Financial Analysts' Forecasting Performance Post Sarbanes-Oxley

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The Sarbanes-Oxley Act (SOX) addresses the quality of financial reporting, operations as well as corporate governance, and aims to improve the overall financial information environment by increasing the accuracy and reliability of corporate disclosure. This study investigates financial analysts' performance post SOX. We examine the impact of SOX on the accuracy of financial analysts' earnings forecasts by investigating pre- and post-SOX quarterly earnings estimates. Findings indicate that forecast accuracy has decreased for all firms in the sample. Also, financial analysts have become pessimistic in their earnings forecasts post SOX. The evidence points to a decrease in the quality of the financial information environment post SOX.

INTRODUCTION

The financial markets play a significant role in the overall economic growth of the United States (U.S.). The efficiency of these financial markets is a very important consideration for corporations, investors, the government, and indeed all market players. To a large extent, this efficiency is directly linked to the validity and accuracy of the information provided by corporations' financial reporting and corporate governance systems.

After the accounting scandal at Enron became public in 2001, as well as other major financial meltdowns by other corporations, the federal government felt justified in responding firmly. To this end, the U.S. Congress passed the Sarbanes-Oxley Act (hereafter, SOX) on July 25, 2002. It was deemed the most serious piece of legislation to affect financial disclosure, corporate governance and public accounting. Its primary aim is to improve the quality of financial reporting and corporate governance and, in so doing, restore and strengthen investors' confidence in the financial markets. Without a doubt, its emphasis is on the provision of accurate information to all market participants. Therefore, SOX forces public companies to be more vigilant and transparent in their business activities, particularly in their financial reporting. The new law established new accountability standards for corporate boards and auditors, and specified civil action penalties for noncompliance. The outcry against the legislation was led by corporate insiders and business groups who believed that the U.S. would lose its leading competitive position as a direct result of the considerable regulatory compliance costs and liability risk associated with SOX. Proponents of the law, however, argued that by taking care of past corruption, the law would lead to increased investor confidence and by extension, higher rates of investment.

This study investigates the impact of SOX on financial analysts' forecasting performance. Specifically, the study will examine whether analyst earnings forecasts are more accurate since the passage of SOX, given the fact that its primary aim is to increase the accuracy and quality of information. Analysts' performance has been thoroughly researched over the years, and more recently with the passage of Regulation Fair Disclosure (hereafter, Reg FD). However, there doesn't appear to be any current research that looks directly at analysts' forecast performance post SOX. Since SOX is geared towards improving the quality of information-gathering and dissemination activities of public companies, it directly impacts the work of financial analysts, and warrants empirical analysis.

Financial analysts play a very important role in our economy. They analyze complex company information and present it in a way that makes it easier for market players to understand and make key financial decisions. In essence, they act as information intermediaries between companies and investors (Chung and Jo (1996)). Research has shown that forecasts and recommendations made by financial analysts affect stock prices and the market value of firms, so their role in financial markets cannot be diminished (Francis and Soffer (1997), Chung and Jo (1996), and Givoly and Lakonishok (1979)). These analysts rely almost entirely on the information provided by companies to make their forecasts, and market participants, in turn, rely on the analysts to guide their investment decisions. Therefore, considering the main objective of SOX lies in increasing the accuracy of information, financial analysts should now have access to more accurate information on which to base their forecasts, if SOX is indeed meeting its objectives. Some recent studies suggest that SOX may actually be achieving its objectives, and despite the high costs of compliance, SOX has improved both the quality and quantity of corporate disclosure (Prentice (2007)). However, other studies conclude that management reporting behavior has become more conservative, and the quality of the information environment may have decreased post-SOX (Lobo and Zhou (2006)).

Our study is related to recent examinations of financial analysts' performance after the adoption of regulations (e.g., Reg FD), with a specific look at the level of their forecast errors (Agrawal et al. (2006), Findlay and Mathew (2006)). We posit that the information provided by companies after the enactment of SOX should be of a higher quality as a direct result of the specific requirements of SOX. Also, we investigate whether there is any difference in the accuracy of analysts' forecasts between large companies and small companies, as defined by their market capitalization, post SOX. The impact on small firms has been a major source of contention among financial market participants, and the focus on analysts' performance as it relates to firm size post SOX will provide valuable information to the existing literature.

The paper is structured as follows. In the next section, we present the related literature followed by the development of the hypotheses. The data and methodology are then presented, followed by the empirical results. In the final section we present the conclusions.

