

Analyst Coverage, Unique Linkages with Firms, and Earnings Forecasting Accuracy

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Abstract. We propose a characteristic-model to separate the linkages information between analysts and listed firms from analyst coverage and investigate the impact of analysts' unique linkage with target firms on earnings forecasting accuracy. Regression results indicate that keeping intense interactions with the target firm will maintain easy access to firm-specific information and produce better earnings forecasting. Our paper contributes to the literature on the informativeness of analyst coverage and provides an effective approach to quantify the relationship between analysts and public firms.

Keywords: Analyst Coverage; Unique Linkages; Informativeness; Earnings Forecasting Accuracy.

1. Introduction

Analysts' earnings forecasting accuracy has been a frequent topic in financial and accounting research. Accumulating literature discusses the determinants of earnings forecasting accuracy. Earnings forecasting accuracy is proved to increase with analysts' experience [1], analysts' prior earnings forecasting performance, the availability of new information [2], and decrease with decision fatigue [3], goodwill impairment charges [4] and reputation concerns. Besides, the title of star analysts [5], fair value measurements [6], and geographical proximity to firms [7] result in analysts' better earnings forecasting accuracy.

However, few pieces of research explore the impact of the relationship between analysts and target firms on the earnings forecasting accuracy, for that relationship is hard to be quantified directly with data. Close connection with target firms have a positive impact on the analyst's information environment and improve the analyst's ability to make accurate predictions. In this paper, we investigate the ties between analysts and public firms, and the subsequent effect on analysts' forecasting performance.

Compared with the cultural orientation in the West, China is a typical relationship-oriented emerging market economy. Relationship plays an important role in economic and social development by providing business information and market opportunities through personal connections. The Chinese stock market provides an ideal environment to study the special relationship between analysts and companies.

Our empirical research is based on the assumption that analysts with limited resources and energy pay more attention to those listed firms with frequent communication. Analyst coverage proxies reflect all observable and unobservable information between analysts and stocks. We measure the unique linkage between analysts and firms by eliminating the technical analysis information attributable to the firm's financial characteristics and analysts' characteristics from analyst coverage based on a simple characteristic-based model. Then, we examine the effect of the unique linkages on analysts' earnings forecasting accuracy. The empirical results suggest that analysts who maintain intense interactions with target firms have better earnings forecasting performance with less forecasting volatility and higher forecasting accuracy. Our study provides a novel perspective on quantifying the relationship between analysts and public firms based on the informativeness of analyst coverage and adds directly to the growing literature on the determinants of earnings forecasting accuracy.

The remainder of the paper is as follows. Section 2 describes the methodology and data. Section 3 reports the empirical results. Section 4 concludes.

2. Methodology and Data

2.1 Measure of Unique Linkages between Analysts and Firms

Analyst coverage is confirmed to contain information about expected returns [8]. The unique linkages between analysts and firms are measured by separating the observable technical components attributable to firm's financial characteristics and analysts' characteristics from analyst coverage. Specifically, we calculate the unique linkages between analyst i and firm j in year t by estimating the following regressions:

$$\begin{aligned} Coverage_{i,j,t} = & \beta_0 + \beta_1 Size_{j,t} + \beta_2 Turnover_{j,t} + \beta_3 Return_{j,t} + \beta_4 VO_{j,t} + \beta_5 MB_{j,t} + \beta_6 Star_{i,t} \\ & + \beta_7 Exp_{i,t} + \beta_8 Gender_{i,t} + \beta_9 Degree_{i,t} + \beta_{10} Brokerage_{i,t} + \beta_{11} Year_{i,j,t} + \beta_{12} Industry_{j,t} + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

where $Coverage_{i,j,t}$ denotes analyst coverage of analyst i for stock j , calculated as the natural logarithm of one plus the number of research reports published by analyst i on stock j in the year t . Control variables include $Size$ (natural logarithm of market value), $Turnover$ (share turnover), $Return$ (cumulative market-adjusted return), VO (price volatility), MB (market-to-book ratio), $Star$ (dummy variable of star analysts), Exp (analysts' career experience), $Gender$ (dummy variable of analysts' gender), $Degree$ (dummy variable of analysts' education level), $Brokerage$ (natural logarithm of the number of analysts employed by the same brokerage firm), year dummy and industry dummy.

