CEO Social Network Connections and Management Forecasts

Jennifer Brown

Stephen Hillegeist

Wei Huang

Arizona State University

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Abstract

This study investigates whether CEOs who have more network connections are able to provide more accurate earnings forecasts. Prior literature documents that social network connections among individuals can serve as private information channels. CEOs who have more network connections can gather more information and resources needed to make accurate forecasts. However, CEOs may overreact to the private information they obtain, leading to more biased earnings forecasts. In addition, the private information travels via CEOs' network connections are not necessarily correct or useful. Overreaction and incorrect information could lead to less accurate earnings guidance. Using BoardEx Network Profiles with 4,508 firm-year observations from 2000 to 2011, we document that CEOs with more social network connections make less accurate earnings forecasts. This negative effect of social network is robust to various specifications, including controlling for factors affecting earnings forecasts, addressing concerns about cross-sectional correlation using the Fama-MacBeth approach, and adopting the Newey-West procedure to account for heteroscedasticity and serial correlation. Our results suggest that CEOs' social networks negatively affect the accuracy of their earnings guidance.

1. Introduction

Recently, numerous accounting and finance studies investigate the economic influence of social network connections. Social network connections can serve as private information channels such that one can gather information and resources through their personal network connections. For instance, Hong et al. (2005) study the effect of social network in a setting that fund managers live in the same city and share their private information by word-of-month. The results reveal that individuals share and are willing to share their private information in professional career. Recent research documents that information sharing through social network connections has significant impacts on economic outcomes. Brown and Drake (2014) find that firms share information on tax-avoidance strategies through social network connections. Larker et al. (2013) document that social network centrality of boards of directors facilitates a firm's risk-adjusted stock returns, and they attribute the economic benefits to the greater information access possessed by more central directors. Cohen et al. (2010) show that when analysts have an educational link to a company, they perform better on stock recommendations by gathering superior information about the company.

We investigate the relation between CEOs' network connections and management forecasts characteristics for several reasons. First, CEOs have most influential power on firm operation decisions. While a number of studies consider social network connections among directors, relatively few studies provide evidence on the economic effects of CEOs' network connections. CEOs make decisions based on their information set; social network connections are a particularly important determinant in the process of decision making, because a CEO with more social network connections can gather and control private information more efficiently (El-Khatib et al. 2015). Second, management forecasts are common voluntary disclosures and are subject to CEOs' discretion. CEOs have great influence on the characteristics of management earnings

forecasts, such as the accuracy and precision of earnings forecasts. Third, investigating the factors that affect forecasts characteristics is important to investors, because knowing how managers choose forecast characteristics help users of management earnings forecasts understand the information characteristics in the forecasts (Choi et. al 2010). In addition, Hirst et al. (2008) demonstrates that research in management forecasts focuses less on the determinants of forecast characteristics, and our study fills this vacancy. In this study, we particularly focus on management earning forecast error.

According to social network theory, CEOs who have more network connections can gather more information and resources. Since CEOs require sufficient information both inside and outside the firm to issue accurate management earnings forecasts, such information advantage may enable CEOs with more social network make accurate forecasts. However, psychology and finance literature documents that individuals tend to overestimate their own abilities and therefore overreact to private information that requires their ability to get (e.g., Griffin and Tversky, 1992, Daniel et al., 1998). In management forecast setting, CEOs may overreact to the private information they obtain through their personal network connections, leading to more biased earnings forecasts. In addition, the private information travels via CEOs' network connections are not necessarily correct or useful. Overreaction and incorrect information could lead to less accurate earnings guidance.

We obtain CEO social network information from BoardEx Director Network Reports to construct CEOs' network connections. Following El-Khatib et al. (2015), we construct annual CEO social network measure based on employment history in public firms, since employment history information is more reliable than other network information and can be verified in other sources. We obtain necessary data from COMPUSTAT, I/B/E/S, CRSP, and Thomson Reuters to

construct dependent variable and control variables. Our final sample consists 4,508 observations from 1,271 firms from 2000 to 2011.

We specify an OLS regression with industry and year fixed effects to test the research question. Our results show that CEOs with more social network connections make less accurate earnings forecasts. We employ Fama-MacBeth approach to address concerns about cross-sectional correlation. We also adopt the Newey-West procedure to account for heteroscedasticity and serial correlation. Our results are robust to these specifications.

