

Online-Appendix A. Results using Quarterly Earnings and Long-Term Growth Forecasts

We replicate all estimations of the paper using quarterly earnings forecasts (QEFs) and long-term growth forecasts (LTGFs). This analysis has a number of limitations relative to the comparison of annual earnings forecasts with recommendations, shown in the main paper. In particular, the comparison of recommendation optimism to QEF or LTGF optimism as a measure of strategic distortion (or, alternatively, the comparison of annual earnings forecast (AEF) optimism or QEF optimism to LTGF optimism) is less clean than the comparison of recommendation optimism to AEF optimism. The main reason is that, while the time frame of AEFs is comparable to that of recommendations (up to one-year perspective), the same does not hold for QEFs and LTGFs. QEFs follow a shorter, quarterly schedule, which constrains analysts more, e.g. in their (strategic) timing of updates. LTGFs, instead, follow a longer and ambiguous schedule. Most often, long-term growth is defined as the expected annual rate of earnings growth over the next three to five years (Thompson Financial, 2004); but Sharpe [2005] estimates that the market prices long-term growth forecasts as if applicable to a five to ten year horizon. Long-term growth forecasts are also difficult to categorize in terms of target audience. On the one hand, they are more complex than recommendations, suggesting a sophisticated (large-investor) audience. On the other hand, they are often vague and hard to verify *ex post*, allowing for distortions without negative consequences. A final limitation of LTGF analysis is that the sample is small. For example, we have only 1,082 affiliated long-term growth forecasts compared to 7,622 affiliated annual earnings forecasts, reflecting a lower number of analysts and brokerage houses who publish long-term growth forecasts with IBES. Nevertheless, we replicate the full set of summary statistics and results for completeness.

The QEF and LTGF data also comes from IBES. Our proxies for distortion mirror those employed in the main paper for annual earnings forecasts and recommendations: forecast minus consensus. For quarterly earnings forecasts, the consensus calculation is the average of all forecasts made during the quarter, following the prior quarterly earnings announcement. We express optimism normalized by share price. LTGF and LTGF optimism are expressed in percent.

As reported in Panel A of Appendix-Table OA.1, the sample includes 412,447 quarterly earnings forecasts (QEF) and 71,339 long-term growth forecasts (LTGF). If we restrict the analysis to those firms that could possibly have affiliated analysts (due to an IPO in the past five years or an SEO in the past two years), the sample is reduced to 86,096 QEFs and 17,461 LTGFs.

The level of QEFs corresponds to roughly one quarter of the annual forecasts. As with annual earning forecasts, discussed in the main paper, QEFs of unaffiliated analysts are *more* positive than those of affiliated analysts. The same holds for the subsample of recent issuers, shown in the lower half of Panel A. LTGFs, instead, are more positive among affiliated analysts, similarly to recommendations.

Table OA.2, Column (1), shows that results for quarterly earnings forecasts replicate when benchmarked against the consensus and in the regression framework. The results for long-term growth forecasts (Column (2)) are, instead, insignificant. Similarly, the differences in the timing of QEF and LTGF updates are shown in Table OA.3.

Similarly to the AEFs, there is virtually no difference in the updating of QEFs between unaffiliated and affiliated analysts. None of the slight (at most one- to two-day) differences shown in the upper half of Panel A are significant, as Panel B reveals. In the case of LTGFs, instead, affiliated analysts wait significantly longer before they update. However, they do so both if their own outstanding LTGF is above the consensus and if it is below the consensus. They wait 104 more days when below the consensus and 103 more days when above the consensus, and the difference is significant in both cases. Both the results on LTGF relative to the consensus (i.e., no significant difference for affiliation) and the results on timing confirm that we cannot use the comparison to LTGFs in a similar spirit as we are using the comparison to recommendations.

The summary statistics of trade reactions are displayed in the Panel B of Appendix Table OA.1. Interestingly, the trade reactions on days with quarterly earnings forecasts are very similar to those on recommendation dates, while the trade reactions on days of long-term growth forecast announcements are very similar to those on annual earnings forecast dates. This “crossed” similarity underlines that QEFs and LTGFs are hard to categorize in terms of investor audience and, as a result, do not provide a clear-cut benchmark to identify strategic distortion.

