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Financial Analysts Cover which Firms?

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Abstract

This study explores the primary factors influencing the number of analysts following a firm. The research sample comprises 11,459 non-U.S. firms, followed by various unique analysts during 2019 and 2020. The study proposes a straightforward model of analyst following, identifying several firm characteristics likely to affect the aggregate demand or supply of analyst services for a particular firm. A regression model tests the relationship between analyst following and high-technology firms (as proxied by R&D expenses) and firm size. The results reveal that, in the following year, analysts are more inclined to follow firms with a higher volume of R&D expenses and larger size in the current year. The study also uncovers that most control variables regarding firm characteristics significantly affect analyst following. In summary, the empirical results are consistent with economic intuition.

Keywords:
Financial Analysts, Firms' Coverage, R&D, Size

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1. Introduction

Financial analyst coverage is a critical facet of financial markets, attracting significant attention in recent years. The extent of coverage a firm receives from financial analysts can notably impact its financial reporting quality, stock market liquidity, and overall performance. Despite its importance, there has been limited research into the factors determining the number of analysts following a firm.

Financial analysts are crucial in producing and analyzing a firm's information, making their coverage an essential element of the financial market (Bhushan, 1989). Previous studies have shown a positive correlation between the number of financial analysts and a firm's size in time-series earnings-forecasting models (Brown et al., 1978). In addition, the information content of earnings announcements has been explored, revealing a negative relationship with firm size (Atiase, 1985; Freeman, 1987; Bhushan, 1989). This inverse relationship is attributed to the increased private information investors acquire for larger firms due to augmented analyst coverage, which reduces the information's informativeness in the long term. Sell-side financial analysts play a vital role in the financial market by collecting information from various sources, including earnings conference calls, tracking and evaluating the current performance of the firms they follow, making recommendations to investors, and forecasting the future prospects of these firms (Healy and Palepu, 2001). Given that analysts' forecasts and reports primarily focus on earnings and cash flows, it is unsurprising that several studies have documented the relationship between analyst following and financial reporting and operating decisions of managers for pre-impairment earnings and cash flows. This includes research that examines the impact of analyst following on earnings management through discretionary accruals (Chen et al., 2015; Irani and Oesch, 2013; Liu, 2014; Yu, 2008), opportunistic income smoothing (Sun, 2011), accounting conservatism (Sun and Liu, 2011), real earnings management (Chen et al., 2015; Duellman et al., 2013; He and Tian, 2013), and goodwill impairments (Ayres et al., 2019).

Financial analysts provide comprehensive information on the firms they cover, including buy and sell recommendations, insights into the industry, and any current or anticipated legal actions. Companies rely on analysts to sell their securities and increase liquidity (Krigman et al., 2001), while investors use the research reports analysts provide to make informed investment decisions (Madan et al., 2003; Premti et al., 2017). The number of analysts following a firm can be viewed as a proxy for the total expenditure in the economy on analyst services for that firm. The interaction between the aggregate demand and supply of analyst services determines this expenditure. Therefore, the firm's characteristics influencing analyst coverage can be studied by examining the aggregate demand and supply functions for analyst services.

This paper contributes to the existing literature on financial analyst coverage by exploring the significant determinants of the number of analysts following a firm. Using the number of unique analysts who followed 11,459 non-U.S. firms in 2019 and 2020, the paper introduces a straightforward model of analyst following and tests the relationship between various firm characteristics and the number of analysts following a firm. The results prove that high-technology firms (proxied by R&D expenses) and firm size significantly determine analyst coverage. This finding aligns with previous research showing that firms with a higher volume of R&D and larger firms are more likely to be followed by analysts. In addition, the paper provides empirical evidence supporting the relationship between the determinants of analyst coverage and the number of analysts following a firm.

The results of this paper hold critical practical implications for firms and investors. Firms can utilize the insights from this study to comprehend how they can attract more analyst attention and enhance their access to information. Investors can use the results to make more informed investment decisions by identifying firms likely to be followed by a larger number of analysts. In summary, this

paper extends the existing literature on financial analyst coverage by providing evidence on the major determinants of analyst coverage, the relationship between these determinants, and the number of analysts following a firm. The results of this study can assist firms and investors in making more informed decisions and enhance their understanding of the factors that influence analyst coverage.

