Analysts' long-term earnings growth forecasts and past firm growth

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Abstract

Many studies show that analysts' consensus forecasts of long-term earnings growth have poor informational value. As one of the reasons, they point out analysts' strong preferences for firms with good past performance. In this paper, we analyze not only consensus forecasts but also most aggressive as well as most conservative forecasts, and examine how analysts' forecast of firm's long-term earnings growth is influenced by firm's past performance. We find that the influence of past performance is especially pronounced in the most conservative forecast, indicating that a good past performance especially decreases conservative forecasts with regard to firm's long-term earnings growth. Also, further analysis reveals that a conservative growth forecast is less informative in terms of predicting high-growth firms. This finding supports our hypothesis that the reason for the strong influence of past performance on the most conservative forecast is that such a forecast is not based on enough information or detailed analysis.

1. Introduction

Expectations about long-term earnings growth are crucial to stock price valuations. Many valuation models rely on long-term growth forecasts for estimating the intrinsic value of a firm's stock (e.g., Frankel and Lee, 1998; Gebhardt et al., 2001). In light of this demand, a competitive market would induce financial analysts to issue accurate forecasts of firms' long-term earnings growth. However, their forecasts are often criticized for being too optimistic, and failing to forecast high-growth firms (La Porta, 1996). As the reason of poor informational value of their forecast, several studies point out irrational extrapolation of firms' past performance into future. Chan et al. (2003) report that analysts tend to extrapolate firms' past earnings growth into the future[1]; although there is no persistence in earnings growth beyond chance, analysts are overly optimistic about firms with good past growth and overly pessimistic about firms with poor past growth. Billings and Morton (2001) also report a positive relation between past stock return and analyst' long-term growth forecast errors; analysts are overly optimistic for past winners and overly pessimistic for past losers.

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1 Another possible explanation draws on the fact that an analyst is employed by a brokerage firm. Aggressive forecasts may generate investment banking business from firms that receive the aggressive forecast (Dugar and Nathan, 1995; Hunton and McEwen, 1997; Dechow et al., 2000) or may boost trading of the firm which could increase the commission income of their brokerage firms (Kim and Lustgarten, 1998).

The influence of past performance on analysts' long-term profit forecasts could be explained by findings in psychology studies that individuals' forecasts are susceptible to cognitive biases (Kahnemann and Riepe, 1998; Fisher and Statman, 2000). For instance, by the confirmation bias, individuals tend to refer to only evidences that support their beliefs. Because of this behavior, their forecasts will be bullish for firms with good past performance and bearish for firms with poor past performance.

These arguments are mainly based on an examination of analysts' consensus forecasts of firms' long-term earnings growth (average or median values of analysts' forecasts). However, a good past performance does not always induce analysts to be equally optimistic; such a performance could especially influence an analyst with an aggressive (optimistic) view of the firm's earnings growth in the future, or it could especially influence an analyst with a conservative (pessimistic) view. In this paper, we investigate not only the consensus forecast but also the most aggressive (highest) as well as the most conservative (lowest) forecast, and examine how analysts' long-term growth forecasts are influenced—and deteriorated—by extrapolation of firm's past performance into the future, and explore the reasons.

For this purpose, we calculate the adjusted most aggressive forecast and conservative forecast, which can be considered as additional information of those forecasts over the analysts' consensus forecast. Then, we examine the influence of firms' past performance on these adjusted forecasts. The result reveals that the most conservative forecast (adjusted) has a strong positive relationship and the most aggressive forecast (adjusted) has a certain negative relationship with past firm performance. This indicates that extrapolation of past performance into the future is especially pronounced in conservative forecasts; in other words, good past performance especially decreases conservative growth forecasts.

We, then, examine the underlying reasons behind our findings. Tversky and Kahneman (1974) show that if there is high information uncertainty, investors' cognitive biases, which can induce analysts' extrapolation behavior, become strong. Thus, we hypothesize that the reason for the strong influence of past performance on the most conservative forecast is that the conservative forecast is not based on enough information or detailed analysis. To test this hypothesis, we examine whether a conservative forecast is less informative than the consensus forecast in terms of forecasting high-growth firms, and whether an aggressive forecast is more informative than the consensus forecast. Our analysis shows poor informational value for the most conservative forecast compared with consensus forecasts, as well as additional informational value for the most aggressive forecast. This result supports our hypothesis.

The paper proceeds as follows. Section 2 analyzes the influence of past performance on the most

aggressive and the most conservative forecasts. Section 3 explores the reason for the strong influence of firm‘s past performance on the most conservative forecast. Section 4 documents several robustness tests for our results. We summarize our findings in Section 5.