The remainder of the paper is organized as follows: Section 2 discusses predictions on the association between CEOs' network connections and management forecast error. Section 3 presents sample selection and model specification. Section 4 discusses the empirical results, and Section 5 concludes the paper.

2. Hypothesis development

2.1 Information Advantage and Management Forecast Error

Social network connections can be formed through common social memberships, military experience, education background, and employment history, etc. Social network connections can serve as private information channels such that one with more social network connections is able to gather more information and resources. Consistent with this theory, recent research documents that information sharing through social network connections have significant impacts on economic outcomes. For instance, Cohen et al. (2010) show that when analysts have an educational link to a company, they perform better on stock recommendations by gathering superior information about the company. Engelberg et al. (2012) document that connections between borrowers and lenders lead to lower interest rates, suggesting that social networks provide either better information flow

or better monitoring. Brown and Drake (2014) find that firms share information on tax-avoidance strategies through social network connections. Larker et al. (2013) document that social network centrality of boards of directors facilitates a firm's risk-adjusted stock returns, and they attribute the economic benefits to the greater information access possessed by more central directors.

While a number of studies consider social network connections among directors, we consider social network connections among CEOs because CEOs has most influential power on firm operation decisions. CEOs make decisions based on their information set; social network connections are a particularly important determinant in the process of making decisions, because a CEO with more social network connections can gather and control private information more efficiently (El-Khatib et al. 2015). We investigate the effect of social network connections on management earnings forecasts, because such voluntary disclosures are common and are subject to CEOs' discretion. CEOs have great influence on the characteristics of management earnings forecasts, such as the accuracy and precision of earnings forecasts. In this study, we focus on management earning forecast error.

Making earnings forecasts, especially accurate earnings forecasts, require sufficient public and private information both internally and externally. For example, comparing relative forecast accuracy of analyst and management forecasts, Hutton et al. (2012) show that information advantage at the macroeconomic level allow analysts to make more accurate earnings forecasts relative to managers when firms are exposed to macroeconomic factors, such as the business cycle, commodity prices, and regulation. CEOs already possess sufficient internal information about their own firms; if they are able to gather sufficient external information, such as the change of operating strategies in their peer firms, the information advantage will allow them to make a better decision than CEOs without such information. Thus, CEOs have more private information channels are

likely to provide more accurate earnings forecasts. In our setting, CEOs who have more social network connections have greater access to private information; accordingly, they are able to make more accurate management earnings forecasts.

2.2 Overreaction to Private Information and Management Forecast Error

Evidence from cognitive psychological literature suggests that individuals tend to overestimate their own abilities and therefore overreact to private information that requires their ability to get (e.g., Griffin and Tversky, 1992). In our setting, CEOs who have more social network connections are able to gather more private information; if s/he put more weight on the private information released by individuals s/he has greater personal network with, s/he would tend to overreact to the private information s/he obtained rather than the public information. Thus, CEOs may overestimate the accuracy of the private information they obtained from personal network connections, but not of public information received by all firms.

Prior literature shows that such psychological bias also applies to finance and accounting context. For example, Daniel et al. (1998) introduce such psychological bias to finance literature and show that investors overreact to private information they get, causing the stock price to deviate from expected price. Thomas and Zhang (2008) document that firms' investors overreact to information disclosed by their firms' industry peers.

In our study, social network connections serve as private information channels such that a CEO with more network connections is able to gather more private information. In the setting of making management earnings forecasts, when CEOs overreact to the private information they obtained, they might issue a more biased earnings forecast, i.e. the management forecast error increases. The private information per se received by the CEO may be accurate; it is CEOs'

overreaction to the private information that could lead to large management forecast error. The more private information a CEO possesses, the more likely that s/he would overreact to the private information and underestimate management forecast error. In other words, managers may overreact to private information they acquire through personal network connections and this overreaction affects the accuracy of their management earnings forecast.

Furthermore, the private information sharing between network parties is not necessarily correct and useful. Most private information CEOs acquire through social network to be used in their earnings guidance is likely to be market-wide private information, since managers are less willing to share their firm-specific private information with others and are more willing to share their market-wide private information. However, prior studies show that managers have limited ability to forecast market uncertainty. Without the ability to forecast market uncertainty, managers may generate incorrect market-wide information. Such incorrect information could travel to other CEOs via social network connections and lead to other CEOs' earnings forecast errors. Moreover, Hutton et al. (2012) document that managers have less ability to understand and correctly incorporate macroeconomic factors into their annual EPS forecasts than analysts do. Without the ability to incorporate market-wide information correctly, managers are not likely to provide more accurate forecasts even if they have greater access to private information than others.