2. Hypothesis Development

Previous research emphasizes analysts' crucial role in corporate monitoring, acting as intermediaries between a company's management and its investors (Ellul and Panayides, 2018; Lehavy et al., 2011; Frankel et al., 2006; Premti et al., 2017). They assist in disseminating private information from a firm's management to investors and help investors identify investment opportunities by repackaging publicly available information (Roulstone, 2003; Piotroski and Roulstone, 2004; James and Karceski, 2006; Easley et al., 1998). Given this pivotal role, a financial analyst's decision to follow or discontinue coverage of a firm is likely influenced by the information environment in which they operate.

Moreover, the literature has investigated whether systematic differences exist in the accuracy of financial analysts' forecasts. Early studies found no such differences (O'Brien, 1990; Butler and Lang, 1991). However, recent research has adopted alternative methodologies, different time frames, and independent data sources to scrutinize analysts' forecast accuracy heterogeneity. These studies have revealed that various factors, such as analyst experience, ability, the size of the analyst's brokerage house, and the number of firms followed, can influence the accuracy of financial analysts' forecasts (Mikhail et al., 1997; Clement, 1999). Such studies include those by Karamanou (2011), Wilson and Wu (2011), Hribar and Mclnnis (2012), Choi et al. (2014), and Zhou et al. (2017).

Firms with significant R&D expenses possess more information asymmetry between managers and investors and more inherent uncertainty about firm value than other firms. These factors suggest that, in the absence of private information acquisition and processing by information intermediaries, such as analysts, the share prices of high intangible firms would reflect their fundamental values less accurately. The potential for less informative prices indicates opportunities for profitable private information acquisition activities. These activities can yield more profitable investment recommendations and higher trading commissions for analysts. Thus, it is hypothesized that analyst coverage is higher for firms with more R&D expenses.

H1: *Analyst coverage is positively associated with increasing R&D expenses.*

Additionally, the aggregate demand for analyst services is likely an increasing function of firm size. An investor might find private information about larger firms more valuable than that about smaller ones. Analysts have incentives to concentrate on larger firms as they are more widely held and pique the interest of numerous investors, leading to more potential transactions. More information released by a firm may facilitate analysts' tasks by providing valuable, necessary information. Thus, it is assumed that the benefits from information acquisition are likely to increase with firm size, implying that the aggregate demand for analyst services would be higher for larger firms.

H2: *Analyst coverage is positively associated with increasing firm size.*

3. Research Methodology

3.1 Sample and data collection

The data collected included key financial metrics such as the number of analysts and other firm-

specific variables. The data was gathered at the beginning of January 2019 and 2020, offering a comprehensive analysis of the companies' financial performance over two years. Using a random sampling method and collecting financial data from reliable sources, such as Yahoo Finance, ensured the research results were accurate and could support informed decisions about the companies under investigation. To test the hypotheses, the final sample identified several unique analysts that followed 11,459 non-U.S. firms in 2019 and 2020.

3.2 Empirical model

The research method used in this study is multivariate regression analysis. First, the following multivariate regression analysis is the primary model (Equation 1):

$$COVERAGE_{i,t+1} = \alpha_1 + \beta_1 R\&D_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 PPE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 CAPEX_{i,t} + \beta_7 ROE_{i,t} + \beta_8 COMDIV_{i,t} + \beta_9 LOSS_{i,t} + \beta_{10} CFO_{i,t} + \beta_{11} INTANGIBLE_{i,t} + \beta_{12} INVREC_{i,t} + \beta_{13} CURR_{i,t} + \beta_{14} GOODWILL_{i,t} + e_{i,t}$$

In the above equation, R&D expenses (*R&D*) and firm size (*SIZE*) are the main independent variables to test whether more analysts follow high-technology and larger firms. To achieve this, the impact of several factors that may affect analyst following is controlled based on the findings in the extant literature (e.g., Bhushan, 1989; Chung and Jo, 1996; Lang and Lundholm, 1996; Dechow and Dichev, 2002; Yu 2008; Hong et al., 2014). For example, return on assets (ROA) is controlled as Yu (2008) shows that firm performance and analyst following are positively correlated. The leverage ratio (LEV) is controlled for external financing activity since it impacts analysts' perception of accounting quality and willingness to follow a firm. A dummy variable (LOSS) is considered because a firm with high financial risks is likely to be dropped by analysts.