2. Influence of firm’s past performance

2.1 Methodology

In this paper, we try to evaluate the influence of firms’ past performance on the most aggressive and the most conservative forecasts relative to the consensus forecast. For this purpose, we first calculate the adjusted value of the most aggressive and conservative forecasts. These can be regarded as the additional aggressiveness/conservativeness of the most aggressive/conservative forecast relative to the consensus forecast. Then, we evaluate the influence of firms’ past performance, represented by several indicators, on these adjusted forecasts. In this section, we first explain the data and the definitions of the adjusted forecasts and several indicators of past performance; we then explain the methodology.

2.1.1 Data

Our sample of analysts’ earnings forecasts is obtained from the Institutional Brokers Estimate System (IBES) Summary unadjusted file. Our data come from the stocks listed on the New York Stock Exchange (NYSE), American Stock Exchange (Amex), or NASDAQ; each stock receives at least three long-term earnings growth forecast. We exclude shares of non-US firms, and low-grade stocks[2].

2.1.2 Definition of adjusted forecasts

The most aggressive (highest) long-term earnings growth forecast for firm *i* at time *t* is denoted as $hLTG_{i,t}$; the most conservative (lowest) long-term earnings growth forecast is denoted as $lLTG_{i,t}$; and the consensus forecast, which is a median value of the analysts’ forecasts, is denoted as $mLTG_{i,t}$. the adjusted $hLTG_{i,t}$ and the adjusted $lLTG_{i,t}$ as additional information of $hLTG_{i,t}$ and $lLTG_{i,t}$ apart from the consensus forecast $mLTG_{i,t}$ are calculated as follows: (i) we first divide all the firms into ten groups based on $mLTG_{i,t}$; (ii) we then normalize $hLTG_{i,t}$ - $mLTG_{i,t}$ (the difference between the most aggressive and the consensus forecasts) and $lLTG_{i,t}$ - $mLTG_{i,t}$ within each group. The reason why we re-adjust $hLTG_{i,t}$ - $mLTG_{i,t}$ and $lLTG_{i,t}$ - $mLTG_{i,t}$ by $mLTG_{i,t}$ is that there is a positive relationship between these values and the consensus forecast[3].

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2 Defined as stocks whose share price is less than one dollar (i.e., penny stocks).

3 Because the relationships between $hLTG_{i,t}$ - $mLTG_{i,t}$ and $mLTG_{i,t}$ as well as between $lLTG_{i,t}$ - $mLTG_{i,t}$ and $mLTG_{i,t}$ are non-linear, we do not apply liner adjustment on the forecasts.

2.1.3 Firm's performance indicators

As candidates for past firm performance, we list the following indicators.

Profit growth - We include the geometric average of yearly growth rates of profit for over 3 (or 5) years; Following Chan et al.'s (2003) argument, profit is defined by the past four quarters' earnings per share (EPS) and dividend per share (DPS) because an evaluation of profit growth should be irrelevant to dividend payout policies. Then, we normalize the geometric average of the yearly growth rate. In addition, because the growth rate cannot be calculated when profits are negative, we handle such cases as follows. We scale the yearly change in profit by the stock price as of the base year *t* for firm *i* as $(EPS_{i,t+1}+DPS_{i,t+1}-EPS_{i,t}-DPS_{i,t})/P_{i,t}$, and normalize the 3- or 5-year average of the changes. This normalized value of the profit change relative to price is assigned to the firm with negative profit.

Stock return - Since past firm performance could be caught by a stock return, we include logged stock total returns for over 36 or 60 months.

Sales growth - We also include the geometric average of yearly growth rates of sales per share for over 3 or 5 years.

Valuation indicators - We also include the valuation indicators, book value to price ratio, cash flow to price ratio, and earnings to price ratio. To calculate these indicators, we use the most recent reported book value per share and the EPS and cash flow per share for the past four quarters. Lakonishok et al. (1994) argue that the existence of glamour stocks, which can be identified by these valuation indicators, could be due to investors' extrapolation of past performance into the future. Thus, these valuation indicators could become reverse indicators of firms' past performance.

However, we should note that the purpose of our study is in-depth analysis in terms of how analysts' preference for firms with good past performance deteriorates the informational value of their long-term earnings growth forecasts. Thus, we should analyze whether their preferences for good-performance firms identified by the firms' past-performance indicators could lower the informational value of their forecasts. For this, we examine whether the realized profit (EPS and DPS) growth is lower for firms with higher past profit growth, higher past sales growth, higher stock return, and more overvalued (glamour) stocks[4]. On the basis of each past-performance indicator, at the end of each month, the firms are assigned to one of five groups, from Q1 (the highest) to Q5 (the

[4] Two firms can offer the same expected return, but have different earnings growth rates because of their dividend payout policies. From an investor's standpoint these two stocks would be considered equivalent. Thus, we use the realized growth of EPS and DPS, instead of using the realized earnings growth.

lowest)[5]. Then, we compare the normalized value of the average realized profit growth for over 3 and 5 years between the groups[6]. When using the indicators of profit growth, stock return, and sales growth, we examine whether the realized profit growth is significantly lower for Q1 than Q5. When using valuation indicators, we examine whether the realized profit growth is significantly lower for Q5 than Q1[7].