Even if CEOs use other firms' firm-specific private information in their own firms' earnings forecasts, the firm-specific private information may also contain incorrect information caused by CEOs' low expertise to predict their firms' prospects. Ben-David et al. (2013) find that executives are not only miscalibrated about the stock market but also miscalibrated about their own firms' prospects. Given that private information are noisy and that incorrect information will

be partially incorporated into the management's earnings forecasts, a CEO with more social network connections may not be able to make more accurate forecasts.

In summary, CEOs with more network connections might be able to issue more accurate earnings forecasts because their network connections bring private information needed to make an accurate earnings forecasts. On the other hand, CEOs with more network connections might issue less accurate earnings forecasts. CEOs who have more network connections are exposed to more private information, which might lead to overreaction of private information such that they are not able to make a more accurate forecast than CEOs without as much information. The more private information they obtained through their network connections, the more likely that they will overreact to the private information, leading to more biased earnings forecasts. Furthermore, the private information flows through CEOs' network connections is not necessarily correct useful. Partially incorporating the incorrect information will lead to management earnings forecast errors. Because of the conflicting predictions, we do not hypothesize the effect of CEOs' network connections on management forecast accuracy.

3. Methodology

3.1 Sample Selection

We obtain CEO social network information from BoardEx Director Network Reports, including employment history, education, military experience, and social memberships, etc.. Following El-Khatib et al. (2015), we construct annual CEO social network measure based on employment history in public firms. El-Khatib et al. (2015) argue that employment history information is more reliable than other network information and can be verified in other sources. We define network connections as the number of a CEO's direct connections to other directors

and executives reported by BoardEx. We assume that once built, a connection would not disappear until one party dies.

Management earnings per share forecasts are obtained from First Call Company Issued Guidance (CIG). We keep only point and range forecasts to construct management forecast error. Since social network measure is constructed annually, we retain the first annual EPS forecast for current year issued after earnings announcement for previous year. We keep the first annual EPS forecasts because it has a longer horizon than updated EPS forecasts. Forecasting in a long horizon is more uncertain than in a short horizon and requires sufficient information, which provides a setting to investigate whether network connections benefit the management by transferring information and reducing uncertainty. We obtain necessary financial data from COMPUSTAT, analyst forecast data from I/B/E/S Detail History, and institutional holdings data from Thomson Reuters (13f). Table 1 Panel A summarizes sample selection procedures. The final sample consists of 4,508 firm-year observations from year 2000 to 2011.

Table 1 Panel B reports the distribution of the final sample across time. The number of management EPS forecasts increases almost monotonically from year 2000 to 2008. Since the CIG database is not available after calendar year 2010, we have limited observations in fiscal year 2011. The average number of all CEOs' network connections each year ranges from 173 to 349, most of which is around 200. The relatively invariant number of network connections is reasonable because a CEO's tenure is long and that network connections do not vary much over time.

Table 1 Panel C describes the industry distribution of the final sple. The final sample is distributed across 62 industries. Three industries with most observations are "Business Services", "Electric, Gas, & Sanitary Services", and "Chemical & Allied Products".

3.2 Model Specification

Following extant literature on management forecast error, we specify the following model to test the effect of network connections on management forecast error:

$$\begin{aligned} ERROR_{it} = {} & \alpha_0 + \alpha_1 CONNECT_{it} + \alpha_2 SIZE_{it-1} + \alpha_3 BTM_{it-1} + \alpha_4 LEV_{it-1} + \alpha_5 LOSS_{it} + \alpha_6 BIGN_{it} \\ & + \alpha_7 LIT_{it} + \alpha_8 ISSUE_{it} + \alpha_9 TACC_{it-1} + \alpha_{10} ROA_{it-1} + \alpha_{11} OPCYCLE_{it-1} + \alpha_{12} XFIN_{it-1} \\ & + \alpha_{13} RANGE_{it} + \alpha_{14} HORIZON_{it} + \alpha_{15} ANALYST_{it-1} + \alpha_{16} INSHOLD_{it-1} \\ & + \alpha_{17} RETVOL_{it-1} + \alpha_{18} TURN_{it-1} + \alpha_{19} BETA_{it-1} + Year\ FE + Industry\ FE \end{aligned} \quad (1)$$