Fixed effects are often included in econometric models to control for time-invariant variables (e.g., industry, firm) that could affect the outcome of interest. However, there are reasons why researchers may choose not to include fixed effects (FE) in their models. One reason could be the limitation of the sample size. FE requires a large sample size to obtain reliable estimates, as it necessitates that the number of fixed effects is much smaller than the number of observations. In other words, if the number of time-invariant variables is large, the sample size requirement can be prohibitively high, making it difficult to obtain accurate estimates of the parameters of interest. Another reason could be the concern about omitted variables bias. This bias occurs when a variable that affects the outcome of interest is not included in the model, leading to biased estimates of the parameters of interest. When using FE, it is crucial to ensure that all relevant time-invariant variables are included in the model; otherwise, omitted variables bias may persist. Lastly, including or excluding FE depends on the research question and available data. For example, if the research question focuses on the effect of a time-varying variable (e.g., a policy change), then including FE may not be necessary as time-invariant variables are unlikely to affect the outcome of interest (Wooldridge, 2010; Cameron and Trivedi, 2010).

4. Results

Table 1 of Panel A presents the descriptive statistics for all variables used in the analyst following models. The mean (median) number of analysts following a firm (*COVERAGE*) is 8.662 (5), which indicates that, on average, around nine analysts are following one firm. These figures are consistent with the results reported in previous studies such as Luo et al. (2020), Dong et al. (2017), and He et al. (2020).

The mean R&D expenditure (*R&D*) is approximately double the median, suggesting that most of the firms in the sample have higher research and development expenditures. SIZE's mean and median values are close, indicating a similar firm size distribution in the sample. The mean return on assets (*ROA*) is slightly above 0.5%, while the average Property, Plant, and Equipment (*PPE*) and Leverage (*LEV*) are high at 24.5% and 21%, respectively. The current ratio (*CURR*) is 1.946, and for the measure of whether firms report negative earnings (*LOSS*), the difference between the mean (0.118) and median (0) suggests that the majority of the firms in the sample have positive earnings. These figures are comparable with previous studies such as Qian et al. (2019), Ayres et al. (2019), and Mak (2017).

In Panel B of Table 1, the correlation matrix displays the relationships between the variables in the study. The dependent variable, *COVERAGE*, significantly correlates with *SIZE* and all the control variables. This suggests a strong relationship exists between the number of analysts following a firm and its size and other factors.

Panel C presents the results of tests of mean differences in analyst coverage by the type of low (first quartile) and high (fourth quartile) R&D expenses and firm size. The results indicate that analyst coverage significantly increases with increasing R&D expenses and firm size. This supports the first and second hypotheses, which predicted a positive relationship between analyst coverage and R&D expenses and firm size. These findings are consistent with previous research in the field and provide further evidence of the importance of these variables in determining analyst coverage.

Table 1. Summary statistics for analyst following models

Panel A: Descriptive data

Variable	Mean	Std.Dev	Q1	Median	Q3
COVERAGE	8.662	9.092	2	5	12
R&D	0.030	0.053	0.004	0.016	0.035
SIZE	9.667	2.897	7.922	9.586	11.518
ROA	0.006	0.132	-0.050	-0.018	0.029
PPE	0.245	0.170	0.108	0.219	0.347
LEV	0.210	0.153	0.081	0.198	0.316
CAPEX	0.040	0.036	0.016	0.031	0.056
ROE	0.006	0.346	-0.105	-0.034	0.064
COMDIV	0.339	0.454	0.032	0.183	0.459
LOSS	0.118	0.323	0	0	0
CFO	-0.055	0.091	-0.079	-0.041	-0.017
INTANGIBLE	0.150	0.171	0.028	0.078	0.213
INVREC	0.274	0.145	0.163	0.269	0.367
CURR	1.946	1.437	1.145	1.564	2.228
GOODWILL	5.953	2.885	4.018	5.918	7.693

Panel A provides the descriptive statistics for variables used in the empirical analyses. I winsorized continuous variables at the top and bottom one percent. Appendix A provides definitions for all variables.

