000)**
SGR				**186.882*****	**201.553*****	**185.735*****
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 31 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
NegSGR				**-128.950*****	**-188.839*****	**-160.178*****
				(0.003)	**(0.000)**	**(0.003)**
Cash				**0.940*****	**1.045*****	**0.977*****
				(0.000)	**(0.000)**	**(0.000)**
CC				**1.394*****	**1.461*****	**1.162*****
				(0.000)	**(0.001)**	**(0.006)**
LagCC				**1.365*****	**1.543*****	**1.380*****
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.207*****	**0.302*****	**0.295*****
				(0.004)	**(0.000)**	**(0.000)**
Forecast		0.701	**-2.421****		**2.629*****	1.006
		(0.140)	**(0.013)**		**(0.001)**	(0.334)

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TABLE 31 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
D1			-9.828			-0.935
			(0.519)			(0.929)
D1.Forecast			**7.420*****			**4.163*****
			(0.000)			**(0.000)**
Average R^2	0.630	0.642	0.665	0.733	0.749	0.757
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,571					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. The results are based on estimating unscaled valuation models. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). The definitions of other variables can be found in the Table 1. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 32							
The Valuation of Loss-Making Firms – Persistent and Transitory Loss-making Firms							
(Using Unscaled Data to Estimate the Valuation Models)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variables	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	51.119	**92.667****	**41.548***		61.790	**96.823****	35.033
	(0.261)	**(0.026)**	**(0.071)**		(0.124)	**(0.011)**	(0.120)
NIEI	**-1.227*****	**-1.159****	0.068		-0.392	**2.111*****	**2.503*****
	(0.000)	**(0.012)**	(0.883)		(0.147)	**(0.001)**	**(0.000)**
BV	**1.359*****	**1.430*****	0.071		**1.017*****	**0.996*****	-0.021
	(0.000)	**(0.000)**	(0.474)		**(0.000)**	**(0.000)**	(0.844)
AbsNegSpI					**-0.877****	**2.493*****	**3.370*****
					(0.038)	**(0.000)**	**(0.000)**
RD					**3.111*****	**2.963*****	-0.148
					(0.000)	**(0.000)**	(0.892)
SGR					**181.944*****	213.658	31.714
					(0.000)	(0.014)	(0.739)

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TABLE 32 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
	Persistent loss-making firms	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-144.253*** **	16.966	161.219
					(0.009)	(0.914)	(0.375)
Cash					**0.998*** **	**0.839*** **	-0.159
					(0.000)	**(0.002)**	(0.682)
CC					**1.230*** **	**5.127*** **	**3.897** **
					(0.002)	**(0.003)**	**(0.012)**
LagCC					**1.313*** **	0.696	-0.617
					(0.000)	(0.214)	(0.313)
DbtIss					**0.281*** **	**0.281* **	-0.000
					(0.001)	**(0.051)**	(0.998)

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TABLE 32 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.649			0.772		
Industry dummies	Yes			Yes		
Observations	14,126	3,445		14,126	3,445	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The results are based on estimating unscaled valuation models. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast*) together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 33						
The Valuation of Loss-Making Firms						
(Using BVlag as the Deflator for the Valuation Models)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
Constant	**-1.243*** **	**-0.876*** **	**-0.857*** **	-0.054	-0.175	-0.229
	(0.000)	**(0.001)**	**(0.001)**	(0.787)	(0.410)	(0.291)
NIEI	**-3.111*** **	**-1.692*** **	**-1.085*** **	**-0.657*** **	**-1.399*** **	**-1.274*** **
	(0.000)	**(0.000)**	**(0.001)**	**(0.003)**	**(0.001)**	**(0.003)**
BV	**2.785*** **	**2.379*** **	**2.264*** **	**1.279*** **	**1.367*** **	**1.381*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
AbsNegSpI				0.258	-0.646	**-0.853***
				(0.244)	(0.168)	**(0.066)**
RD				**2.523*** **	**2.915*** **	**2.874*** **
				(0.000)	**(0.000)**	**(0.000)**
SGR				**1.826*** **	**1.794*** **	**1.791*** **
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 33 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
NegSGR				**-1.542*** **	**-1.690*** **	**-1.703*** **
				(0.000)	**(0.000)**	**(0.000)**
Cash				**1.284*** **	**1.341*** **	**1.324*** **
				(0.000)	**(0.000)**	**(0.000)**
CC				**0.752*** **	**0.721*** **	**0.627*** **
				(0.000)	**(0.000)**	**(0.002)**
LagCC				**0.744*** **	**0.871*** **	**0.846*** **
				(0.000)	**(0.000)**	**(0.000)**
DbtIss				**0.221*** **	**0.284*** **	**0.268*** **
				(0.000)	**(0.000)**	**(0.000)**