RELATED LITERATURE

This study contributes to the body of research that examines the importance of financial analysts as players in the financial system, and the impact that new legislation has on their performance. It is important because of the sheer nature of the Act – deemed the most extensive piece of legislation to impact all financial aspects of public companies.

Analysts' Use of Information

Scholars and practitioners agree that financial analysts are the most influential information intermediaries in the financial system. Their primary function is to collect and analyze large quantities of information from a number of different firms, and then make this information available to investors in a way that is easy to understand to help in their decision-making.

Ceteris paribus, superior information quality should have a positive impact on forecast accuracy. Kross et al. (1990) report that financial analysts enjoy an advantage that increases with better information-gathering and dissemination techniques used by analysts and firms alike. Lang and Lundholm (1996) and Barron and Stuerke (1998) use forecast dispersion among analysts as a proxy for information asymmetry.

A high level of dispersion is indicative of low consensus among analysts' forecasts, which translates into high information asymmetry. The information gleaned from consensus forecasts is very important to researchers, investors and indeed all market players as it is used in economic and investment models, as well as in formulating buy and sell decisions for securities. Dreman and Berry (1995) find that accurate earnings estimates are imperative to most contemporary stock valuation models. These models rely on the ability of financial analysts to forecast earnings accurately. Its influence on stock prices has also been well documented (Brown and Rozeff (1978), Rozeff (1983), Chung and Jo (1996)).

In summary, there is a wealth of evidence concurring with the belief that financial analysts play a key role in maintaining the information efficiency of the financial markets (Moyer et al. (1989)). To the extent that SOX directly addresses the quality and accuracy of corporate disclosures, this study aims to examine whether there has been a decrease in forecasting errors post-SOX.

Large Firms vs. Small Firms

It is reasonable to expect that the impact on small firms as a result of the enactment of SOX would be different from the impact on larger firms. This can be attributed primarily to the costs of compliance with SOX, as well as the possible benefits of SOX, which have been deemed greater for small firms than their larger counterparts (Kamar et al. (2007)). Given that SOX aims to increase the transparency of all financial activities of public companies, meeting this objective would be especially beneficial to small firms since their limited accounting personnel, as well as their limited exposure to public scrutiny, make their financial statements prone to inaccuracies (Doyle et al. (2007)).

Prior to the enactment of SOX, we can assume that less accurate information was available to financial analysts and investors for small firms. Information is one of the main assets that financial analysts have in fulfilling their role. Specifically, they add value through their ability to identify and convey information to market players. Firm size has been well documented as an important characteristic of the information environment. Researchers posit that more information is associated with larger firms because smaller firms are generally associated with poorer information environments (Grant (1980), Collins et al. (1987), and Bhushan (1989)). Moreover, Atiase (1985) reports that there is an inverse relationship between firm size and the amount of unexpected information communicated to the market by actual earnings reports. Thus, it has been suggested that firm size is inversely correlated with forecast error and bias since the amount and quality of information provided by large firms is greater than that of smaller firms (Beckers et al. (2004)).

HYPOTHESIS DEVELOPMENT

Two hypotheses are examined. The first hypothesis is that analysts' earnings forecast errors have decreased post SOX. In other words, forecast accuracy has improved post SOX. Indeed, if the quality of the financial information environment is better post SOX, this should have a positive effect on financial analysts' performance. If the opposite holds true, and there has been a reduction in the quality of the information environment post-SOX because, for example, management has become more conservative in their corporate reporting, then there should be a decrease in the forecast accuracy.

The second hypothesis centers on small firms. We hypothesize that any improvements in analysts' forecast accuracy should be more pronounced for small firms than for large firms post SOX because of two main reasons: (1) Small firms are usually characterized by poor information environments relative to large firms (Francis et al. (1997)). (2) The potential benefits of a better information environment may be higher for small firms because of the increased transparency and more accurate financial reporting that are not usually inherent in small firms. These factors lead one to believe that if SOX has actually created a better information environment, any impact on financial analysts' performance would be highlighted in small firms, as these firms have not traditionally enjoyed a high quality information environment.

DATA AND METHODOLOGY

Data Description and Sample Selection

The financial data for this study come from the Institutional Brokers Estimate System (I/B/E/S) and COMPUSTAT. Specifically, earnings forecast data (obtained from I/B/E/S) are analyzed for quarters ending between March 1996 and December 2006 for firms in the S&P 500 Index and S&P Small Cap 600 Index. We use this time period to avoid any impact on the study as a result of the recent financial crisis, which some analysts believe began as early as 2007. The use of these two S&P indices allows for the control of various firm characteristics such as the information environment and firm size. The S&P 500 is widely respected as the best single indicator of the U.S. equities market, and the S&P Small Cap 600 is a reputable small cap index that is structured specifically to comprise an efficient portfolio of small firms.