Panel B: Correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
COVERAGE (1)	1														
R&D (2)	-0.011	1													
SIZE (3)	.347**	-.261**	1												

ROA (4)	-.060**	.278**	-.134**	1											
PPE (5)	.095**	-.236**	.269**	-.067**	1										
LEV (6)	.054**	-.177**	.140**	-0.027	.340**	1									
CAPEX (7)	.122**	-.096**	.117**	.078**	.539**	.140**	1								
ROE (8)	-0.027	.204**	-.065**	.815**	-.048**	-.054**	.081**	1							
COMDIV (9)	.143**	-.112**	.048**	-0.029	.213**	.713**	.050**	-.038*	1						
LOSS (10)	-.133**	.216**	-.170**	.183**	-.045*	.091**	-.059**	.081**	.098**	1					
CFO (11)	-.113**	-0.031	0.029	-.480**	-.119**	0.032	-.273**	-.446**	.056**	.083**	1				
INTANGIBLE (12)	.077**	.127**	-.356**	.054**	-.387**	.088**	-.235**	0.030	.169**	.092**	-.036*	1			
INVREC (13)	-.167**	-.073**	-.039*	-.071**	-.214**	-.097**	-.094**	-.055**	-.150**	-.101**	.111**	-.343**	1		
CURR (14)	-.098**	.127**	-.089**	0.030	-.205**	-.452**	-.116**	0.029	-.281**	-.040*	0.004	-.136**	-0.020	1	
GOODWILL (15)	.379**	-.173**	.736**	-.099**	.037*	.158**	-0.012	-.060**	.129**	-.119**	0.015	.144**	-.180**	-.128**	1

Panel B presents Pearson correlation coefficients for variables included in Equation (1). **, * indicate significance levels of less than 1 and 5 %, respectively.

Panel C: Tests of mean differences

Variable	R&D			SIZE		
	Q1	Q4	Difference (1-4)	Q1	Q4	Difference (1-4)
Coverage	8.56	9.46	-0.901*	4.58	11.27	-6.690**
Observations	975	749		692	1240	

Panel C reports tests of mean differences in analyst coverage by the type of low (first quartile) and high (fourth quartile) R&D expenses and firm size. ** denotes two-tailed statistical significance at 1%, and * at 5%.

Based on the results from Table 2, it can be concluded that analyst coverage is positively associated with increasing R&D expenses and firm size. These findings provide strong evidence that in the next year, analysts are more likely to follow firms with higher levels of R&D expenses and firm size in the current year. Given these results, the following recommendations can be made:

For Hypothesis 1:

- Firms looking to increase analyst coverage could consider increasing their R&D expenses. This investment in research and development could lead to increased attention from financial analysts, providing benefits such as improved financial reporting quality and increased liquidity in the stock market.

For Hypothesis 2:

- Similar to the recommendation for Hypothesis 1, firms seeking to increase analyst coverage

could focus on growing their firm size. This growth could come through mergers, acquisitions, or organic growth initiatives. By increasing the size of their firm, these companies could attract more attention from financial analysts and reap the benefits of increased analyst coverage.

Furthermore, the coefficients on all control variables, except *PPE* and *ROE*, are statistically significant, suggesting that *ROA*, *LEV*, *CAPEX*, *COMDIV*, *LOSS*, *CFO*, *INTANGIBLE*, *INVREC*, *CURR*, and *GOODWILL*, have a significant influence on analyst following, which is consistent with previous studies (Bhushan, 1989; O'Brien and Bhushan, 1990). The R-square for the model is 22.7%. Both the significant estimates on predictor variables and the R-square indicate that the main model captures the variance in analyst following. In addition, the results for variance inflation factors (VIF) tests reveal that none of our continuous independent variables has a VIF value higher than 5, indicating no multicollinearity issue for the regression analysis.

Table 2. Regression results from equation (1) where the dependent variable is the number of following analysts

Variable	Predicted sign	Estimate	T-stat	p-value	VIF
$R\&D_t$	+	18.451	6.184	0.000	1.253
$SIZE_t$	+	1.026	10.035	0.000	4.420
ROA_t	+	-4.842	-2.419	0.016	3.502
PPE_t	?	-1.362	-1.093	0.274	2.268
LEV_t	+	-11.034	-7.439	0.000	2.582
$CAPEX_t$	?	22.579	4.658	0.000	1.519
ROE_t	+	-1.023	-1.433	0.152	3.081
$COMDIV_t$	?	3.807	8.415	0.000	2.128
$LOSS_t$	-	-1.741	-3.705	0.000	1.162
CFO_t	+-	-12.092	-6.386	0.000	1.505
$INTANGIBLE_t$	+	5.578	4.034	0.000	2.801
$INVREC_t$	-	-4.993	-4.176	0.000	1.510
$CURR_t$	?	-0.554	-4.844	0.000	1.360
$GOODWILL_t$	?	0.327	3.469	0.001	3.737
Intercept		-2.117	-1.917	0.055	-
Observations			3236		
F-statistic			67.537***		
R-squared			0.227		

