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**Management forecast and investment decisions**

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by

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## Management Forecast and Investment Decisions

**Abstract:** Investors decision is made based on several factors within the company, and mostly it depends on the external reported financial forecast of the company. Even though the forecast is an essential element for a successful investment, most stakeholders cannot directly take this factor into consideration for investment. Rely on the data from the CSMAR, and the model's regression analysis, I found forecast quality is negatively related with the future stock price. In this study I followed with the former researcher to choose three-year A share market companies which is from 2008 to 2010. Based on those data I get the relation analysis information, which proved that the Chinese companies' externally observed forecast cannot be used to infer the internal capital budgeting of the company.

*Keywords:* earnings forecasts; stock price; investment; capital budgeting; managerial ability;

*JEL Classification:* D83; G31; M41

## **Introduction**

As for the information quality and market response contained in make profitable decision, most of the western mainstream accounting studies in the past 30 years have been carried out under the framework of information view. Its main method is to make the profit announcement as the event, check the changes in the market rate of return before and after the announcement. The research on the earnings forecast also reached a similar conclusion: the management forecast can provide useful information for the securities market, and the unpredicted earnings also have similar content, which is represented as abnormal remuneration before and after the disclosure of earnings. Capital budget is the most basic and important responsibility of an enterprise. The key determinant of a successful investment is the management's ability to predict and invest, and the key is to decide whether a company can invest Project which make good profit, because forecasting plays a central role in investment valuation methods. Since a lot of company reported their forecast monthly or quarterly. For this specific type of managerial forecast, the properties of the company are readily observable. Thus, these voluntarily disclosed earnings forecasts may be valuable to external stakeholders not only because they provide management's expectations of next period earnings, but also because they reveal information about managers' knowledge of the firm's economic environment and their ability to forecast future business prospects, a major component in the investment decision process.

This paper investigates if the external forecasts can be used to make investment decisions in Chinese stock market's companies. Although prior research uses the cumulative abnormal return (CAR) to form the model. In this paper, I simplify the dependent variable as

the stock price, which can also reflect the company's fluctuation in its stock return. I use the market stock prices as our measure of forecasting quality.

My study contributes to prior research on several aspects. First, my research focuses the several common variables instead of the complex variables from the previous research. Most of the prior capital investment literature focuses on the value created or destroyed by corporate capital investment and on whether firms' level of capital investment falls in line with their investment opportunity set (Hubbard 1998; Stein 2003) my findings also suggest that, when studying the determinants and consequences of managers' earnings guidance, researchers should regard the quality of earnings forecasts as a broader measure of forecasting ability and not simply as a means for providing information about managers' expectations of next period earnings.

Second, my research focuses on the short-term earnings forecasts in the year end. During the year end, most Chinese company must provide the annual report on these days. Therefore, the quality of the forecast may also go up during those periods. The results show that the forecast can be used to make the decision of investment.

## Literature Review

In the early research on the reaction of the earnings forecast market. People verified the importance of the management forecasts. In particular, the release of the forecast by the management layer is related to the huge changes in the earnings, and the unanticipated profits of the management layer are positively related to the returns of the securities in the forecast period. These studies also prove that there is a symmetrical relationship between the prediction error of the management layer and the company's stock price. The former researcher shows that the stock price will rise for the positive earnings forecast error, while the stock price will fall for the negative forecast error.

Subsequent studies began to try to explain the market's different responses to the size of the error in earnings forecasts, and to test management forecasts with different degrees of error. Measure the relationship with changes in security prices. And there is a positive correlation between the degree of response and the prediction error of management. Dempsey points out that the extent to which share prices react to the error in earnings forecasts is also subject to litigation liability. Therefore, the relationship between the security price and earnings forecasts are complicated.

If the scope of the study is defined in the management's profit forecast in the prospect, it is necessary to take Firth and Smith's prior research as an example. They did a lot of studies in this field. Large percentage of those studies have proved that the management prediction has a typical optimistic tendency, and most of the listed companies fail to achieve the goal of profit prediction in the first year after listing. (Firth and Smith, 2007). Based on

this understanding, the market will think that on average, the actual profit of IPO company is lower than the predicted profit. This kind of expectation is likely to become the influence factor of stock price change before the forecast error is published.

From this point of view, scholars expect that the announcement of positive earnings forecast error will reflect a greater degree of information asymmetry, because the market will use positive excess earnings as the return for IPO companies to beat the earnings forecast.

Aswath also tries to compare accounting and cash flow metrics for different types of returns and how best to predict these Numbers for any given business in the future. Past investments and expected future investments can be used to prove whether a company is still valuable (Aswath, 2007). Changes in the company's finances do not keep pace with changes in the company's valuation. Therefore, the new measures help investors determine the company's profitability.