The result, shown in Table I, reveals that normalized realized profit growth for over 3 or 5 years is significantly lower for firms with high past profit growth and for those with high past stock return. On the other hand, we cannot say that the realized growth is significantly lower for firms with high past sales growth or for glamour stocks. From these results, it is quite possible that analysts' preference for firms with high past profit growth and for those with high stock return decreases the informational value of their long-term growth forecast. Therefore, we utilize the 3- and 5-year profit growth and 36- and 60-month stock return as the past-performance indicator.

[Table I]

2.1.4 Evaluating influence of past performance on the forecast

We compare the influence of firms' past performance on extreme forecasts (the most aggressive and the most conservative) relative to the consensus forecast. For this purpose, the following procedures are performed. First, at the end of each month from January 1987 to December 2006 (20 years), all the firms are divided into five portfolios from Q1 (the highest) to Q5 (the lowest) on the basis of 3- and 5-year profit growth and 36- and 60-month stock returns; Q1 includes firms with good past performance and Q5, firms with poor past performance. Then, the averages of the adjusted most aggressive and most conservative long-term earnings growth forecasts, are calculated for each group. In particular, we compare the Q1 value with the Q5. If the adjusted most aggressive/conservative forecast is significantly higher for Q1 than Q5, we can say that the most aggressive/conservative forecast is more influenced by the firm's past performance than the

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[5] The period investigated for the 3-year realized profit growth is January 1987 to December 2005 and 5-year realized profit growth is January 1987 to December 2003.

6 For minimizing the survivorship bias in evaluating the realized profit growth, we consider the normalized value of the average profit change relative to price over the maximum available period as the non-surviving firm's normalized realized profit growth.

[7] All significance tests in our study are performed on the basis of autocorrelation-consistent t-statistics, also used by Jegadeesh et al. (2004). How to calculate the t-statistic is described in the appendix to their work. The parameter setting with regard to the number of non-zero serial covariance for calculating the t-statistics is described in each table as a footnote.

consensus forecast. On the other hand, if the adjusted most aggressive/conservative forecast is significantly lower for Q1 than Q5, it is likely that the most aggressive/conservative forecast is less influenced by past performance.

2.2 Results

Table II shows the influence of firm's past performance on the most aggressive and the most conservative forecasts relative to the consensus forecast. The result reveals that the adjusted most aggressive forecast is significantly lower for Q1 than for Q5 when we use the 36- or 60-month return or the 5-year profit growth as past-performance indicator. However, there is no significant difference between Q1 and Q5 in the adjusted most aggressive forecast when the 3-year profit growth is used. In addition, the difference between Q2 and Q4 in the adjusted most aggressive forecast is insignificant when using the 3- or 5-year profit growth. Thus, although it is likely that the influence of past performance is lower on the most aggressive than the consensus forecast, we cannot confirm a large difference in the influence between them. On the other hand, the adjusted most conservative forecast is significantly higher for Q1 than for Q5, whichever past-performance indicator is used. In addition, the adjusted most conservative forecast is significantly higher for Q2 than for Q4. Therefore, it is highly likely that the influence of firms' past performance is higher on the most conservative forecast than on the consensus forecast.

These results indicate that the influence of past performance is especially strong on the most conservative forecast; in other words, the extrapolation of past performance into the future decreases informational value of the long-term growth forecast in such a way that good firm's past performance decreases conservative forecasts with regard to firm's long-term earnings growth.

[Table II]

3. The reason for the influence of past performance on the conservative forecast

3.1 Methodology

In this section, we examine why extrapolation of firm's past performance into the future is especially pronounced in the most conservative forecast. Analysts' cognitive biases (e.g., confirmation bias and representativeness heuristics) could become one of the reasons why analysts extrapolate past performance into the future. In addition, Tversky and Kahneman (1974) argue that information uncertainty strengthen these cognitive biases. Thus, we can state a hypothesis that the reason for the strong influence of firms' past performance on the most conservative forecast is that the conservative forecast is not based on enough information or detailed analysis. It is highly likely that the long-term growth forecast made without considerable information or detailed analysis contains little information in terms of future firm profit growth. To test our hypothesis, we examine

whether the informational value with regard to forecasting high-profit-growth firms is lower for the most conservative forecast than for the consensus forecast[8].

For checking the poor informational value of the most conservative forecast relative to the consensus forecast, we examine whether the realized profit growth is lower for firms with the higher adjusted most conservative forecast. In addition, we also analyze whether the higher adjusted most aggressive forecast predicts higher future profit growth, for eliminating the possibility that the poor informational value of the conservative forecast is due to divergence from the consensus (extremeness of the forecast).