$ERROR_{it}$ is management EPS forecast error. Following prior literature, we measure point forecasts error as the absolute value of the difference between management earnings forecasts and actual earnings[1], scaled by beginning stock price. For range forecasts, the error is measured as the mid-point of the range, scaled by beginning stock price (Goodman et al. 2014, Rogers and Stocken 2005). $CONNECT_{it}$ is the variable of interest, defined as natural logarithm of the number of a CEO's direct network connections based on employment history. Network connections serve as channels for information flow, a CEO with more network connections is likely to obtain more information than a CEO with fewer network connections. On one hand, more information could help a CEO make a more accurate forecast in a relatively long horizon. In this case, a CEO with more network connections makes a more accurate EPS forecast ($\alpha_1 > 0$). On the other hand, more information might lead to information overload. In this case a CEO with more network connections makes less accurate EPS forecast ($\alpha_1 > 0$).

We control for firm size, $SIZE_{it-1}$, as Table 1 Panel B reports around one-third of our sample are S&P500 firms. CEOs in larger firms tend to be more central in the social network, and prior

[1] Interpretations do not change if we use GAAP earnings per share from COMPUSTAT.

literature also documents that firm size can affect forecast behavior (Baginski and Hassell 1997; Bamber and Cheon 1998). $SIZE_{it-1}$ is measured as natural logarithm of the market value of the firm's common equity. We include BTM_{it-1} to control for a firm's growth opportunities, as prior literature documents that managers' forecast behavior is associated with firms' growth opportunities (Ajinkya et al. 2005; Ball et al. 2012). BTM_{it-1} is measured as book value of common equity of the firm divided by market value of common equity. We also control for leverage, LEV_{it-1}, and Big N auditors, $BIGN_{it}$, as prior literature documents a positive relation between leverage and management forecast accuracy and a positive relation between Big N auditors and management forecast accuracy (Ajinkya et al. 2005; Kramanou and Vafeas 2005; Ball et al. 2012;). LEV_{it-1} is measured as long-term debt plus debt due within a year scaled by total asset. $BIGN_{it}$ is an indicator variable equal to one if the firm is audited by Big N auditors, and zero otherwise.

Prior literature documents that when firm report negative earnings or face high risk, management forecasts tend to be less accurate (Ajinkya et al. 2015). Therefore, we control for negative earnings and litigation risk by including $LOSS_{it}$, LIT_{it} and $BETA_{it-1}$. $LOSS_{it}$ is an indicator variable equal to one if the firm report negative earnings before extraordinary items, and zero otherwise. LIT_{it} is an indicator variable equal to one if the firm is in high litigation risk industries, and zero otherwise. $BETA_{it-1}$ is the slope coefficient from regressing daily stock returns on the CRSP equal-weighted stock returns over previous year. Managers' incentive and ability to manipulate earnings also affects their forecasting behavior (McNichols 1989; Kasznik 1999). Potential earnings management opportunity is proxied by total accruals, measured as income before extraordinary items minus operating cash flows, defined as cash flow from operations minus extraordinary items and discontinued operations scaled by beginning total assets. We also control

the firm's performance in previous period (ROA_{it-1}), the firm's operating uncertainty ($OPCYCLE_{it-1}$), and prior period external financing activities ($XFIN_{it-1}$).

Prior literature shows that management earnings forecasts are more accurate when managers issue forecasts closer to the end of fiscal year (Choi and Ziebart 2000; Johnson et al. 2001). Forecast horizon, $HORIZON_{it}$, is measured as the number of days between the day managers issue forecasts and the end of fiscal year. We also control for other forecast characteristic ($RANGE_{it}$) and forecast uncertainty prior to management forecast ($RETVOL_{it}$, $TURN_{it-1}$).

Ajinkya et al. (2005) and Karamanou and Vafeas (2005) find that forecast error is positively related to corporate governance. Managers subject to superior corporate governance tend to make more accurate forecasts. We include the number of analysts following the firm, $ANALYST_{it-1}$, and the percentage of institutional ownership, $INSHOLD_{it-1}$, as the proxies for corporate governance.