The time period under review provides 44 consecutive quarters of data. According to Keane et al. (1988) and O'Brien (1994), the longer time horizon should limit the sensitivity of the results to any macroeconomic shocks in the economy. Following Heflin, Subramanyam and Zhang (2003), we investigate the impact of SOX on the accuracy of financial analysts' consensus earnings forecasts by examining pre- and post-SOX quarterly earnings estimates. The pre-SOX period includes quarters ending between March 1996 and September 2002, and the post-SOX period extends from quarters ending December 2002 to December 2006. In order to be consistent and to match calendar and fiscal quarters, the sample is limited to firms having December fiscal year ends. For all forecasts, matching actual earnings data were required as well as data on the firm characteristics. In addition, one-quarter ahead forecasts over the zero-horizon forecasts are examined in accordance with Mohanty and Aw (2006). The zero-horizon forecasts are defined as the most recent earnings forecasts made before the announcement of the actual earnings. This forecast period is important because as one gets closer to the earnings release, financial analysts should have more information at their disposal and forecasts should become more accurate.
The final sample of 11,153 observations, representing 254 firms, include all December fiscal year-end firms with the following data in all quarters of the sample: (1) actual earnings per share (EPS); (2) consensus EPS forecasts; (3) number of analysts; and (4) number of company executives.

Methodology

Univariate Tests

In prior studies, analyst forecast accuracy has been measured as the absolute forecast error, scaled by the absolute value of actual earnings. In this study, for the consensus forecasts, the absolute normalized forecast error (ANFE) for company *j* for forecast period *t* is defined as follows:

$$\mathrm{ANFE}_{jt} = |_{\mathrm{jt}} - eps_{jt}\,| \,/\, |eps_{jt}|, \tag{1}$$

where $_{\mathrm{jt}}$ equals the consensus forecast EPS for company *j* for quarter *t*, and eps_{jt} equals the actual EPS for company *j* for quarter *t*. The following steps were also taken: First, in order to avoid division by zero, actual EPS observations equal to zero were omitted from the sample. Second, in order to minimize the effect that extreme observations may have on any inferences, forecast errors with values greater than two are omitted. Many studies find that financial analysts are usually optimistic in their forecasts (Easterwood and Nutt (1999), Butler and Lang (1991), and O'Brien (1988). To investigate the persistent direction of the forecast errors, or the forecast optimism or pessimism, the forecast bias for company *j* for forecast period *t* is defined as follows:

$$\mathrm{FB}_{jt} = {}_{\mathrm{jt}} - eps_{jt} \,/\, |eps_{jt}| \tag{2}$$

Multivariate Tests

The primary concern in this study is in investigating the impact of SOX on financial analyst forecast performance. As such, a model with firm fixed effects is used here to isolate the effect of SOX on financial analysts' forecast errors while controlling for firm characteristics (Wooldridge (2002)). This model is appropriate because there are no significant firm differences, but there might be autocorrelation due to time-lagged temporal effects. In other words, the variables are homogenous across the firms. Consistent with Agrawal et al. (2006), we report robust t-statistics from a heteroskedasticity-autocorrelation consistent estimator. First, the following fixed-effects regressions are estimated:

$$\mathrm{ANFE}_{jt} = b_0 + b_1\,\mathrm{POSTSOX}_t + b_2\,\mathrm{DISP}_{jt} + b_3\,\mathrm{LNAN}_{jt} + b_4\,\mathrm{LNEXEC}_{jt} + b_5\,\mathrm{EVOL}_{jt} + b_6\,\mathrm{LOSS}_{jt} + u_{jt}, \tag{3a}$$

$$\mathrm{FB}_{jt} = b_0 + b_1\,\mathrm{POSTSOX}_t + b_2\,\mathrm{DISP}_{jt} + b_3\,\mathrm{LNAN}_{jt} + b_4\,\mathrm{LNEXEC}_{jt} + b_5\,\mathrm{EVOL}_{jt} + b_6\,\mathrm{LOSS}_{jt} + u_{jt}, \tag{3b}$$

where ANFE and FB are defined according to Section B.1. above. The dummy variable, $\mathrm{POSTSOX}_t$, is equal to one if the forecast period is within the post-SOX period and zero otherwise. A positive coefficient on POSTSOX would indicate that analyst forecast errors increased after the enactment of SOX (i.e., a decrease in accuracy), while a negative coefficient would indicate a decrease in the forecast errors indicating an improvement in accuracy. In terms of the forecast bias, a positive coefficient on POSTSOX would indicate that financial analysts have become more optimistic in their forecasts post-SOX, while a negative coefficient would indicate pessimism in earnings forecasts post-SOX. Ideally, one would like to see a coefficient closer to zero indicating that financial analysts are becoming more accurate in their forecasts.