Appendix-Table OA.4 shows the regression results for trade reactions to quarterly earnings forecasts and long-term growth forecasts. The estimated coefficients for small traders’ reaction are always insignificant both for unaffiliated and affiliated analysts’ QEF and LTGF revisions. Large traders react significantly positively to QEF and LTGF revisions by unaffiliated analysts and insignificantly positively to those by affiliated analysts, though the coefficient estimate is large in all cases. The intercept coefficient is significantly positive for small traders for QEF updates of both unaffiliated and affiliated analysts and for LTGF updates of unaffiliated analysts. The intercept is much smaller in magnitude and always insignificant for large traders. That is, small traders show a positive response to the *occurrence* of most QEF and LTGF updates, but do not account for the direction of the updates. Large traders, instead, respond to the directional content of an update. Given that small traders do not react to long-term growth forecast content (insignificant slope), it should be possible for analysts to target these statements towards large investors. However, given that neither group reacts to LTGFs updates of affiliated analysts, it is unclear if affiliated analysts have that option. As such, we cannot make predictions regarding unaffiliated versus affiliated long-term growth behavior, relative to recommendations and annual earnings forecasts.

Appendix-Table OA.5 relates quarterly earnings-forecast optimism to recommendation optimism. The results are qualitatively similar to those using annual earnings forecasts, though the coefficient estimates and difference between the two slope coefficients are only marginally significant or insignificant. Long-term growth forecasts, shown in Appendix Table OA.6, show a (mostly significant) positive relationship coefficient for both unaffiliated and affiliated analysts with no significant difference between the two.

Repeating the analysis for the *next* recommendation reported in the paper (untabulated), we find similar results for QEFs as for AEFs: the affiliated coefficient

turns from negative to positive, though it is insignificant for QEFs. A similar analysis for long-term growth forecasts finds no significant results.

Appendix-Table OA.7 repeats the analysis showing the negative forecast error in analysts' last forecast before the earnings announcement for quarterly earnings forecasts. All results are qualitatively similar for QEFs as for AEFs, with the last forecast being more negative for affiliated analysts, but lack any statistical significance.

References

Sharpe, Steven A., "How Does the Market Interpret Analysts' Long-Term Growth Forecasts?" *Journal of Accounting, Auditing and Finance*, XX, (2005),147-166.

TABLE OA1. Summary Statistics

Panel A. Quarterly Forecasts and Long Term Growth Forecasts

Quarterly Earnings Forecasts are reported in earnings-per-share dollars, and the sample is limited to forecasts pertaining to the closest following quarterly earnings-per-share announcement, and to earnings announcements that occur during the SEC mandated window of 0-45 days after the end of the relevant fiscal quarter. Long-term Growth Forecasts are the expected annual rate of earnings growth, typically for the next 3-5 years. A brokerage firm is "Unaffiliated" if it has not been the lead or co-underwriter for a firm's IPO in the past 5 years or for a firm's SEO in the past 2 years. A brokerage firm is "Affiliated" if it has been a lead or co-underwriter over the same periods. A brokerage firm is "Never Affiliated" if it does not have any (lead or co-underwriter) equity or bond underwriting affiliation during the entire sample period. The sample period is 2/01/1994 to 12/31/2002.

	Quarterly Earnings Per Share						Long Term Growth Forecasts					
	Sample size	Mean	Standard Deviation	Percentile			Sample size	Mean	Standard Deviation	Percentile		
				25th	50th	75th				25th	50th	75th
Entire Sample												
All	412,447	0.40	0.50	0.17	0.34	0.57	71,339	15.01	8.84	10.00	14.00	18.00
Unaffiliated	406,253	0.40	0.50	0.17	0.34	0.58	70,257	14.96	8.83	10.00	14.00	18.00
Affiliated	6,194	0.33	0.44	0.13	0.28	0.46	1,082	18.36	8.65	13.00	17.00	22.50
Never Affiliated	156,828	0.41	0.51	0.17	0.35	0.59	29,427	14.43	7.89	10.00	13.00	17.80
Subsample of firms with an IPO in the past 5 years or an SEO in the past 2 years												
All	86,113	0.35	0.43	0.14	0.30	0.50	17,466	17.81	9.38	12.00	16.00	22.00
Unaffiliated	79,919	0.35	0.43	0.14	0.30	0.51	16,384	17.78	9.43	12.00	16.00	22.00
Affiliated	6,194	0.33	0.44	0.13	0.28	0.46	1,082	18.36	8.65	13.00	17.00	22.50
Never Affiliated	33,513	0.35	0.42	0.14	0.30	0.50	7,044	17.50	9.11	12.00	15.50	21.00