4. Empirical Results

4.1 Descriptive Statistics

Table 2 reports descriptive statistics for all variables in model (1). Management forecast error, *ERROR,* is right-skewed (mean = 0.020, median = 0.005). The mean (median) of natural logarithm of the number of connections is 4.598 (4.575), indicating that the variable *CONNECT* is slightly right skewed. The average natural logarithm of firm size is 7.607, and the mean of book-to-market ratio is 0.460. Indicator variables *LOSS, BIGN*, *LIT* and *ISSUE* show that 14.9% firms report negative earnings before extraordinary items, 93.3% firms employ a Big N auditor, 30.9% firms are in high litigation risk industries, and 99.6% firms issue shares in the year. The average total accruals is left skewed (mean = 0.001, median = 0.005), the average *ROA* is 0.014, and the average operating cycle is 185 days. On average firms have negative external financing

(*XFIN*). Indicator variable *RANGE* indicate that 88.2% firms make range forecasts. The average of natural logarithm of forecast horizon (*HORIZON*) is 5.63. The average number of analysts following (*ANALYST*) is 12.84, and the average institutional holdings (*INSHOLD*) is 73.5%. The average return volatility (*RETVOL*) is 0.025, the average trading volume deflated by outstanding shares (*TURN*) is 9.13, and the average firm risk (*BETA*) is 1.123.

4.2 Results of OLS Regressions

Table 3 shows the results of model (1). The dependent variable *ERROR* is measured as the absolute value of the difference between the firm's actual EPS reported by I/B/E/S and management EPS forecast for year t, scaled by beginning stock price. The variable of interest is *CONNECT*, measured as natural logarithm of the number of a CEO's direct network connections based on employment history. On one hand, a CEO with more network connections could gather more information needed to make a more accurate forecast. In this case, the coefficient of CONNECT should be positive ($\alpha_1 > 0$). On the other hand, more information could lead to information overload such that a CEO with more network connections is not able to make a more accurate forecasts ($\alpha_1 < 0$).

Consistent with the information overload hypothesis, the coefficient of *CONNECT* is 0.276 (0.297) without (with) year and industry fixed effects, and is significant at 5% level. The results indicate that one standard deviation increase in network leads to a 3.10 (0.297 * 1.273 / 0.122) standard deviation increase in predicted management forecast error, with the other variables held constant.

The coefficient of BTM is positive and significant at 1% level, consistent with prior literature that growth opportunities are positively associated with forecast error. The coefficient of

TACC is negative and significant at 10% level, indicating that a firm with higher total accruals tend to issue more accurate forecasts. The result, however, is not consistent with literature documenting that accruals are positively associated with management forecast error.

4.3 Additional Test: Fama-Macbeth Cross-Sectional Regressions

To address cross-sectional correlation, we employ Fama-MacBeth approach (Fama and MacBeth 1973) as an additional test. Fama-MacBeth approach considers the correlation between observations of different firms in the same year, but not the correlation between observations of the same firm across time. In our setting, using Fama-MacBeth can better answer the following question: Do firms with different CEO network connections indeed have different management forecast error?

In addition, we conduct Fama-MacBeth test with Newey-West adjusted standard error. Newey and West (1987) procedure yields a covariance matrix estimator that is robust to both heteroscedasticity and autocorrelation. Newey-West corrected Fama-MacBeth standard errors by adjusting the standard errors to the time-series of coefficient estimates. Therefore, Newey-West adjusted Fama-MacBeth standard errors are robust to both cross-sectional and time-series dependence. In other words, Fama-MacBeth approach with Newey-West adjusted standard error corrects autocorrelation in addition to cross-sectional correlation.

Table 4 reports the results from Fama-MacBeth regressions without and with Newey-West adjusted standard errors. Fama-MacBeth regressions show that the cross-sectional variation in management forecast error is explained by the cross-sectional variation in CEO network. Specifically, the coefficient of *CONNECT* is positive and significant at 10% level using Fama-MacBeth approach, and is positive and significant at 5% level using Fama-MacBeth with Newey-

West adjusted standard errors. The results support the hypothesis that CEOs who could gather more information may face information overload such that they do not provide more accurate forecasts than CEOs who have fewer network connections.

5. Conclusions

This study investigates whether CEOs who have more network connections are able to provide more accurate earnings forecasts. Recently research documents that information sharing through social network connections have significant impacts on economic outcomes. CEOs who have more network connections can gather more information and resources. Such information advantage enables CEOs with more social network needed to make accurate forecasts. However, CEOs may overreact to the private information they obtain, leading to more biased earnings forecasts. In addition, the private information travels via CEOs' network connections are not necessarily correct or useful. Overreacting to or incorporating incorrect information could lead to less accurate earnings forecasts.