At the end of each month, all the firms are assigned to one of five groups from H1 (the highest) to H5 (the lowest) on the basis of the adjusted most aggressive forecast, and from L1 (the highest) to L5 (the lowest) on the basis of the adjusted most conservative forecast. We compare the average of the realized 3- and 5-year profit growth rates between H1 and H5 and between L1 and L5[9]. However, since the difference in informational value could be due to the difference in preference for firms with good past performance, we should eliminate the influence of preference for firms with good past performance from the evaluation of profit growth predictability. For this purpose, based on the matching procedure of Daniel et al. (1997), we calculate the characteristic-adjusted profit growth (CAG), which is adjusted by the 5-year profit growth and 36- and 60-month returns as follows[10]: we, first, sort the firms into 5-year profit growth quintiles, then, within each quintile, into 36-month return quintiles and, finally, within each 5X5 quintile, into 60-month return quintiles. To calculate the adjusted growth rate for each firm, we subtract the average normalized realized profit growth of the group to which that firm belongs from the normalized realized profit growth of the firm. This procedure is applied to the 3- and 5-year realized profit growth (3- and 5-year CAG).

For evaluating the additional informational value of the most conservative and the most aggressive forecasts relative to the consensus forecast, we compare the 3-year and 5-year CAGs between L1 and L5 and between H1 and H5. If the CAG is significantly lower for L1 than for L5, it is likely that the most conservative forecast is less informative than the consensus forecast in terms

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[8] We can evaluate the informational value of the forecasts by their return predictability. However, return predictability is determined by not only accuracy of its growth forecast but also the investor's response to the forecast. Thus, it is much better and much more straightforward to evaluate the informational value of the forecast by whether it can forecast high-profit-growth firms.

[9] The period investigated for the 3-year realized profit growth is January 1987 to December 2005 and for the 5-year realized profit growth is January 1987 to December 2003.

[10] The 3-year profit growth is not included as an adjustment factor for calculating the adjusted profit growth, because the preference for firms with high past 3-year profit growth is relatively weak for both forecasts.

of forecasting high-earnings growth firms. On the other hand, if the CAG is significantly higher for H1 than H5, it is likely that the informational value is higher for the most aggressive forecast than for the consensus forecast.

3.2 Results

The result, shown in Table III, reveals that both the 3-year and 5-year CAGs are significantly lower for L1 than for L5, indicating that the most conservative forecast is less informative than the consensus forecast in terms of forecasting high-growth firms. In addition, both the 3-year and 5-year CAGs are significantly higher for H1 than for H5, indicating that the informational value is higher for the most aggressive than the consensus forecast; This result denies the possibility that the poor informational value of the conservative forecast is due to divergence from the consensus forecast. Therefore, these results support our hypothesis that the reason for the strong influence of past performance on the most conservative forecast is that the conservative forecast is not based on enough information or detailed analysis.

Our finding (i.e., poor informational value of the most conservative forecast) is consistent with the argument of previous studies with regard to the analysts' incentive structure problem. Analysts earn a percentage on commissions from stock sales (Kim and Lustgarten, 1998) and get rewarded whenever their employer wins investment banking deals (Dugar and Nathan, 1995; Hunton and McEwen, 1997; Dechow et al., 2000). This incentive structure induces analysts to follow stocks for which they have an optimistic outlook; on the other hand, it discourages their careful analysis for firms for which they have a poor outlook (McNichols and O'Brien, 1997). It is quite possible that this analyst incentive problem lowers the informational value of the conservative (pessimistic) forecast.

[Table III]

4. Robustness tests and discussion

4.1 Difference in analyst opinion

In this section, we examine the consistency of our findings with previous studies about the differences in analyst opinion (analyst forecast dispersion).

4.1.1 Negative relation between difference in analyst opinion and past performance

The strong influence of firms' past performance on conservative long-term earnings growth forecasts could indicate that analysts' opinions with regard to firm's long-term earnings growth differ less for firms with good past performance. On the other hand, Diether et al. (2002) show that analyst opinion on future earnings differs less for past winners than for losers. Thus, there is the possibility

that our finding is subsumed by this negative relationship between the difference in analyst opinion and momentum. However, in their study, the difference in analyst opinion is evaluated by the dispersion in short-term earnings forecasts, defined by the standard deviation of analysts' short-term earnings forecasts denominated by the absolute value of the mean forecast. Thus, to test this possibility, we should examine whether there is also a negative relationship between the differences in analyst opinion with regard to long-term earnings growth and past firm performance.