The residual component of analyst coverage after removing technical analysis and analysts' characteristics, calculated as the standard residuals of the Eq. (1), is selected as the proxy of the close relationship between analysts and firms.

2.2 Measure of Earnings Forecasting Accuracy

The simple measure of earnings forecasting accuracy, absolute forecasting accuracy, is calculated as the absolute difference between forecasted earnings per share (EPS) and the actual EPS based on the following model:

$$AFA_{i,j,t} = |FEPS_{i,j,t} - AEPS_{j,t}| / P_{j,t} \quad (2)$$

where $FEPS$ denotes the forecasted EPS , $AEPS$ denotes the actual EPS , and P is the close price.

Furthermore, we measure the relative forecasting accuracy RFA by scaling the absolute forecasting accuracy to be 1 for the most forecasting accuracy and 0 for the least forecasting accuracy, which mitigates stock characteristic effects on forecasting accuracy for the comparison between different stocks.

2.3 Data and Samples

We selected all the research reports announced from January 1, 2007, to December 31, 2017 on all A-shares stocks listed on the Shanghai and Shenzhen Stock Exchange as the initial samples. Then we remove the research reports that (1) analysts only make one earnings forecasting on the same stock in one year; (2) only one analyst follows in one year. Earnings forecasting data and firm financial data are obtained from China Stock Market and Accounting Research (CSMAR) and Resset database.

The summary statistics of all variables in our sample are provided in Table 1.

Table 1. Descriptive statistics

Variable	Mean	Std.Dev	Min	5%	50%	95%	Max
RFA	0.624	0.343	0	0	0.728	1	1
Coverage	1.059	0.443	0.693	0.693	1.099	1.946	3.850
Size	23.611	1.521	20.301	21.747	23.314	26.491	30.895
Turnover	4.992	4.621	0.000	0.411	3.696	13.904	49.118
Return	0.098	0.518	-1.679	-0.471	-0.003	0.984	14.604
VO	0.029	0.024	0.007	0.016	0.027	0.048	2.095
MB	0.504	0.263	0.011	0.152	0.456	0.990	4.565
Anal	3.021	0.629	1.099	1.792	3.091	3.892	4.500
Level	0.438	0.223	0.008	0.099	0.428	0.820	2.579
Volume	21.205	1.268	13.347	19.185	21.193	23.347	26.265
Exp	3.389	2.564	0	0.400	2.748	8.540	15.213
Star	0.222	0.415	0	0	0	1	1
Gender	0.276	0.447	0	0	0	1	1
Degree	2.996	0.470	1	2	3	4	4
Brokerage	6.362	0.864	0	4.779	6.477	7.482	7.766
Stocknum	3.036	0.836	0	1.609	3.091	4.344	5.394

3. Empirical Results

Column (1) of Table 2 reports the OLS estimation results of Eq. (1), which suggests that analyst coverage is significantly increasing in firm size, firms' cumulative return, the title of star analysts, analysts' career experience, education level and the brokerage size, and decreasing in share turnover, price volatility, market-to-book ratio. Then, we get the unique linkages between analysts and target firms which is denoted by the standard residuals.

Considering the information sharing among analysts from the same brokerage institutions, we consider the coverage of all analysts from the same brokerage firms on the same target firms, *BroCoverage*, as the alternative variables of *Coverage*. Correspondingly, the standard residuals of regression in Column (2), *BroLinkage*, is denoted as the alternative variable of *Linkage*.

Next, we examine the impact of the unique linkage between analysts and firms on analysts' forecasting accuracy following the estimated regression in Eq. (3):

$$RFA_{i,j,t} = \beta_0 + \beta_1 Linkage_{i,j,t} + \beta_2 Anal_{j,t} + \beta_3 Size_{j,t} + \beta_4 MB_{j,t} + \beta_5 Level_{j,t} + \beta_6 Volume_{j,t} + \beta_7 Indnum_{j,t} + \beta_8 Star_{i,t} + \beta_9 Exp_{i,t} + \beta_{10} Gender_{i,t} + \beta_{11} Degree_{i,t} + \beta_{12} Stocknum_{i,t} + \beta_{13} Brokerage_{i,t} + \beta_{14} Year_{i,j,t} + \beta_{15} Industry_{j,t} + \varepsilon_{i,j,t} \quad (3)$$