We obtain social network data form BoardEx Network Profiles, financial data from COMPUSTAT, analyst forecast data from I/B/E/S, management earnings forecast data from First Call CIG, stock returns data from CRSP, institutional holdings data from Thomson Reuters (13f). Following prior literature, we specify a management forecast error model to test our research question. Our results show that CEOs with more social network connections do not make more accurate earnings forecasts. Instead, management earnings forecasts issued by CEOs with more network connections have greater forecasting errors than those issued by CEOs with fewer network connections. We employ Fama-MacBeth cross-sectional regressions and Newey-West adjusted Fama-MacBeth regressions as robustness test, and the results remain unchanged. Future research can focus on other management forecast characteristics, for example, whether CEOs with more

social network connections issue more precise earnings forecasts than CEOs with fewer social network connections.

Appendix

Variable Definitions

Variable	Definition
$ERROR_{it}$	Management earnings forecast error, measured as absolute value of the firm's actual EPS reported by I/B/E/S minus management EPS forecast for year t, scaled by beginning stock price.
$CONNECT_{it}$	CEOs' direct network connections, measured as natural logarithm of the number of a CEO's direct network connections based on employment history in year t.
$SIZE_{it-1}$	Natural logarithm of the market value of the firm's common equity (price multiplied by common shares outstanding) at the end of the year.
BTM_{it-1}	Book-to-market ratio, measured as book value of common equity of the firm divided by market value of common equity at the end of fiscal year t-1.
LEV_{it-1}	Financial leverage, measured as long-term debt plus debt due within a year scaled by total assets at the end of fiscal year t-1.
$LOSS_{it}$	An indicator variable equal to one if the firm report negative earnings before extraordinary items in year t, and zero otherwise.
$BIGN_{it}$	An indicator variable equal to one if the firm is audited by Big 4 auditors in year t (Big 5 auditors in year 2000 to 2002), and zero otherwise.
LIT_{it}	Litigation risk, an indicator variable equal to one if the firm is in high litigation risk industries, Compustat SIC codes between 2833–2836 (Drugs), 8731–8734 (R&D services), 7371–7379 (Programming), 3570–3577 (Computers), or 3600–3674 (Electronics), and zero otherwise.
$ISSUE_{t}$	An indicator variable equal to one if the firm issued shares in year t.
$TACC_{it-1}$	Total accruals, measured as income before extraordinary items minus operating cash flows, defined as cash flow from operations minus extraordinary items and discontinued operations scaled by beginning total assets.

ROA_{it-1}	Return on assets, measured as income before extraordinary items divided by beginning total assets.
$OPCYCLE_{it-1}$	Operating cycle, measured as average accounts receivable divided by sales, plus average inventory divided by cost of goods sold, then multiplied by 90.
$XFIN_{it-1}$	External financing, measured as net equity financing plus net debt financing, scaled by beginning total assets. Net equity financing is measured as cash proceeds from the sale of common and preferred stock minus cash payments for the purchase of common and preferred stock and minus cash payments for dividends. Net debt financing is defined as cash proceeds from the issuance of long-term debt minus cash payments for long-term debt reductions and minus the net changes in current debt.
$RANGE_{it}$	An indicator equal to one if the management EPS forecast for year t is in the form of range forecast, and zero otherwise.
$HORIZON_{it}$	Forecast horizon, measured as natural logarithm of the number of days between fiscal year-end and the issuance of management EPS forecast.
$INSHOLD_{it-1}$	Percentage of institutional holdings, measured as the shares held by institutional investors reported by Thomson Reuters (13f) closest to fiscal year-end t-1, scaled by total common shares outstanding.
$ANALYST_{i,t-1}$	The number of analysts following the firm during the year.
$RETVOL_{it-1}$	The standard deviation of daily raw stock returns over year t-1.
$TURN_{it-1}$	Average daily share volume divided by the average shares outstanding in year t-1.
$BETA_{it-1}$	Slope coefficient from regressing daily stock returns on the CRSP equal-weighted stock returns in year t-1.