Panel B. Measures of Trade Reaction

	All dates			Quarterly forecast dates			Long term growth forecast dates		
	mean	median	st. dev	mean	median	st. dev	mean	median	st. dev
Number of small buy-initiated trades	49.67	15	93.38	111.87	47	150.96	104.03	22	145.27
Number of large buy-initiated trades	24.27	3	68.90	76.24	23	138.05	73.93	38	133.23
Number of small sell-initiated trades	43.25	15	80.28	93.80	42	129.23	87.83	18	124.71
Number of large sell-initiated trades	20.06	3	56.73	62.17	19	113.31	60.81	82	110.63
Total number of small buy/sell-initiated trades	92.92	31	170.90	205.66	90	275.85	191.86	41	265.76
Total number of large buy/sell-initiated trades	44.33	7	124.73	138.42	43	249.61	134.74	4	242.09
Δ(buy-sell) initiated small trades	6.42	1	33.54	18.07	5	53.71	16.19	2	51.80
Δ(buy-sell) initiated large trades	4.21	0	19.29	14.07	3	38.59	13.12	364988	37.04
	<i>N 3,586,144</i>			<i>433,050</i>			<i>71,339</i>		

TABLE OA2. Comparison to Consensus

OLS regression of the difference between individual analyst forecasts and consensus, normalized by share price (and multiplied by 100) in Column (1) and difference between analyst forecast and consensus, unnormalized, in Column (2), on an indicator for affiliation and, in Column (1), on expected time to the next quarterly earnings announcement (measured as days/1000). For both columns, a positive difference indicates that the analyst is optimistic relative to the consensus. For quarterly earnings forecasts, the sample is limited to stocks with a share price of at least \$5. For long term growth forecasts the sample is limited to stocks with at least one long term growth forecast in the prior six months and full data availability for the prior six months. For both columns, the sample is limited to stocks for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years. We include fixed effects for year, month and day-of-week. Standard errors (in parentheses) are robust to arbitrary heteroskedasticity and within-date correlation.

	Quarterly Earnings Forecasts (1)	Long Term Growth Forecasts (2)
Affiliated	-0.0091 (0.0050)	-0.1938 (0.2413)
Expected time to quarterly earnings announcement	0.7201 (0.0703)	
Fixed Effects for year, month, and day-of-week	Yes	Yes
Number of Observations	76,453	15,894
R2	0.0049	0.0038

TABLE OA3. Timing**Panel A. Sample Statistics**

Mean (median) number of days until new recommendation or new forecast (same						
Quarterly Earnings Forecasts	Overall	Relative to Consensus			Relative to Update	
		Below	Equal to	Above	Before Increase	Before Decrease
Unaffiliated	39.3 (38)	38.2 (35)	44.1 (45)	38.5 (36)	38.9 (36)	39.5 (38)
Affiliated	40.2 (41)	39.0 (40)	42.5 (44)	40.3 (38)	41.2 (42)	39.7 (39)
Long Term Growth Forecasts	Overall	Relative to Consensus			Relative to Update	
		Below	Equal to	Above	Before Increase	Before Decrease
Unaffiliated	280.4 (154)	289.5 (162)	393.9 (268)	259.3 (139)	249.9 (122)	299.8 (175)
Affiliated	386.1 (239)	392.2 (250)	565.0 (468)	363.0 (218)	311.6 (195)	430.0 (283)

Sample Period is 2/01/1994 to 12/31/2002. The sample is limited to stocks for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years.

Panel B. Regression Analysis

OLS regressions of the number of days until the next quarterly earnings forecast or long term growth forecast by the same analyst for the same stock on forecast controls and their interactions with affiliation dummies. The sample excludes reiterations and is limited to stocks for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years. Standard errors (in parentheses) are robust to arbitrary heteroskedasticity and within-date correlation.