Risk analysis is also a critical part for both internal and external users. Savvakis C describes the stages in the process of applying risk analysis. The interpretation of the results produced by risk analysis applications, including investment decision criteria based on the concept of expected value and various risk measures, is studied (Savvakis C, 1994). Using his research methods, we can come up with more useful and simpler ways to assess a company's risk.

Earnings represent a summary measure of the payoffs from past investments and are precisely what managers are interested in estimating when choosing among alternative investment projects (Graham, Harvey, and Rajgopal 2005). Therefore, managers may use

similar information and skills when generating external revenue forecasts and internal project revenue forecasts. If the external earnings forecast can serve as a useful signal for managers to predict the future investment returns, we expect that the quality of the external forecast will be related to the quality of the subsequent investment. In line with our argument, Trueman (1986) analytically demonstrates the conditions under which management forecasts allow investors to better assess the ability of management to predict changes in the economic environment and adjust production plans accordingly. Managers' ability to predict is driven by two important factors: (I) the availability of high-quality information about internal operations and the external environment, and (II) their ability to process this information when making forecasts. Feng, Li, and McVay (2009) supported the role of information systems in generating high-quality forecasts and found that earnings forecasts provided by managers of companies with significant deficiencies in internal control over financial reporting were less accurate.

While we cannot easily get the individual effects of information system quality and managerial forecasting ability, we note that information systems are designed and implemented by managers to aid them in making better operating decisions. Accordingly, we assume that the accuracy of management forecasts arises from both managers' ability to obtain high quality information, by putting in place appropriate information systems, and their skill in processing and incorporating this information into their forecasts.

Public release of profit forecast may encourage managers to manipulate financial reports or make sub optimal investments to achieve their own profit objectives(Fuller and Jensen 2002; Roychowdhury 2006; Cohen, Mashruwala, and Zach 2010), which would

confound the forecasting ability signal.<sup>10</sup> For example, a manager may appear to have high quality external forecasts, but in reality the manager may have engaged in earnings management and actually has lower forecasting ability (Kasznik 1999). Alternatively, managers may have strong internal forecasting abilities, but strategically bias external forecasts to meet an objective other than forecasting accuracy, such as walking down analysts' earnings expectations, misleading competitors, and manipulating their stock price for insider trading and/or compensation reasons (Cotter et al. 2006; Matsumoto 2002; Aboody and Kasznik 2000). Thus, the quality of the external forecasts may not capture the manager's actual forecasting ability. On the other hand, both the 'settling up' of external forecasts and their recurring nature impose disciplinary and potential legal constraints on managers' freedom to bias their expectations from their internal projections (Baginski, Hassell, and Kimbrough 2002). So, it is unclear to what extent managers make substantive forecast adjustments from their actual expectations.

Second, there are differences in the forecasting horizon between forecasting earnings and forecasting investment payoffs. It is possible that the quality of external forecasts measures only short-term earnings forecasting ability, whereas the successful implementation of commonly used investment valuation methods, requires not only short-term, but also long-term earnings forecasting ability and terminal value estimates. Although these two forecasting tasks are distinct, we expect the quality of the two tasks to be positively related in that they rely on the manager's ability to assess the external economic environment, their firm's place in that environment, potential future changes in competition, demand, technology, production costs, etc., as well as the quality of the firm's internal

information systems. We expect that short-term forecasting ability is a necessary, but not enough, condition for long-term forecasting ability. In other words, on average we expect that managers who are unable to accurately forecast earnings in the short-term will also forecast poorly over longer horizons.

### **Hypothesis Development**

In this research, I will focus on the relationship between the earnings forecast and the profitability in future.

**H1:** The forecast accuracy in Chinese stock market is accurate to help outside investors to make good Investment choices.

### **Methodology**

We use the quality of earnings forecasts instead of the quality of management forecasts because earnings represent the total return on past investment decisions and most of the other management forecasts are internal and cannot be observed by outsiders. To assess the quality of managed earnings forecasts, we looked at the predictive accuracy of previous studies (Bamber et al. 2010). We also use the absolute value of the prediction error to quantify the accuracy of the prediction.

We collect data of China's company earnings forecasts within three years and actual earnings per share (EPS) of those corresponding items from CSMAR database. Using the difference between the management EPS forecast and the actual EPS divided by the stock price we can get the absolute value of accuracy. We also follow prior research (Rogers 2005) to choose the annual forecast because those data are audited annually. Therefore, they are less

likely to be manipulated.

Based on Goodman's previous research methods, we calculated the prediction accuracy measure, that is, the prediction accuracy, that is, the average accuracy of all annual forecasts in the three years before the investment decision. And then we multiply that by negative 1, and we convert that into a way of improving the quality. A long measurement window helps mitigate short-term effects that can affect the quality of forecasts, including earnings management or short-term forecasting "luck", neither of which is likely to last (Hilary and Hsu 2011).