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Table 1 Sample Selection and Distribution

Panel A: Sample Selection

	Selection Criteria	Number of Firm-Year Observations	Number of Firms
	Observations from BoardEx	51,395	7,097
Less:	Observations without financial data from COMPUSTAT	(17,320)	(1,225)
Less:	Observations without analyst forecast data from I/B/E/S Academic	(7,642)	(1,121)
Less:	Observations without annual management EPS guidance from First Call CIG	(20,126)	(3,162)
Less:	Observations without stock returns on CRSP or institutional holdings from Thomson Reuters (13f)	(1,799)	(318)
	Final Sample	4,508	1,271

Panel B: Sample Distribution

Fiscal Year	Number of Management EPS Forecast	Percent	Average Number of Network Connections	Number of S&P500 firms	Percent
2000	26	0.58%	349.42	23	88.46%
2001	217	4.81%	231.70	100	46.08%
2002	311	6.90%	221.61	147	47.27%
2003	334	7.41%	208.44	139	41.62%
2004	493	10.94%	173.95	150	30.43%
2005	538	11.93%	206.02	174	32.34%
2006	545	12.09%	205.89	162	29.72%
2007	575	12.76%	226.05	165	28.70%
2008	543	12.05%	243.66	173	31.86%
2009	435	9.65%	228.23	153	35.17%
2010	431	9.56%	243.48	155	35.96%
2011	60	1.33%	222.95	16	26.67%
Total	4,508	100.00%		1,557	34.54%

Panel C: Industry Distribution

SIC2	Description	# of Obs.	Percent	SIC2	Description	# of Obs.	Percent
01	Agricultural Services	7	0.16	47	Transportation Services	14	0.31
12	Coal Mining	14	0.31	48	Communications	63	1.40
13	Oil & Gas Extraction	37	0.82	49	Electric, Gas, & Sanitary Services	458	10.16
14	Nonmetallic Minerals, except Fuels	14	0.31	50	Wholesale Trade- Durable Goods	65	1.44
15	General Building Contractors	21	0.47	51	Wholesale Trade- Nondurable Goods	61	1.35
16	Heavy Construction, Except Building	32	0.71	52	Building Materials& Gardening Supplies	8	0.18
17	Special Trade Contractors	8	0.18	53	General Merchandise Stores	54	1.20
20	Food & Kindred Products	168	3.73	54	Food Stores	28	0.62
21	Tobacco Products	17	0.38	55	Automative Dealers &	40	0.89
23	Apparel & Other Textile Products	47	1.04	56	Apparel & Accessory Stores	57	1.26
24	Lumber & Wood Products, except Furniture	7	0.16	57	Furniture & Homefurnishings Stores	22	0.49
25	Furniture & Fixtures	49	1.09	58	Eating & Drinking Places	84	1.86
26	Paper & Allied Products	40	0.89	59	Miscellaneous Retail	109	2.42
27	Printing & Publishing	39	0.87	60	Depository Institutions	78	1.73
28	Chemical & Allied Products	374	8.30	61	Nondepository Credit Institutions	24	0.53
29	Petroleum & Coal Products	6	0.13	62	Security & Commodity Brokers	22	0.49
30	Rubber & Miscellaneous Plastics Products	27	0.60	63	Insurance Carriers	185	4.10
31	Leather & Leather Products	45	1.00	64	Insurance Agents Brokers & Service	12	0.27
32	Stone, Clay, & Glass Products	11	0.24	65	Real Estate	18	0.40
33	Primary Metal Industries	25	0.55	67	Holding & Other Investment Offices	30	0.67
34	Fabricated Metal Products	51	1.13	70	Hotels & Other Lodging Places	11	0.24
35	Industrial Machinery & Equipment	262	5.81	72	Personal Services	25	0.55
36	Electronic & Other Electric Equipment	166	3.68	73	Business Services	638	14.15
37	Transportation Equipment	130	2.88	75	Auto Repair, Services, & Parking	21	0.47
38	Instruments & Related Products	348	7.72	78	Miscellaneous Repair Services	3	0.07
39	Misc. Manuf. Industries	46	1.02	79	Motion Pictures	23	0.51
40	Railroad Transportation	12	0.27	80	Health Services	124	2.75
41	Local/Suburban Transit & Highway Passenger	6	0.13	82	Educational Services	22	0.49
42	Trucking & Warehousing	26	0.58	83	Social Services	3	0.07
44	Water Transportation	7	0.16	87	Engineering & Management	144	3.19
45	Transportation by Air	13	0.29	99	Non classifiable Establishments	7	0.16