Prior studies find that dispersion (DISP), number of analysts (LNAN), number of company executives (LNEXEC), earnings volatility (EVOL), as well as profits and losses (LOSS) are related to forecast accuracy. Therefore, these variables are controlled for in the model. Following Chung et al. (1995) and Morse et al. (1991), the variable DISP_{jt} is measured as the coefficient of variation of the consensus forecasts (i.e., the standard deviation of the consensus forecast earnings over the quarter normalized by the mean consensus forecast). We expect a positive coefficient on this variable implying that as analyst disagreement on estimates increase, forecast errors and forecast bias also increase. As a result of the skewness of the number of analysts and number of company executives, the logarithm measures (LNAN and LNEXEC) are used in the regressions. We expect that the forecast error would decrease with an increasing number of analysts, indicating a negative coefficient on LNAN. Lundtofte (2006) showed that there are three types of information agents (executives, stockbrokers, and small investors) representing three levels of information quality. He posited that there are three types of information agents (executives, stockbrokers, and small investors) representing three levels of information quality. The executive is the fully informed agent who understands the true dynamics of the economy and has the most accurate and complete information set. Using this analysis, we postulate that the number of company executives would have a positive impact on forecast accuracy if executives were open to share information with analysts. However, if the executives are conservative in terms of how much information they share, this could have a negative impact on forecast accuracy. As such, we expect a positive or negative coefficient on LNEXEC.

The variable EVOL_{jt} represents earnings volatility. High earnings volatility should make forecasting future earnings more difficult so EVOL is included to control for inherent earnings volatility. Consistent with Minton and Schrand (1999), earnings volatility is measured as the coefficient of variation of pretax income over the four quarters preceding the end of the quarter at which time the earnings forecast is measured. We expect the EVOL_{jt} coefficient to be positively related to the forecast error. The variable LOSS_{jt} is a dummy variable that equals one if $eps_{jt} < 0$ and zero otherwise. Following previous studies (e.g., Brown (2001)), which conclude that profits and losses impact forecast accuracy differently, we control for the effect by including LOSS in the regression. We expect a positive coefficient on LOSS implying that losses would increase forecast errors as analysts usually have more difficulty estimating earnings when firms experience losses (Agrawal et al. (2006); Francis et al. (1996); and Hayn (1995)). In terms of the forecast bias, we expect a negative or positive coefficient on LNAN, LNEXEC, EVOL, and

LOSS depending on whether financial analysts are optimistic or pessimistic in their forecasts. If their forecasts were accurate, then the coefficient would be equal to zero.

Next we investigate whether the quality of the information environment has improved more for small firms post SOX. If this were the case, any improvements in the forecast accuracy of small firms would be more distinct post-SOX. We estimate the following fixed-effects regressions, which test for the difference in the impact of SOX on small and large firms:

$$\text{ANFE}_{jt} = b_0 + b_1\,\text{POSTSOX}_t * \text{SMALLFIRM}_j + b_2\,\text{POSTSOX}_t * \text{LARFIRM}_j + b_3\,\text{DISP}_{jt} + b_4\,\text{LNAN}_{jt} + b_5\,\text{LNEXEC}_{jt} + b_6\,\text{EVOL}_{jt} + b_7\,\text{LOSS}_{jt} + u_{jt}, \tag{4a}$$

$$\text{FB}_{jt} = b_0 + b_1\,\text{POSTSOX}_t * \text{SMALLFIRM}_j + b_2\,\text{POSTSOX}_t * \text{LARFIRM}_j + b_3\,\text{DISP}_{jt} + b_4\,\text{LNAN}_{jt} + b_5\,\text{LNEXEC}_{jt} + b_6\,\text{EVOL}_{jt} + b_7\,\text{LOSS}_{jt} + u_{jt}, \tag{4b}$$

where SMALLFIRM_j equals one if the firm is part of the S&P Small Cap 600 group of firms, and zero otherwise. The variable LARFIRM_j equals one if the firm is part of the S&P 500 group of firms, and zero otherwise. The other explanatory variables are as described above.