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TABLE 33 (CONTINUED)						
Variable	*Simple valuation model*	*Simple valuation model plus earnings forecast*	*Simple valuation model plus earnings forecast & interaction term*	*Darrough and Ye (2007) baseline model*	*Darrough and Ye (2007) baseline model plus earnings forecast*	*Darrough and Ye (2007) baseline model plus earnings forecast and interaction term*
Forecast		**-2.133*****	**-3.536*****		**1.855****	**1.302***
		(0.000)	**(0.000)**		**(0.010)**	**(0.075)**
D1			-0.123			-0.031
			(0.124)			(0.479)
D1.Forecast			**8.849*****			**4.005*****
			(0.000)			**(0.000)**
Average R^2	0.250	0.269	0.286	0.416	0.429	0.434
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,404					
Number of time periods	34					

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models using Fama-MacBeth (1973), for the period 1981–2014. The valuation models are scaled by opening book value of equity *(BVlag)*. Model 1 presents the results of estimating a basic model with earnings and book value. Model 2 presents the results of estimating Model 1 after adding the one year-ahead earnings forecasts (*Forecast*). Model 3 presents the results of estimating Model 1 after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast*). *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). Model 4 presents the results of estimating the benchmark model (the valuation model developed in Darrough and Ye (2007)). Model 5 presents the results of estimating the benchmark model after adding the one year-ahead earnings forecasts (*Forecast*). Model 6 presents the results of estimating the benchmark model after adding *Forecast*, loss persistent dummy (*D1*), and an interaction term (*D1.Forecast)*. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

TABLE 34

The Valuation of Loss-Making Firms – Persistent and Transitory Loss-Making Firms

(Using BVlag as the Deflator for the Valuation Models)

	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
Variables	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Constant	**-1.287*** **	**-0.801** **	**0.486***		-0.245	0.270	**0.515** **
	(0.000)	**(0.024)**	**(0.088)**		(0.272)	(0.255)	**(0.049)**
NIEI	**-3.181*** **	**-2.308*** **	**0.873** **		**-1.113*** **	**1.430** **	**2.543*** **
	(0.000)	**(0.000)**	**(0.041)**		**(0.000)**	**(0.030)**	**(0.000)**
BV	**2.830*** **	**2.248*** **	**-0.582** **		**1.378*** **	**0.892*** **	**-0.486***
	(0.000)	**(0.000)**	**(0.042)**		**(0.000)**	**(0.000)**	**(0.088)**
AbsNegSpI					**-0.827*** **	**1.945*** **	**2.772*** **
					(0.005)	**(0.003)**	**(0.000)**
RD					**2.461*** **	**3.647*** **	**1.186** **
					(0.000)	**(0.000)**	**(0.030)**
SGR					**1.945*** **	**1.281*** **	**-0.664***
					(0.000)	**(0.000)**	**(0.068)**

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TABLE 34 (CONTINUED)							
	Panel A: *Simple valuation model*				**Panel B:** *Darrough and Ye (2007) model*		
	Persistent loss-making firms	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*		*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
NegSGR					**-1.799*****	**-1.380*****	0.419
					(0.000)	**(0.006)**	(0.498)
Cash					**1.223*****	**1.430*****	0.207
					(0.000)	**(0.000)**	(0.394)
CC					**0.669*****	**2.679*****	**2.010*****
					(0.001)	**(0.001)**	**(0.007)**
LagCC					**0.736*****	**0.809***	0.073
					(0.000)	**(0.058)**	(0.862)
DbtIss					**0.233*****	**0.168****	-0.065
					(0.000)	**(0.035)**	(0.488)