Based on previous research (Asquith, Bruner, and Mullins 1983), we used stock returns before and after the announcement to represent the quality of the investment decision. This method assumes that the market effectively integrates information into stock prices, so that the announced earnings are an unbiased estimate of the effect of the acquisition on the shareholder wealth of the acquiring company.

I collect our acquisition sample from the CSMAR. To test our prediction regarding the relationship between forecast quality and the quality of acquisitions, we use the following regression model:

$$\text{Stock Price} = \gamma_0 + \gamma_1 \text{Forecasting Accuracy} + \gamma_2 \text{ROA} + \gamma_3 \text{Leverage} + \gamma_4 \text{Stock Return} + \gamma_5 \text{Firm Size} + \text{et},$$

Forecasting Accuracy is defined as average accuracy for all annual forecasts issued in the three-year period before the investment decision, then multiply this average by negative one

to transform it into an increasing in-quality measure. The long measurement window helps mitigate short-term effects that may bias forecast quality, including earnings management or short periods of forecasting ‘luck,’ both of which are unlikely to be sustainable (Hilary and Hsu 2011). and we predict  $\gamma_1 > 0$ . Control variables includes leverage, ROA, stock return, and firm size. The regression model also includes industry and the time fixed effects.

However, the forecast accuracy data in CSMAR which only involved the years from 2009 to 2010. Therefore, in this study I transferred the January 1 for 2009 into 2008’s year-end forecast. By this method, it helps the me to filter data into 3782 items.

### **Empirical result**

From the control variables, we know that they have a large distance between the highest price and the lowest price. I already deleted the number which is extremely high or low. Because the number of those item are just one. Those items will make bias to the whole data analysis. Then, I got the data which can be inferred from the summary statistics table.

The total number of the sample is about 3782.

#### **Summary statistics**

	N	Mean	Median	Min	Max
Stock price	3782	18	13.105	.617	224
Forecast accuracy	3782	.02	.009	0	1.311
ROA	3782	.058	.054	-4.16	2.64
Leverage	3782	.501	.482	.011	55.4
Size	3782	21.971	21.705	13.763	30.234
Stock return	3782	.477	.166	-.85	7.937

Forecast accuracy is computed before, which is the absolute value of the difference between the management forecasted EPS minus the actual EPS divided by the stock price. Then we got the data for the forecast accuracy. The data shows that the minimum value is 0, which suggests the value is already absolute. ROA is easy to compute. In this study, it is computed by the income before extraordinary items divided by lag total assets for the fiscal year preceding the investment date/period which followed the previous research. The table shows the median of ROA is equal to 0.054 which suggests the stock return is mostly low in Chinese stock market in the especially in the year end. The minimum return shows that -4.16 which is much higher than maximum value if it is computed by the absolute value. Therefore, the negative tendency can be predicted that when investors get loss from stock market, they earn less than they the loss they occurred in the past. Leverage is computed through the ratio of total liabilities divided by total assets at the end of the fiscal year. The difference between them is obvious. Maximum reach the 55.4 when the minimum just the 0.011. It suggests that some companies they may using huge borrowed money to operates. Or they got some bad days in the operation. Maybe they did not earn enough money to pay for the long-term salary's contract number. The median shows a positive number of 0.482 which suggests most companies can use their assets to pay for the liability parts. And the number illustrates the healthy condition since the company has the mean of 0.501 in leverage. Companies has the double assets compared with the liabilities. Firm size is the reported of their total assets at the end of the fiscal year. From the table we can see that the distance between the maximum and minimum is not huge. Therefore, it suggests that the company I choose is mostly the same size. And the size if the company is also an important factor to determine a company forecast

ability. The larger the company is, the better management structure it may be. And the quality of their externally reported forecast is more able to be trusted by outsiders. Finally, the stock return is also a control variable which is essential and easy to be used in the relation test.

Combined median number and mean number together I found that most of the company they got positive stock return these years period.

**Matrix of correlations**

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Stock price	1.000					
(2) Forecast Accuracy	-0.140	1.000				
(3) ROA	0.198	-0.320	1.000			
(4) Leverage	-0.096	0.067	-0.134	1.000		
(5) Size	-0.122	0.090	0.022	0.002	1.000	
(6) Stock return	0.107	-0.071	-0.002	0.018	-0.121	1.000

Then I use the matrix of correlations to infer the relationship between those variables. Which is shows above. It delivered the information of two variables. When the number is positive, it means that both variables moves in the same direction. When the number is negative, it suggests that one variable increase while the other variable decrease. When the number is close to -1 or 1, it means the relationship between two variables is high. Therefore, refer to the table, we found several unit which is close to 1 but not hugely close to the number.