Table 1 summarizes the descriptive statistics. Panel A reports descriptive statistics for the resulting overall sample. On average, the ANFE is 16% and the FB is 2% while the standard deviation is 0.26 and 0.31, respectively. Panel B shows descriptive statistics for large and small firms. The ANFE is about 21% and 14% for small and large firms, respectively. The FB is 1% for large firms and 3% for small firms.

TABLE 1
DESCRIPTIVE STATISTICS

Panel A: All Firms

Variable	Mean	Median	SD	N
EPS	0.46	0.40	0.46	11, 153
ANFE	0.16	0.06	0.26	11, 153
FB	0.02	-0.01	0.31	11, 153
POSTSOX	0.39	0	0.49	11, 153
NAN	10.56	10	6.54	11, 153
NEXEC	6.23	6	1.36	11, 153
DISP	0.03	0.02	0.05	11, 153
LOSS	0.05	0	0.22	11, 153
EVOL	0.38	0.24	0.37	11, 153

Panel B: Firms by Size

Variable	Mean		Median		SD		N	
	Large	Small	Large	Small	Large	Small	Large	Small
EPS	0.53	0.30	0.47	0.24	0.47	0.40	7686	3467
ANFE	0.14	0.21	0.05	0.10	0.24	0.30	7686	3467
FB	0.01	0.03	-0.01	-0.02	0.27	0.37	7686	3467
POSTSOX	0.39	0.39	0	0	0.49	0.49	7686	3467
NAN	12.06	7.23	11	6	6.27	5.86	7686	3467
NEXEC	6.43	5.79	6	6	1.35	1.26	7686	3467
DISP	0.03	0.02	0.02	0.01	0.05	0.04	7686	3467
LOSS	0.03	0.10	0	0	0.18	0.30	7686	3467
EVOL	0.39	0.35	0.25	0.22	0.37	0.36	7686	3467

Panel C: Pearson Correlations

	POSTSOX	LNAN	DISP	LNEXEC	LOSS	EVOL
POSTSOX	1.0000					
LNAN	0.1656***	1.0000				
DISP	0.1066***	0.0216***	1.0000			
LNEXEC	-0.2383***	0.0354***	0.0231**	1.0000		
LOSS	-0.0264***	-0.1284***	0.1769***	0.0259**	1.0000	
EVOL	-0.0153*	-0.0389***	0.0580***	0.0792***	-0.0567***	1.0000

*** Denotes statistical significance at the 1% level in two-tailed tests.
** Denotes statistical significance at the 5% level in two-tailed tests.
* Denotes statistical significance at the 10% level in two-tailed tests.

The mean number of analysts is 7.2 for small firms and 12.1 for large firms, while the mean number of company executives is 5.8 for small firms and 6.4 for large firms. Panel C of Table 1 shows the correlation matrix for the independent variables. The variable, POSTSOX, is significantly correlated with all of the other control variables (p-value<0.05). Thus, to the extent that POSTSOX is the most important variable, it is important to control for the other explanatory variables when examining our primary variable (POSTSOX).