For this analysis, at the end of each month, we divide the firms into 5 groups on the basis of 3- and 5-year profit growth and 36- and 60-month stock returns. Then, as a proxy for the differences in analyst opinion on long-term earnings growth, the average of dispersion in analysts' long-term earnings growth forecasts (defined by the standard deviation of analysts' long-term earnings growth forecasts for the firm) is calculated for each group. Then, we examine whether the dispersion in analysts' long-term earnings growth forecasts is lower for Q1 than for Q5.

The result, shown in Table IV, does not support a negative relationship between a dispersion in long-term earnings growth forecasts and past performance. Further, when the 3-year profit growth is used as a past-performance indicator, the dispersion in long-term earnings growth forecasts is higher for Q1 than for Q5, indicating a positive relationship between the dispersion and the 3-year profit growth. At least, it can be denied that there is a significant negative relationship between the differences in opinion with regard to the firm's long-term earnings growth and past performance. Therefore, it can be said that a strong influence of the firm's past performance on the most conservative forecast cannot be subsumed by the findings of Diether et al. (2002).

[Table IV]

4.1.2 Negative relationship between difference in analyst opinion and future return

Diether et al. (2002) also show a negative relationship between the differences in analyst opinion and future stock return. Following Miller (1977), they argue that stocks with high differences in analyst opinion are overpriced because the limitation of short sales prevents the conservative opinions from being incorporated into stock prices. Their argument is based on the assumption of additional value for conservative forecasts. Thus, our finding of poor informational value for the most conservative forecast seems to be inconsistent with their argument. However, we should again note that they define the differences in analyst opinion by the dispersion in short-term earnings forecasts. Therefore, we should examine whether higher differences in analyst opinion with regard to firms' long-term earnings growth also predicts lower future stock return.

For that purpose, at the end of each month, all the firms are assigned to one of five groups from Q1 to Q5 on the basis of the dispersion in analysts' long-term earnings growth forecasts. The average

stock return over the following month is calculated for each group. Also, we utilize returns that are risk-adjusted by the Fama-French three-factor model with Carhart's (1997) momentum factor to evaluate the return predictability of dispersion in long-term earnings growth forecasts. Then, we examine whether the stock return is lower for Q1 than Q5.

The result, shown in Table V, provides no support for the negative relationship between differences in analyst opinion with regard to firms' long-term earnings growth and future stock return. The risk-adjusted return is significantly higher for Q1 than for Q5. This could indicate poor informational value of the most conservative forecast (because of their poor informational value, the limitation of incorporating conservative forecasts into stock prices does not result in lower future return). Otherwise, this result could counter Diether et al.'s (2002) argument of the negative relationship between differences in analyst opinion and future stock return which is also criticized by several studies (e.g., Johnson, 2004; Cen et al., 2007)[11]. Whatever the indication of this results, at least, it can be said that there is no negative relationship between future stock return and differences in analyst opinion with regard to firms' long-term earnings growth. Thus, there is no inconsistency between poor informational value of the conservative forecast and the negative relationship between dispersion in analysts' short-term earnings forecasts and future return.

[Table V]

4.2 Analyst coverage

The number of analysts following the firms (analyst coverage for the firm) could influence the diversity of forecasts and in turn could affect the adjusted most aggressive and conservative forecasts. Thus, we should examine whether our finding of the strong influence of past performance on the most conservative forecast is driven by differences in analyst coverage.

For this purpose, we adjust the most aggressive and the most conservative forecasts by both the consensus forecast and analyst coverage as follows: (i) we first divide all the firms into ten groups based on $mLTG_{i,t}$ (the consensus forecast); (ii) we then divide all the firms into ten groups on the basis of analyst coverage of the firms; (iii) finally, within each group, we normalize $hLTG_{i,t}$ - $mLTG_{i,t}$ (difference between the most aggressive forecast and the consensus forecast) and $lLTG_{i,t}$ - $mLTG_{i,t}$ (difference between the most conservative forecast and the consensus forecast) within each group. On the basis of these adjusted forecasts, we examine the influence of firms' past performance on the

[11] Johnson (2004) argues that forecast dispersion is not an appropriate proxy for the difference in analysts' opinion. In addition, Cen et al. (2007) show that the negative relationship between future return and the difference in analysts' opinion (standard deviation of short-term earnings divided by absolute value of the mean forecast) is mainly due to the effect of its denominator (absolute value of the mean forecast).

extreme forecasts by applying the methodology explained in Section 2.

This result, shown in Table VI, reveals that the adjusted most conservative forecast is still higher for Q1 (firms with good past performance) than for Q5 (firms with poor past performance), whichever past-performance indicator is used. In addition, the adjusted most conservative forecast is still significantly higher for Q2 than for Q4. This indicates that, even if the forecasts are adjusted by analyst coverage, the influence of firms' past performance is still higher on the most conservative forecast than on the consensus forecast.