Table 2 Descriptive Statistics

Variable	Mean	Std Dev	Q1	Median	Q3
ERROR	0.020	0.122	0.002	0.005	0.012
CONNECT	4.598	1.273	3.611	4.575	5.517
SIZE	7.607	1.673	6.389	7.471	8.756
BTM	0.460	0.311	0.252	0.391	0.593
LEV	0.193	0.164	0.030	0.178	0.306
LOSS	0.149	0.356	0.000	0.000	0.000
BIGN	0.933	0.251	1.000	1.000	1.000
LIT	0.309	0.462	0.000	0.000	1.000
ISSUE	0.996	0.065	1.000	1.000	1.000
TACC	0.001	0.076	-0.023	0.005	0.032
ROA	0.014	0.041	0.005	0.015	0.027
OPCYCLE	185.139	483.371	60.183	93.629	145.074
XFIN	-0.022	0.224	-0.059	-0.005	0.039
RANGE	0.882	0.323	1.000	1.000	1.000
HORIZON	5.630	0.414	5.694	5.775	5.814
ANALYST	12.838	8.462	6.000	11.000	18.000
INSHOLD	0.735	0.195	0.621	0.766	0.883
RETVOL	0.025	0.013	0.016	0.022	0.031
TURN	9.130	6.815	4.857	7.505	11.177
BETA	1.123	0.569	0.738	1.059	1.434

Table 3 CEO Network and Management Forecast Accuracy:

OLS Regression

Variable	Parameter Estimate	t Value	Parameter Estimate	t Value
INTERCEPT	-1.644	-0.52		
CONNECT	0.276**	1.95	0.297**	2.04
SIZE	0.005	0.03	0.013	0.07
BTM	1.141**	2.21	1.726***	2.93
LEV	-1.154	-1.20	-1.226	-1.15
LOSS	0.271	0.53	0.065	0.13
BIGN	-0.110	-0.18	0.093	0.15
LIT	-0.418	-1.20	-0.208	-0.36
ISSUE	-0.002	0.00	-0.357	-0.14
TACC	-0.349	-0.17	-3.689*	-1.79
ROA	-11.211**	-2.40	-4.641	-1.00
OPCYCLE	0.000	-0.25	0.000	-0.09
XFIN	0.289	0.44	0.648	0.99
RANGE	0.179	0.39	0.001	0.00
HORIZON	0.119	0.33	0.328	0.90
ANALYST	-0.031	-1.15	-0.045	-1.55
INSHOLD	0.059	0.07	-0.040	-0.04
RETVOL	-41.759***	-2.75	-30.618	-1.47
TURN	0.126***	4.62	0.117***	4.11
BETA	0.077	0.27	0.102	0.31
Year FE	NO		YES	
Industry FE	NO		YES	
N	4,508		4,508	
R^2	0.01		0.26	

Table 4 CEO Network and Management Forecast Accuracy:

Fama-Macbeth Regression

Variable	Parameter Estimate	t Value	Parameter Estimate	t Value
INTERCEPT	-1.327*	-1.70	-1.327*	-2.12
CONNECT	0.157*	1.74	0.157**	2.31
SIZE	0.031*	1.89	0.031**	2.45
BTM	1.281	1.42	1.281*	2.00
LEV	-0.810	-1.38	-0.810*	-2.01
LOSS	-0.120	-1.39	-0.120*	-1.99
BIGN	-0.074	-0.81	-0.074	-1.14
LIT	-0.206	-1.53	-0.206**	-2.36
ISSUE	0.048	0.25	0.048	0.39
TACC	0.471	0.82	0.471	1.17
ROA	-11.741	-1.09	-11.741	-1.78
OPCYCLE	-0.000	-1.19	-0.000*	-2.04
XFIN	0.391*	1.66	0.391**	2.36
RANGE	0.238	1.53	0.238**	2.21
HORIZON	0.041	1.17	0.041**	2.58
ANALYST	-0.021*	-1.90	-0.021**	-2.48
INSHOLD	-0.033	-0.11	-0.033	-0.21
RETVOL	-26.967	-1.59	-26.967*	-2.18
TURN	0.083*	1.78	0.083**	2.31
BETA	0.105**	2.01	0.105**	2.68
Newey-West Adjusted Standard Error	No		Yes	
R^2	0.24		0.24	