EMPIRICAL RESULTS

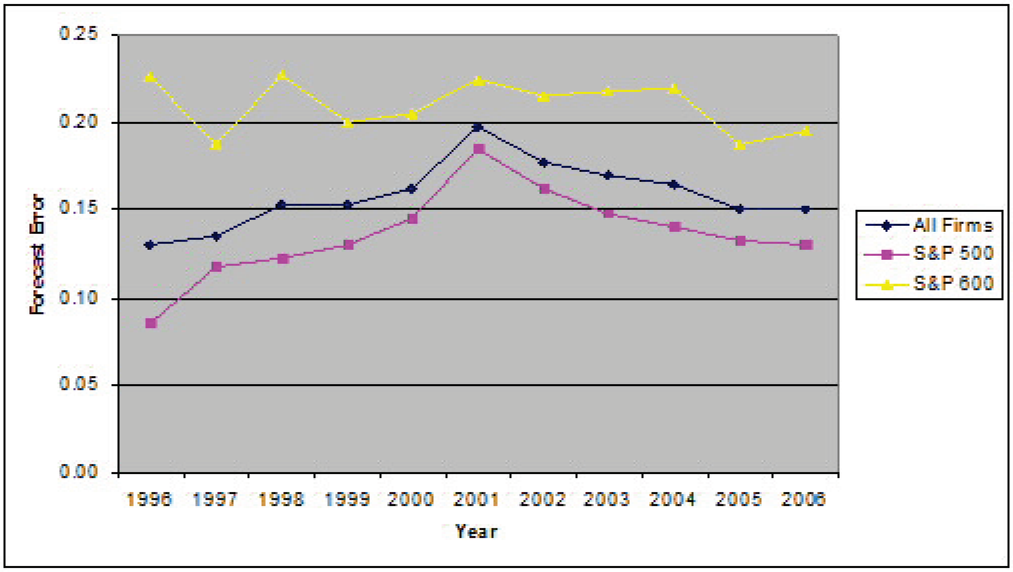
Univariate Results

Figure 1 shows the graphs of the consensus forecast errors and forecast bias for the firms in the sample over the eleven-year period (1996-2006). The forecast errors for the S&P Small Cap 600 firms averages about 21% per year over the sample period, and are distinctly higher than the forecast errors of the S&P 500 firms, which averages about 14% (see Panel A). This is consistent with the general view that the information environment is less efficient for small firms. Also in keeping with prior research, persistent analyst optimism (represented by positive forecast bias figures) is visible for most of the forecast period, although a decrease in optimism is noted during the 2003 to 2005 period (see Panel B). This period coincides with the economic downturn after the high-tech bubble and the restrained confidence in the markets, and may explain the period of forecast pessimism.

We report the pre and post-SOX consensus normalized forecast errors and forecast bias for each of the quarters in Table 2 (Panel A). For the quarters ending in March, the consensus normalized forecast errors increased post-SOX by about 20%. For the September and December quarters, the results show a decrease in the consensus normalized forecast errors post-SOX by about 6%, while the normalized forecast errors remained unchanged for quarters ending in June. However, the only statistically significant result for the difference in means is for the March quarters, which has a p-value of 0.02 for the t-test. These results hold for the overall sample, as well as for the sub-samples of large and small firms (Panels B and C). In terms of the forecast bias, Panel A shows that there was a decrease in forecast optimism for the overall sample post-SOX, while Panel B shows evidence of forecast pessimism for the sub-sample of large firms. However, the decrease in the forecast bias for the sub-sample of small firms was not statistically significant (Panel C).

FIGURE 1
FINANCIAL ANALYSTS' PERFORMANCE

Panel A: Consensus Forecast Error



Panel B: Consensus Forecast Bias

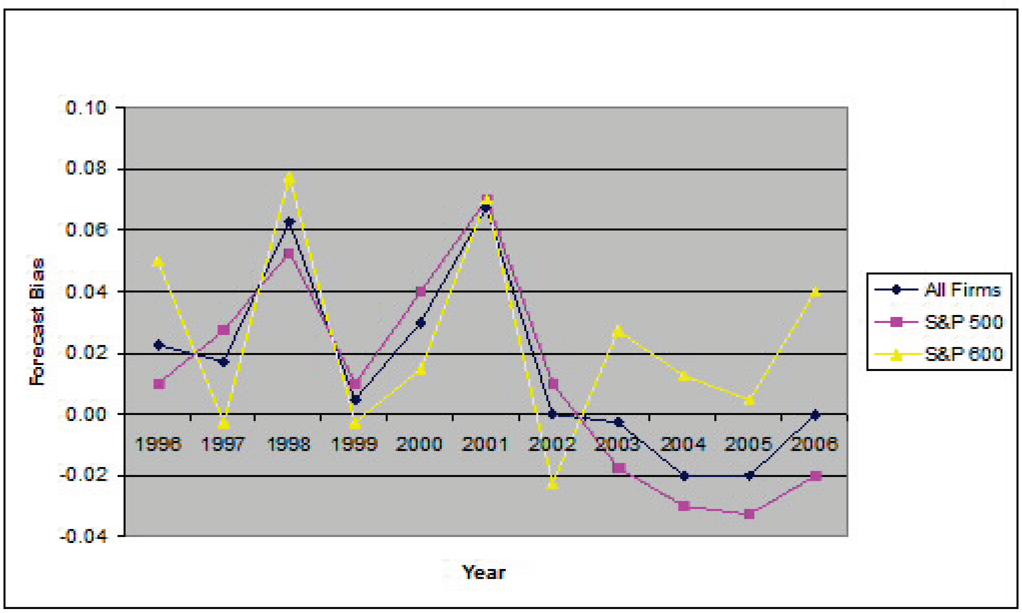


TABLE 2
ABSOLUTE NORMALIZED FORECAST ERRORS AND FORECAST BIAS
(PRE AND POST-SOX PERIODS)