[Table VI]

4.3 Influence of the outlier of actual profit growth rate

In Section 3, the realized profit growth rate is used to evaluate the informational value of the forecast. Since a relatively low base year profit often introduces large outliers of growth rate, we should examine whether these outliers have an influence on our final result (i.e., poor informational value of the most conservative forecast and additional informational value of the most aggressive forecast). For this purpose, outlier adjustment is performed for the normalized 3- and 5-year profit growth rates as follows: (i) all data higher than 3 are set at 3; (ii) all data lower than -3 are set at -3. Then, we calculate the CAG on the basis of the outlier-adjusted growth (we call this the outlier-adjusted CAG).

Table VII shows the informational value of the most aggressive and the most conservative forecasts on the basis of the outlier-adjusted 3- and 5-year CAGs. The result reveals that both the outlier-adjusted CAGs are higher for H1 than for H5 and lower for L1 than for L5. Even if outlier adjustment is performed for the profit growth rate, we can observe the poor informational value of the most conservative and additional value of the most aggressive forecast.

[Table VII]

4.4. Forecast herding

As mentioned in Subsection 4.1, our result, which implies a strong influence of firms' past performance on the most conservative forecasts, could indicate that dispersion in long-term earnings growth forecasts is lower for firms with good past performance. Thus, there is a possibility that the influence of past performance is due to herding behavior within high-growth firms.

However, this interpretation is inconsistent with several previous findings. Zhang (2006) shows that information uncertainty is higher for high-growth firms than for low-growth firms. In addition, Trueman (1994) argues a negative relationship between information uncertainty and herding behavior: lower information uncertainty induces higher herding behavior. Based on both arguments,

it is likely that forecast herding are especially strong for firms with poor past performance. Thus, it is unlikely that our findings about the influence of firms' past performance on the most conservative forecast can be explained by analysts' herding behavior.

5. Conclusions

In this paper, by analyzing not only the consensus forecast with regard to firms' long-term earnings growth but also the most aggressive as well as the most conservative forecasts, we examine how analysts' long-term growth forecasts are influenced and deteriorated by extrapolation of firm's past performance into the future, and explore the reasons The findings in this paper are as follows.

First, we find that the influence of firms' past performance is much stronger on the most conservative forecast. This result indicates that the informational value of long-term growth forecasts is decreased by the extrapolation of past performance in a way that good past performance especially decreases conservative growth forecasts.

Second, we find that the most conservative forecast is much less informative than the consensus forecast in terms of predicting future high-growth firms, while the most aggressive forecast is much more informative. It is likely that the forecast made without considerable information and detailed analysis contains little information about future profit growth. Thus, the finding supports our hypothesis that the reason for the strong influence of firms' past performance on the most conservative forecast is that conservative forecasts are not based on enough information or detailed analysis.

Our findings further explain why the long-term earnings growth forecast fails to provide information about future firm growth. As Chan et al. (2003) point out, the long-term earnings growth, on average, is optimistic compared with the actual growth rate. Thus, it is natural to attribute the poor informational value of long-term growth forecasts to the excessively optimistic (aggressive) forecasts issued by an analyst who believes in strong persistence of firm's excellent past performance. However, our analysis reveals that the poor informational value is due to the most conservative forecast rather than most aggressive forecast; conservative analysts fail to issue conservative (pessimistic) forecasts for firms with low future profit growth. This finding could be understood in line with the analysts' incentive structure problem. The incentive structure discourages analysts from focusing on firms with a pessimistic view. The poor incentive to voice conservative or pessimistic views could make conservative forecasts less informative, enforcing the influence of past performance on conservative forecasts.

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Table I

Relationship between past performance indicators and future growth

To construct the table, we sort all firms into quintiles by each past performance indicator. In each table, we show the normalized realized 5- and 3-year profit growth rates. Q1–Q5 represents the difference in mean value of the realized growth between Q1 and Q5. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11 for valuation indicators and at 35 for the others.

(a) 36-month stock return

	36-month past stock return					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	0.033	-0.066	-0.115	-0.081	0.135	-0.102 (-1.35)
Normalized 3-year growth	0.006	-0.074	-0.106	-0.083	0.139	-0.133 (-2.39)

(b) 60-month stock return

	60-month past stock return					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	0.013	-0.092	-0.144	-0.088	0.136	-0.123 (-1.68)
Normalized 3-year growth	-0.012	-0.094	-0.126	-0.073	0.115	-0.127 (-2.31)

(c) 3-year profit growth

	3-year past profit growth					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	-0.110	-0.123	-0.136	-0.187	0.296	-0.406 (-6.40)
Normalized 3-year growth	-0.173	-0.129	-0.134	-0.182	0.331	-0.504 (-8.92)

(d) 5-year profit growth

	5-year past profit growth					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	-0.093	-0.142	-0.132	-0.199	0.278	-0.372 (-5.19)
Normalized 3-year growth	-0.141	-0.159	-0.129	-0.192	0.303	-0.444 (-6.08)