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TABLE 34 (CONTINUED)						
	Panel A: *Simple valuation model*			**Panel B:** *Darrough and Ye (2007) model*		
Variable	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*	*Persistent loss-making firms*	*Transitory loss-making firms*	*Coefficient differences between persistent and transitory loss-making firms*
Average R^2	0.263			0.446		
Industry dummies	Yes			Yes		
Observations	13,930	3,474		13,930	3,474	
Number of time periods	34			34		

Notes: This table presents the estimated regression coefficients and their p-values in parentheses as the results of estimating the valuation models for persistent and transitory loss-making firms using Fama-MacBeth (1973) regression, for the period 1981–2014. The valuation models are scaled by opening book value of equity *(BVlag)*. The model in Panel A includes *NIEI*, *BV*, and the one year-ahead earnings forecasts (*Forecast*) together with their interactions with *D1*. The model in Panel B includes all variables in Darrough and Ye (2007) model and *Forecast* together with their interactions with *D*. *D1* is equal to 1 if the earnings forecasts are positive (transitory loss-making firms) and zero if the earnings forecasts are negative (persistent loss-making firms). The columns show the coefficients of estimating the valuation models for persistent loss-making firms, transitory loss-making firms, and the differences between the valuation model coefficient for the two categories of firms. *** means significant at the 1% significant level, ** means significant at the 5% significant level, and * means significant at the 10% significant level.

CHAPTER 5

CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This thesis concentrates on earnings forecasts and the separate market valuation of profit and loss-making firms. In chapter 2, we first examine the possibility of developing better cross-sectional models for generating more accurate earnings forecasts for profit and loss-making firms separately. The overall results show that including accounting items proposed in the existing earnings forecasts and valuation literature in the HDZ model helps to better explain earnings for both profit and loss-making firms, and that the explanatory power of these accounting items varies across the different categories of loss-making firms. Testing the forecasting performance of all the alternative HDZ and expanded models proposed for profit-making firms in this chapter, suggests that the expanded model estimated on profit-making firms outperforms all the other models in terms of forecast accuracy. However, the expanded model estimated on all firms outperforms all the other models proposed for loss-making firms in this chapter, in terms of the forecast accuracy.

Chapter 3 and 4 examine the value relevance of earnings forecasts for profit-making and loss-making firms respectively. We first use the expanded earnings forecasting model developed in chapter 2 to generate one year-ahead earnings forecasts for profit-making and loss-making firms. We classify profit-making and loss-making firms into transitory or persistent profit and loss categories, based upon the sign of their forecasted earnings. We then evaluate the value relevance of the earnings forecasts directly and indirectly. The empirical results in chapter 3 shows that our earnings forecasts are value relevant for profit-making firms generally and specifically for persistent profit-making firms, in the presence of current earnings and book value. Further, the results show that the valuation weights placed on current earnings and book value are conditional upon profit persistence. The empirical results in chapter 4 show that our earnings forecasts are value relevant for loss-making firms in the presence of the value drivers identified by Darrough and Ye (2007). Further, we find that our earnings forecasts are value relevant for both transitory and persistent loss-making firms. Finally, we find that current earnings play less role in valuing persistent loss-making firms than in valuing transitory loss-making firms, whereas book value plays more of a role in valuing persistent loss-making firms than in valuing transitory loss-making firms.

For future research, we make some suggestions. First, an extension of chapter 2 could apply our strategy to other markets and compare between the results with those from the US, to see if the US results generalize. Further, it could be interesting to evaluate the performance of our expanded earnings forecasting models in terms of forecast accuracy pre- and post- the mandatory adoption of IFRS in different countries, whilst controlling for various country characteristics such as legal systems and institutional infrastructures. Second, we rely mainly on accounting variables to build our expanded earnings forecasting models. Thus, an extension of the models could include other market variables such as current and lagged share price, and could test their explanatory power for one year-ahead earnings for profit-making and loss-making firms alongside the other variables in the extended models.

Finally, HDZ examine the validity of their cross-sectional model by using the model-based earnings forecasts as proxy for cash flow predictions in estimating the ICC. Li and Mohanram (2014) develop two alternative models to the HDZ model and use their earnings forecasts to compute the ICC. They find that both models outperform the HDZ model in terms of estimating the ICC. As mentioned earlier, we use the HDZ model as our baseline model. As a consequence, to make our research comparable with prior research, our earnings forecasts could be used in computing the ICC, together with using analysts' earnings forecasts. Nonetheless, computing the ICC for loss-making firms might be a problematic.