Panel A: All Firms

Quarter	Pre-SOX ANFE	Post-SOX ANFE	*p*-Value	Pre-SOX FB	Post-SOX FB	*p*-Value
March	0.150	0.180	0.02**	-0.004	-0.024	0.102
June	0.150	0.150	0.44	0.012	-0.023	0.002***
September	0.160	0.150	0.48	0.055	0.004	0.000***
December	0.170	0.160	0.33	0.064	0.007	0.000***

Panel B: S&P 500 Firms

Quarter	Pre-SOX ANFE	Post-SOX ANFE	*p*-Value	Pre-SOX FB	Post-SOX FB	*p*-Value
March	0.13	0.16	0.04**	0.003	-0.039	0.002***
June	0.12	0.13	0.20	0.013	-0.030	0.000***
September	0.13	0.14	0.78	0.050	-0.015	0.000***
December	0.14	0.13	0.46	0.060	-0.003	0.000***

Panel C: S&P 600 Firms

Quarter	Pre-SOX ANFE	Post-SOX ANFE	*p*-Value	Pre-SOX FB	Post-SOX FB	*p*-Value
March	0.20	0.23	0.03**	-0.020	0.009	0.272
June	0.20	0.20	0.73	0.011	-0.007	0.469
September	0.22	0.19	0.16	0.066	0.045	0.414
December	0.22	0.21	0.51	0.072	0.029	0.094

The *p*-values are based on the two-tailed *t*-tests for means.
*** Denotes statistical significance at the 1% level in two-tailed tests.
**Denotes statistical significance at the 5% level in two-tailed tests.

Multivariate Results

We summarize the results of the first fixed-effects regression as specified in equation 3a in Table 3 (Panel A). The estimated coefficient on the POSTSOX dummy variable is positive and statistically significant, implying that there was a decrease in forecast accuracy post SOX. In other words, financial analysts' performance has worsened post-SOX. As expected, the absolute normalized forecast errors increase with dispersion, earnings volatility, and losses indicating a reduction in forecast accuracy. The coefficient on DISP, LOSS and EVOL are all positive and statistically significant. In terms of the number of analysts, the negative and significant coefficient on LNAN indicates that as the number of financial analysts increases, the absolute normalized forecast error decreases. The positive and significant coefficient on LNEXEC implies that there is a positive relationship between the number of company executives and the normalized forecast error. Therefore, we surmise that even though company executives may be knowledgeable agents who may proxy for information quality, they may have become more conservative post-SOX.

We present the results of equation 3b in Panel B. The coefficient on POSTSOX is negative and statistically significant, indicating that financial analysts have become pessimistic in their forecasts post-

SOX. In this case, the coefficient on LNAN is positive and statistically significant, implying that the forecast bias increases as the number of financial analysts increases.

TABLE 3
REGRESSIONS OF THE ABSOLUTE NORMALIZED FORECAST ERRORS AND FORECAST BIAS

Panel A: $ANFE_{jt} = b_0 + b_1 POSTSOX_t + b_2 DISP_{jt} + b_3 LNAN_{jt} + b_4 LNEXEC_{jt} + b_5 EVOL_{jt} + b_6 LOSS_{jt} + u_{jt}$

Variable	Coefficient	*t*-Statistics
POSTSOX	0.0174	3.54***
LNAN	-0.0333	-5.67***
LNEXEC	0.0159	4.10***
DISP	0.2456	2.37**
LOSS	0.3885	14.67***
EVOL	0.0297	3.52***
Adjusted R^2	0.20	
Total # of observations	11,153	

Panel B: $FB_{jt} = b_0 + b_1 POSTSOX_t + b_2 DISP_{jt} + b_3 LNAN_{jt} + b_4 LNEXEC_{jt} + b_5 EVOL_{jt} + b_6 LOSS_{jt} + u_{jt}$

Variable	Coefficient	*t*-Statistics
POSTSOX	-0.0315	-5.11***
LNAN	0.0362	4.74***
LNEXEC	0.0740	4.51***
DISP	0.0192	2.47**
LOSS	0.4481	12.44***
EVOL	0.0002	0.77
Adjusted R^2	0.06	
Total # of observations	11,153	

Reported t-statistics are from a robust variance estimator.
*** Denotes statistical significance at the 1% level in two-tailed tests.
** Denotes statistical significance at the 5% level in two-tailed tests.