(e) 3-year sales growth

	3-year past sales growth					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	0.039	-0.021	-0.108	-0.093	0.060	-0.021 (-0.36)
Normalized 3-year growth	0.001	-0.050	-0.089	-0.070	0.068	-0.067 (-1.11)

(f) 5-year sales growth

	5-year past sales growth					
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Normalized 5-year growth	0.042	-0.045	-0.082	-0.092	0.005	0.036 (0.71)
Normalized 3-year growth	0.018	-0.069	-0.070	-0.084	0.025	-0.007 (-0.50)

(g) Book to price ratio

	Book to Price Ratio					
	Q5(Low)	Q4	Q3	Q2	Q1(High)	Q5-Q1
Normalized 5-year growth	0.006	-0.080	-0.058	-0.028	0.111	-0.104 (-1.84)
Normalized 3-year growth	-0.014	-0.072	-0.068	-0.037	0.101	-0.115 (-1.64)

(h) Earnings to price ratio

	Earnings to Price Ratio					
	Q5(Low)	Q4	Q3	Q2	Q1(High)	Q5-Q1
Normalized 5-year growth	-0.339	-0.223	-0.120	-0.015	0.377	-0.715 (-15.67)
Normalized 3-year growth	-0.407	-0.243	-0.161	-0.042	0.398	-0.805 (-16.00)

(i) Cash flow to price ratio

	Cash Flow to Price Ratio					
	Q5(Low)	Q4	Q3	Q2	Q1(High)	Q5-Q1
Normalized 5-year growth	-0.070	-0.143	-0.081	0.007	0.180	-0.250 (-7.40)
Normalized 3-year growth	-0.098	-0.145	-0.091	-0.012	0.169	-0.267 (-6.73)

Table II

The influence of past firm performance on extreme forecasts

To construct the table, we sort all firms into quintiles by 36-month (Table II [a]) and 60-month (Table II [b]) past stock returns, and 3-year (Table II [c]) and 5-year (Table II [d]) past profit growth. The table values represent the averages of normalized adjusted most aggressive and normalized adjusted most conservative forecasts for each quintile across 240 months. Q1–Q5 represents the difference between Q1 and Q5 mean values. Q2–Q4 represents the difference between Q2 and Q4 mean values. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11.

(a) 36-month stock return

	36-month past stock return						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	0.036	-0.074	-0.073	-0.002	0.155	-0.119 (-2.34)	-0.071 (-1.94)
The most conservative forecast	0.065	0.082	0.049	-0.059	-0.266	0.331 (6.30)	0.142 (4.47)

(b) 60-month stock return

	60-month past stock return						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	-0.010	-0.093	-0.064	0.024	0.192	-0.202 (-5.70)	-0.118 (-3.10)
The most conservative forecast	0.068	0.073	0.033	-0.072	-0.260	0.328 (8.43)	0.145 (5.10)

(c) 3-year profit growth

	3-year past profit growth						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	0.076	-0.092	-0.100	-0.128	0.136	-0.059 (-1.11)	0.036 (0.90)
The most conservative forecast	-0.005	0.091	0.046	0.031	-0.174	0.169 (4.12)	0.060 (1.96)

(d) 5-year profit growth

	5-year past profit growth						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	0.014	-0.121	-0.068	-0.121	0.190	-0.176 (-2.80)	0.000 (0.00)
The most conservative forecast	0.005	0.094	0.001	0.013	-0.170	0.175 (5.38)	0.081 (3.18)

Table III

Informational value of extreme forecasts

To construct the table, we sort all firms into quintiles in each month by the adjusted most aggressive and adjusted most conservative forecasts. In each table, we show the characteristic adjusted 5-year (CAG [5 year]) and 3-year (CAG [3 year]) profit growth rates. Table III (a) shows the result for the most conservative and Table III (b) for the most aggressive forecast. H1–H5 represents the difference between the mean CAG values for H1 and H5. L1–L5 represents the difference between the mean CAG values for L1 and L5. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11.

(a) The most conservative forecast

	L1(High)	L2	L3	L4	L5(Low)	L1-L5
CAG(5 year)	-0.012	-0.017	-0.015	0.006	0.036	-0.050 (-1.98)
CAG(3 year)	-0.020	-0.016	-0.016	-0.003	0.056	-0.076 (-2.48)

(b) The most aggressive forecast

	The most aggressive forecast					
	H1(High)	H2	H3	H4	H5(Low)	H1-H5
CAG(5 year)	0.068	0.000	-0.021	-0.015	-0.033	0.101 (3.72)
CAG(3 year)	0.063	0.008	-0.016	-0.026	-0.030	0.093 (3.21)

Table IV

Relationship between dispersion in long-term growth forecast and past performance

To construct the table, we sort all firms into quintiles by 36- and 60-month past stock returns and 3- and 5-year past profit growth. The table shows mean values of dispersion among long-term growth forecasts of analysts covering the firm (i.e., the standard deviation of the long-term earning growth forecasts). Q1–Q5 represents the difference between the mean dispersions for Q1 and Q5. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11.