	Quarterly Earnings Forecast	Long Term Growth Forecast
Above consensus	38.49 (0.40)	259.31 (6.05)
Equal to consensus	44.11 (0.47)	393.86 (22.31)
Below consensus	38.24 (0.38)	289.47 (5.88)
(Above consensus) *(Affiliation)	1.79 (1.08)	103.73 (27.88)
(Equal to consensus) *(Affiliation)	-1.64 (1.58)	171.14 (114.62)
(Below consensus) *(Affiliation)	0.79 (1.00)	102.74 (23.40)
Number of Observations	19,840	10,435
R ²	0.75	0.41

TABLE OA4. Trade Reaction: Regression Results

OLS regressions of trade reaction on forecast update values. Trade reaction is measured by abnormal trade imbalance. Large traders represent trades of at least \$50,000; small traders represent trades of less than \$20,000. Update is the difference between a given forecast and the prior forecast, normalized by share price for Quarterly Earnings Forecasts (as these are in earnings per share units) and unnormalized for Long-Term Growth Forecasts (as these are in percentage units). The sample is limited to stocks for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years. Standard errors (in parentheses) are robust to arbitrary heteroskedasticity and within-day correlation.

		Quarterly Earnings Forecasts			Long Term Growth Forecasts		
		Small Traders	Large Traders	Difference (S-L)	Small Traders	Large Traders	Difference (S-L)
Unaffiliated	Update	0.9119 (1.0198)	2.2087 (0.9176)	-1.2968 (1.3718)	-0.0001 (0.0014)	0.0034 (0.0014)	-0.0035 (0.0020)
	Constant	0.0707 (0.0108)	0.0027 (0.0097)	0.0681 (0.0145)	0.0581 (0.0118)	-0.0095 (0.0109)	0.0677 (0.0161)
	<i>N</i>	23,818	23,818		9,614	9,614	
	<i>R</i> ²	0.0001	0.0007		0.0000	0.0007	
Affiliated	Update	1.4729 (2.5195)	1.0993 (2.4767)	0.3736 (3.5329)	0.0036 (0.0056)	0.0094 (0.0066)	-0.0058 (0.0086)
	Constant	0.0766 (0.0253)	-0.0350 (0.0241)	0.1116 (0.0349)	0.0130 (0.0407)	0.0087 (0.0447)	0.0043 (0.0605)
	<i>N</i>	1,777	1,777		564	564	
	<i>R</i> ²	0.0002	0.0001		0.0007	0.0046	

TABLE OA5. Relationship Between Quarterly Forecast Optimism and Recommendation Optimism

Quarterly Forecast Optimism, defined as the difference between forecast and consensus, divided by the stock price on the forecast date (and multiplied by 100). Recommendation Optimism is the difference between a recommendation and the consensus for the same stock (over the past month) at the time of the earnings forecast. Affiliation is a binary variable and equal to 1 if the analyst's brokerage house is affiliated with an investment bank with a past SEO- or IPO- (co- or lead-)underwriting relationship. We include year-, month-, and day-of-the-week fixed effects. Panel A displays results for the full sample. Panel B displays results for the subsample of analysts who have at least one affiliated forecast or recommendation outstanding and at least one unaffiliated forecast or recommendation outstanding. The sample is limited to earnings forecasts within 80 days before the earnings announcement and to stocks with prices of at least \$5 and for which past affiliation is possible, i.e., stocks with an IPO in the past

Panel A. All Analysts

	Whole Sample	Unaffiliated	Affiliated	Whole Sample
Recommendation Optimism	0.0031	0.0050	-0.0240	0.0051
	(0.0064)	(0.0067)	(0.0148)	(0.0067)
Affiliation				-0.0224
				(0.0159)
Affiliation*(Recommendation Optimism)				-0.0258
				(0.0158)
Fixed Effects for year, month and day-of-week	Yes	Yes	Yes	Yes
Number of Observations	30,344	28,515	1,829	30,344
R ²	0.0044	0.0039	0.0405	0.0046