The regression results of unique linkages between analysts and target firms on earnings forecasting accuracy are shown in Column (1) of Table 3. The significantly positive coefficient of *Linkage* suggests unique linkages with firms improves analysts' earnings forecasting accuracy. Columns (4) reports the robustness results of *BroLinkage* on forecasting accuracy

Table 2. Unique linkages between analysts and firms

Variable	(1)	(2)
	Coverage	BroCoverage
Size	0.053*** (49.316)	0.078*** (54.350)
Turnover	-0.005*** (-12.920)	-0.006*** (-11.866)
Return	0.020*** (8.250)	0.028*** (8.859)
VO	-0.234*** (-4.646)	-0.383*** (-5.698)
MB	-0.140*** (-26.012)	-0.221*** (-30.734)
Star	0.095*** (35.168)	0.139*** (38.612)
Exp	0.015*** (34.837)	-0.012*** (-20.904)
Gender	0.005** (1.986)	0.017*** (5.172)
Degree	-0.001 (-0.325)	0.259*** (139.987)
Brokerage	0.075*** (54.089)	0.078*** (54.350)
Constant	-0.706*** (-22.997)	-2.019*** (-50.376)
Year	control	control
Industry	control	control
Observations	167,902	167,902
R-squared	0.081	0.203

The t-statistics are reported in parentheses under the estimated coefficients. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

To eliminate concerns of non-information-driven forecasting on results, we design the *RFA_Mean* and *RFA_Volatility*, the mean value and volatility of relative earnings forecasting corresponding to the same value of Linkage. Columns (2) and (3) examine the relationship between unique linkages and *RFA_Mean* as well as *RFA_Volatility*. The results indicate that maintaining a close relationship with the target firm improves analysts' forecasting performance with less forecasting volatility and higher forecasting accuracy.

Table 3. Unique linkages and earnings forecasting accuracy

Variable	(1)	(2)	(3)	(4)
	RFA	RFA Mean	RFA Volatility	RFA
Linkage	0.059*** (74.740)	0.063*** (450.583)	-0.026*** (-305.217)	
BroLinkage				0.041*** (49.136)
Anal	0.059*** (32.700)	0.001*** (7.878)	-0.001*** (-7.998)	0.060*** (33.167)
Size	0.012*** (12.357)	0.001*** (9.206)	-0.001*** (-25.405)	0.013*** (12.549)
MB	-0.052*** (-10.838)	0.000 (0.256)	0.002*** (10.475)	-0.049*** (-10.165)
Level	-0.008 (-1.334)	-0.001*** (-2.983)	0.000 (0.306)	-0.011* (-1.788)
Volume	-0.008*** (-7.238)	-0.001*** (-7.552)	0.000*** (6.361)	-0.009*** (-7.792)
Indnum	0.007 (1.027)	0.001 (1.170)	-0.000 (-1.265)	0.003 (0.458)
Star	0.006*** (2.935)	0.002*** (9.523)	-0.002*** (-17.532)	0.005** (2.162)
Exp	-0.005*** (-14.261)	0.000*** (6.012)	-0.000*** (-19.617)	-0.005*** (-16.012)
Gender	0.009*** (4.746)	0.000*** (2.900)	0.000 (0.331)	0.009*** (5.121)
Degree	0.004** (2.058)	0.000 (0.058)	0.000** (2.224)	0.005*** (2.597)
Stocknum	0.010*** (8.731)	0.000*** (5.484)	-0.000 (-1.175)	0.018*** (15.030)
Brokerage	0.009*** (7.965)	0.001*** (10.590)	-0.002*** (-35.459)	0.041*** (49.136)
Constant	0.255*** (8.083)	0.617*** (257.334)	0.371*** (266.155)	0.262*** (8.249)
Year	control	control	control	control
Industry	control	control	control	control
Observations	167,902	167,902	167,848	167,902
R-squared	0.057	0.868	0.756	0.042

The t-statistics are reported in parentheses under the estimated coefficients. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

4. Conclusion

We innovatively quantify the relationship between analysts and listed firms by removing the mechanical component summarized by observable firm characteristics and analyst characteristics from the standard analyst coverage proxies. We find that analysts closely associated with target firms maintain easy access to firm-specific information. Besides, unique linkage with target firms improves information precision and leads to better earnings forecasting performance with less forecasting volatility and higher forecasting accuracy. Our paper contributes to the literature on the informativeness of analyst coverage and expands the determinants of earnings forecasting accuracy.

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