Divided by	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
36-month past stock return	0.046	0.034	0.032	0.035	0.046	0.000 (-0.15)
60-month past stock return	0.042	0.033	0.031	0.035	0.044	-0.003 (-1.23)
3-year past profit growth	0.044	0.035	0.034	0.029	0.040	0.005 (2.34)
5-year past profit growth	0.040	0.031	0.035	0.028	0.039	0.001 (0.64)

Table V

Relationship between dispersion in long-term growth forecast and future return

To construct the table, we sort all firms into quintiles by dispersion among long-term growth forecasts of analysts covering the firm (i.e., the standard deviation of the long-term earning growth forecasts for the firm). Raw return represents the average stock return over the following month across 240 months. The four-factor adjusted return represents the average risk-adjusted return by the Fama-French three-factor model along with Carhart's momentum factor. Q1–Q5 represents the difference between Q1 and Q5 mean values. The figures in parentheses are t-statistics.

	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5
Raw return	1.43%	1.25%	1.31%	1.27%	1.19%	0.24% (0.27)
Four-factor adjusted return	0.90%	0.65%	0.62%	0.54%	0.52%	0.37% (2.01)

Table VI

Influence of past firm performance on forecasts after considering analyst coverage

To construct the table, we sort all firms into quintiles by 36-month (Table VI [a]) and 60-month (Table VI [b]) past stock returns, and 3- year (Table VI [c]) and 5-year (Table VI [d]) past profit growth. The table shows the mean values of the normalized adjusted most aggressive and most conservative forecasts for each quintile across 240 months. Q1–Q5 represents the difference between Q1 and Q5 mean values. Q2–Q4 represents the difference between Q2 and Q4 mean values. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11.

(a) 36-month stock return

	36-month past stock return						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	-0.003	-0.098	-0.091	-0.002	0.218	-0.221 (-4.75)	-0.096 (-2.50)
The most conservative forecast	0.105	0.112	0.068	-0.061	-0.315	0.421 (11.38)	0.172 (5.97)

(b) 60-month stock return

	60-month past stock return						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	-0.052	-0.118	-0.090	0.020	0.243	-0.295 (-8.99)	-0.139 (-3.42)
The most conservative forecast	0.125	0.103	0.059	-0.072	-0.305	0.429 (12.33)	0.174 (6.86)

(c) 3-year profit growth

	3-year past profit growth						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	0.051	-0.114	-0.113	-0.131	0.154	-0.103 (-1.99)	0.017 (0.41)
The most conservative forecast	0.027	0.115	0.065	0.034	-0.183	0.210 (6.25)	0.081 (2.66)

(d) 5-year profit growth

	5-year past profit growth						
	Q1(High)	Q2	Q3	Q4	Q5(Low)	Q1-Q5	Q2-Q4
The most aggressive forecast	-0.020	-0.144	-0.081	-0.124	0.194	-0.214 (-3.48)	-0.020 (-0.65)
The most conservative forecast	0.051	0.125	0.021	0.026	-0.176	0.227 (8.26)	0.099 (3.90)

Table VII

Informational value of forecasts on the basis of the outlier-adjusted CAG

To construct the table, we sort all firms into quintiles in each month by the adjusted most aggressive and adjusted most conservative forecasts. In each table, we show outlier-adjusted 5- and 3-year CAGs. Table VII (a) shows the result for the most conservative forecast and Table VII (b) for the most aggressive. H1–H5 represents the difference between the mean values of the outlier-adjusted CAGs for H1 and H5. L1–L5 represents the difference between the mean values of the outlier-adjusted CAGs for L1 and L5. The figures in parentheses are autocorrelation-consistent t-statistics. The non-zero serial covariance is set at 11.

(a) The most conservative forecast

	The most conservative forecast					
	L1(High)	L2	L3	L4	L5(Low)	L1-L5
Outlier-adjusted CAG(5 year)	-0.003	-0.012	-0.020	0.004	0.032	-0.035 (-2.06)
Outlier-adjusted CAG(3 year)	-0.010	-0.011	-0.018	-0.002	0.042	-0.051 (-2.05)

(b) The most aggressive forecast

	The most aggressive forecast					
	H1(High)	H2	H3	H4	H5(Low)	H1-H5
Outlier-adjusted CAG(5 year)	0.053	-0.006	-0.017	-0.009	-0.020	0.073 (4.19)
Outlier-adjusted CAG(3 year)	0.053	0.001	-0.011	-0.019	-0.025	0.078 (3.24)