Panel B. Analysts who are both affiliated and unaffiliated

	Whole Sample	Unaffiliated	Affiliated	Whole Sample
Recommendation Optimism	-0.0114	-0.0035	-0.0187	-0.0041
	(0.0087)	(0.0096)	(0.0144)	(0.0095)
Affiliation				-0.0322
				(0.0188)
Affiliation*(Recommendation Optimism)				-0.0122
				(0.0163)
Fixed Effects for year, month and day-of-week	Yes	Yes	Yes	Yes
Number of Observations	4,087	2,359	1,728	4,087
R ²	0.0245	0.0250	0.0402	0.0266

TABLE OA6. Relationship Between Long Term Growth Forecast Optimism and Recommendation Optimism

OLS regressions of forecast optimism on recommendation optimism, affiliation, and interaction. The dependent variable is Long-Term Growth Forecast Optimism, defined as the difference between forecast and consensus (over the past 6 months). Recommendation Optimism is the difference between a recommendation and the consensus for the same stock (over the past month) at the time of the earnings forecast. Affiliation is a binary variable and equal to 1 if the analyst's brokerage house is affiliated with an investment bank with a past SEO- or IPO- (co- or lead-)underwriting relationship. We include year-, month-, and day-of-the-week fixed effects. Panel A displays results for the full sample. Panel B displays results for the subsample of analysts who have at least one affiliated forecast or recommendation outstanding and at least one unaffiliated forecast or recommendation outstanding. The sample is limited to earnings forecasts within 80 days before the earnings announcement and to stocks with prices of at least \$5 and for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years. Standard errors (in parentheses) are robust to heteroskedasticity and arbitrary within-analyst correlation.

Panel A. All Analysts

	Whole Sample	Unaffiliated	Affiliated	Whole Sample
Recommendation Optimism	0.6483	0.6480	0.6080	0.6486
	(0.0877)	(0.0907)	(0.3772)	(0.0907)
Affiliation				-0.0505
				(0.3730)
Affiliation*(Recommendation Optimism)				0.0001
				(0.3690)
Fixed Effects for year, month and day-of-week	Yes	Yes	Yes	Yes
Number of Observations	9,823	9,378	445	9,823
R ²	0.0132	0.0128	0.0726	0.0132

Panel B. Analysts who are both affiliated and unaffiliated

	Whole Sample	Unaffiliated	Affiliated	Whole Sample
Recommendation Optimism	0.4914	0.3731	0.6670	0.3751
	(0.2313)	(0.2906)	(0.3781)	(0.2777)
Affiliation				0.8294
				(0.4245)
Affiliation*(Recommendation Optimism)				0.2113
				(0.4540)
Fixed Effects for year, month and day-of-week	Yes	Yes	Yes	Yes
Number of Observations	1,021	602	419	1,021
R ²	0.0387	0.0439	0.0766	0.0433

TABLE OA7. Quarterly Earnings Forecasts: Positive or Negative Forecast Error

Logit model, where the dependent variable takes the value of 1 if the quarterly earnings forecast is greater than the earnings realization. The sample is limited to the last forecast of a given analyst for a particular firm's fiscal period. Expected time to quarterly earnings announcements is based on the dates of the previous year's earnings announcements. The sample period is 02/01/1994 to 12/31/2002 for the "full period" estimations and 02/01/1994 to 7/31/2001 for the "pre-scandal period." The sample is also limited to stocks for which past affiliation is possible, i.e., stocks with an IPO in the past 5 years or SEO in the past 2 years. Standard errors (in parentheses) are robust to arbitrary heteroskedasticity and within-analyst correlation.

	Full Period		Pre-Scandal Period	
	(1)	(2)	(3)	(4)
Affiliated	-0.0375 (0.0523)	-0.0355 (0.0524)	-0.0822 (0.0607)	-0.0808 (0.0608)
Expected time to next quarterly announcement [in thousandths]	0.0018 (0.0003)	0.0017 (0.0003)	0.0019 (0.0004)	0.0018 (0.0004)
Forecast optimism relative to consensus, normalized by share price		9.5006 (3.2463)		9.4220 (4.9473)
Constant	-1.1223 (0.0225)	-1.1132 (0.0227)	-1.1647 (0.0252)	-1.1571 (0.0255)
Number of Observations	53,990	53,990	44,485	44,485
χ^2	31	38	28	31
Pseudo R ²	0.0006	0.0013	0.0007	0.0011