This table reports the results of the following regression model.
$COVERAGE_{i,t+1} = \alpha_1 + \beta_1 R\&D_{i,t} + \beta_2 SIZE_{i,t} + X_{i,t} + e_{i,t}$
The dependent variable is the number of analysts following firm i in year t+1. The leading independent variables to test the hypotheses are $R\&D_{i,t}$, i.e., research and development expenditure divided by the book value of total assets measured at the end of fiscal year t, and $SIZE_{i,t}$, the natural logarithm of the firm's asset book value at the end of fiscal year t. $X_{i,t}$ is a vector of firm-specific variables that are expected to affect $COVERAGE_{i,t+1}$, which includes return on assets (*ROA*), Property, plant & equipment divided by book value of total assets (*PPE*), the book value of debt divided by book value of total assets (*LEV*), Capital expenditure scaled by the book value of total assets (*CAPEX*), Rate of return on common stockholders' equity (*ROE*), Common dividends scaled by stakeholders equity (*COMDIV*), an indicator for earning losses (*LOSS*), Cash flows scaled by the beginning balance of total asset (*CFO*), The ratio of intangible assets to total assets (*INTANGIBLE*), Some of the firm's receivables and inventory divided by its total assets (*INVREC*), Current assets to current liabilities (*CURR*), Goodwill to total assets (*GOODWILL*).

5. Conclusion

This study does provide crucial insights into the factors driving financial analyst following of firms, particularly highlighting the positive relationships between analyst coverage and both R&D expenditure and firm size. Companies with larger sizes and higher R&D investments tend to draw more analyst attention, likely due to the greater information asymmetry surrounding these firms,

which heightens the demand for analyst services. However, this paper's model is indeed a simplified representation of the complex interplay of factors that influence analyst following. Other elements, such as uncertainties, free ridership, and the role of prices in aggregating and transmitting information, are not captured in the current model. These factors are important in an analyst's decision-making process, and their inclusion in future research would undoubtedly deepen our understanding of the economics of analyst following. The study's implications are valuable for various stakeholders. Companies can strategize to boost analyst coverage by investing more in R&D and growing their firm size. Additionally, the findings can aid investors in making more informed decisions by taking into account the level of analyst coverage of a firm.

It is also important to acknowledge the limitations of the study. The sample size comprising 11,459 non-U.S. firms may not fully represent the global corporate landscape. Additionally, the model considers a limited set of variables and overlooks other possible influencers of analyst following, such as the quality of financial reporting, the degree of corporate governance, and the level of industry competition. In sum, this study offers important insights into what drives analyst following of firms, but substantial scope exists for enhancement and further exploration. Future studies should strive to incorporate more variables and utilize more intricate models to comprehend the intricacies of analyst better following.

Appendix. Variable definitions

$COVERAGE_{t+1}$	= The natural logarithm of one plus the number of analysts following firms in the next year.
$R\&D_t$	= Research and development (R&D) expenditure divided by the book value of total assets measured at the end of fiscal year t.
$SIZE_t$	= The natural logarithm of the firm's asset book value at fiscal year t's end.
ROA_t	= Return on assets ratio defined as operating income after depreciation divided by book value of total assets, measured at the end of fiscal year t.
PPE_t	= Property, plant & equipment divided by book value of total assets measured at the end of fiscal year t.
LEV_t	= Firm i's leverage ratio, defined as the book value of debt divided by the book value of total assets measured at the end of fiscal year t.
$CAPEX_t$	= Capital expenditure scaled by the book value of total assets measured at the end of fiscal year t.
ROE_t	= Rate of return on common stockholders' equity at the end of fiscal year t.
$COMDIV_t$	= Common dividends scaled by stakeholders' equity at fiscal year t's end.
$LOSS_t$	= A dummy variable set to one if a firm's earnings per share (EPSFX) is negative and zero otherwise at the end of fiscal year t.
CFO_t	= Cash flows scaled by the beginning balance of total assets at the end of fiscal year t.
$INTANGIBLE_t$	= The ratio of intangible assets to total assets for firm i at the end of fiscal year t.
$INVREC_t$	= Some of the firm's receivables and inventory divided by its total assets at the end of fiscal year t.
$CURR_t$	= Current assets to current liabilities at the end of fiscal year t.
$GOODWILL_t$	= Goodwill to total assets at the end of fiscal year t.

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