S&P 500 Firms versus S&P Small Cap 600 Firms

We report the results from the fixed-effects regressions specified in equations 4a and 4b in Table 4. For all firms in the sample, we see in Panel A that the normalized forecast errors have increased post-SOX. The coefficients on SMALLFIRM and LARFIRM are both positive and statistically significant. Further, there is no statistically significant difference between the effect of SOX on financial analysts' performance as it relates to small firms and large firms (p-value = 0.9247). This suggests that the information environment may not have improved for both large and small firms post SOX. In terms of the forecast bias, we see that financial analysts have gotten pessimistic in their earnings forecast for both large and small firms post-SOX (Panel B). However, the negative coefficient on SMALLFIRM is not statistically significant so no concrete conclusions can be drawn about the forecast bias as it relates to the sub-sample of small firms post-SOX. For large firms, the coefficient is negative and statistically significant (t-statistic = 7.85), and we can therefore reasonably conclude that financial analysts have become more pessimistic in their earnings forecasts post-SOX.

TABLE 4
REGRESSIONS OF THE ABSOLUTE NORMALIZED FORECAST ERRORS

Panel A: $ANFE_{jt} = b_0 + b_1 POSTSOX_t * SMALLFIRM_j + b_2 POSTSOX_t * LARFIRM_j + b_3 DISP_{jt} + b_4 LNAN_{jt} + b_5 LNEXEC_{jt} + b_6 EVOL_{jt} + b_7 LOSS_{jt} + u_{jt}$

Variable	Coefficient	*t*-Statistics
SMALLFIRM	0.0181	2.24**
LARFIRM	0.0171	3.41***
p-value for difference	*(0.9247)*	
LNAN	-0.0334	-5.56***
LNEXEC	0.0518	4.09***
DISP	0.2454	2.36**
LOSS	0.3885	14.65***
EVOL	0.0297	3.52***
Adjusted R^2	0.20	
Total # of observations	11,153	

Panel B: $FB_{jt} = b_0 + b_1 POSTSOX_t * SMALLFIRM_j + b_2 POSTSOX_t * LARFIRM_j + b_3 DISP_{jt} + b_4 LNAN_{jt} + b_5 LNEXEC_{jt} + b_6 EVOL_{jt} + b_7 LOSS_{jt} + u_{jt}$

Variable	Coefficient	*t*-Statistics
SMALLFIRM	-0.0021	-0.17
LARFIRM	-0.0511	-7.85***
p-value for difference	*(0.0001)*	
LNAN	0.0296	3.78***
LNEXEC	0.0653	3.98***
DISP	0.3888	3.04***
LOSS	0.4621	13.13***
EVOL	0.0001	0.40
Adjusted R^2	0.06	
Total # of observations	11,153	

Reported t-statistics are from a robust variance estimator.
*** Denotes statistical significance at the 1% level in two-tailed tests.
** Denotes statistical significance at the 5% level in two-tailed tests.

One concern about the above results is that Reg FD could have impacted the findings. Reg FD was effective from October 2000, and SOX was effective from July 2002. Therefore, most of the pre-SOX sample is also in the post-Reg FD period, and the entire post-SOX sample is also in the post-Reg FD period. In order to control for any influence that Reg FD may have on the results, the pre-SOX period was deemed to be from the first quarter of 2001 to the third quarter of 2002. This time period represents the post-Reg FD period as well as the pre-SOX period, and minimizes contamination from Reg FD. The results are unaffected when the regressions were estimated using this new time period.

CONCLUSIONS

This study empirically examines the impact of SOX on financial analysts' performance. Our results show that consensus earnings forecasts have become less accurate post SOX. We also find that financial analysts have become more pessimistic in their forecasts post-SOX. Further, there is no significant difference in the decrease in forecast accuracy for smaller firms. However, there is a statistically significant difference in the forecast bias between large and small firms, with financial analysts being much more pessimistic in the earnings forecasts for large firms.

The findings allow several conclusions. First, despite the extensive scope of the Act, the information environment as a whole has not improved post SOX. Second, the information environment of small firms has not benefitted post SOX. Third, financial analysts are reacting to more conservative corporate insiders by erring on the side of caution and becoming more pessimistic in their earnings forecasts. It has been shown that analysts are judged less harshly when they are pessimistic in their forecasts as opposed to when they are optimistic in their forecasts, especially when the earnings forecasts are for large firms. Agency theory, or principal-agent theory, both provide credible theoretical explanations for this result. The financial analysts, acting as agents, act in their own best interests by providing pessimistic forecasts because they believe that these forecasts are more in line with what corporations want and they will be rewarded appropriately. In addition, one of the main provisions of SOX is that CEOs can be held criminally liable for inaccurate information in financial reports. This certainly increases the pressure to understate projections as the costs of being wrong have increased substantially because of SOX.

Our results are important and timely especially since the government, market participants, and other interested parties, are assessing the overall effect of SOX to determine whether or not it should be amended or even repealed.

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