For the variable of stock price. It is positively related with ROA and Stock return. The number is not close to -1 or 1 which is not an obvious relation within these two variables. And this situation is also happened within other several variables. Then, I found ROA and stock return, they are similar in several ways. The relation between forecast accuracy and

ROA shows the number of -0.320 which is the largest when it counted as absolute value. Therefore, the stock price is more closely associated with forecast accuracy and Return on assets. Although several variables are not significant related with the stock price, then I use the Stata to generate the clearer relationships of those values.

VARIABLES	Stock price
Forecast accuracy	-29.104*** (-4.690)
ROA	20.526*** (9.599)
Leverage	-1.013*** (-4.029)
Size	-0.769*** (-4.681)
Stock return	4.355*** (10.187)
Constant	26.734*** (7.112)
Observations	3,782
R-squared	0.154
Year FE	YES
Industry FE	YES
Adjusted R-squared	0.153

t-statistics in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

From the table above, I also get the similar results compared with the former table. The result shows that the coefficient of Forecast accuracy x stock price is negative and statistically significant with the t-statistics of -4.690. which suggests that forecast accuracy has a small effect on stock price. Similarly, I found the coefficient of leverage and firm size

are also the same negative similar amount number. Each of them suggests that they are not significantly influence the stock price.

The t-statistics of ROA and stock return shows the positive number of 9.599 and 10.187, which suggests that ROA and stock return have a positive relationship with stock price. And it proved the prior table's conclusion. Therefore, we can infer that the ROA and stock return are the factors which contributes to the high price of the stock in Chinese market.

### **Conclusion**

The accuracy of the externally reported forecast is useful for investors in American stock market but not the Chinese company. There are many factors which caused the stock price to increase or decrease. Especially in Chinese market, the fluctuation of the stock price is extremely abnormal sometimes. Some investors may consider the central government's arrangements may cause the issue. However, the Chinese stock market is still growing nowadays. There still exists several other factors which make the forecasts unstable especially on the stock price. In this way, the stock price cannot really show the companies' real commission circumstances. Moreover, the international interferences within the country also caused the unstable of the stock market. The price of the stock fluctuated frequently in the short period of time. Therefore, this research has several shortcomings by following the prior research. Because each state's economic situation is quite different sometimes.

The statistical analysis result shows the association between several variables with the stock price. The target forecast accuracy is negatively associated with the stock price,

which overturns the hypothesis. Therefore, the companies' externally reported forecasts cannot be used to predict the future stock price or making investment decisions.

If research get enough stock market's accuracy report for a several decades, maybe the result of the research will make a difference. Due to the limited data resources of the CSMAR, only three years report can be used to calculate the forecasts accuracy. However, the large amount of data also contributes to the model's statistical analysis, which shows the ROA and stock returns' association with stock price. Therefore, the annual report or the quarterly report is demonstrated to be a good tool to make the future stock price investment decisions.

Moreover, the externally reported forecasts also necessary for investors to make decision. The companies should keep doing the forecast quarterly. Even though the results do not show the importance of the companies' forecast. In the long run, the companies' forecasting ability will grow up. And the quality and accuracy of the forecasts also makes a difference.

Some researchers also find that there exists manipulation on the external reported forecast to influence the stockholders to understand the abnormal situation within the company. Therefore, there exists fraud that the company may want to make up. For example, the company which sell sea food announced recently that their inventory in the sea disappeared by hard environment condition under the sea. By this way, the company have its explanation for the new forecasts. The people who get hurts may not be the company but the shareholder of the company. So, the government in China may need to set more specific rules

to deal with the forecast events or news of the internal message come out from the company.

In case the people get the profits by making the fake forecasts for the company. Strict

punishment or other new implementation may need in the future stock market.

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## Appendix

<b>Variable</b>	<b>Definition</b>
<i>Forecast Accuracy</i>	Average accuracy of all annual management forecasts issued in the three years prior to the investment date/period (for acquisitions and capital expenditures, respectively). For each forecast, accuracy is measured as the absolute value of the difference between the management forecasted EPS minus the actual EPS divided by the stock price three days prior to the management forecast release date. The management forecast is either a point estimate or the mid-point of a range estimate of a firm's annual earnings. Accuracy is multiplied by minus one to transform it in an increasing-in-quality measure.
<i>Firm Size</i>	Natural log of total assets at the end of the fiscal year preceding the investment date/period.
<i>Leverage</i>	Leverage computed as the ratio of total liabilities to total assets at the end of the fiscal year
<i>Return on Assets (ROA)</i>	Income before extraordinary items divided by lag total assets for the fiscal year preceding the investment date/period.
<i>Stock Returns</i>	Buy and hold stock return in the fiscal year preceding the investment date/period.