Online supplemental materials to:

“The Disincentive Effect of Stars: Evidence from Analyst Coverage”

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1. The competition avoidance effect—analyst-level evidence

To provide more direct evidence on competition avoidance effect, we examine our research question by using firm-analyst-year level observations. Specifically, we first identify all analysts who switch their coverage. Let' say that an analyst switches from A and B to C and D (That is, this analyst drops the coverage of A and B and initiates the coverage of C and D). We then compare the star coverage of each firm initiated by the analyst (i.e., C and D) with the average star coverage of firms dropped by the analyst (i.e., the average star coverage of A and B). The comparison outcome can be "Increase", "Decrease" or "The same". We use a categorical variable, $Decrease\_Cov_{ijt}$, to indicate the three possibilities. $Decrease\_Cov_{ijt}$ equals 1/0/-1 if analyst j initiates coverage for firm i and firm i' star coverage is lower than/the same as/higher than the average star coverage of firms dropped by analyst j in year t. We conduct empirical analyses and report our results in Table A1.

Panel A shows that when the dropped firms experience an increase in star coverage, the star coverage of initiated firms on average is lower than the star coverage of dropped firms (the mean value of *Decrease_Cov* is 0.110). However, when the dropped firms do not experience an increase in star coverage, the star coverage of initiated firms on average is higher than the star coverage of dropped firms (the mean value of *Decrease_Cov* is -0.12). The difference in *Decrease_Cov* between the two scenarios is significant at the 1% level. This result clearly indicates that when firms currently covered by non-star analysts experience an increase in star coverage, non-stars move to firms with lower star coverage.

Panel B reports detailed distribution of *Decrease_Cov*. We find that when dropped firms experience an increase in star coverage, close to 50% of newly covered firms have lower star coverage than dropped firms. However, only 27% of newly covered firms have lower star coverage than dropped firms, when dropped firms do not experience an increase in star coverage. The results in this panel add further support to the notion that non-stars tend to avoid competing with stars.

Panel C reports the results when we regress *Decrease_Cov* on *Dropped Star Increase*, a dummy which takes the value of 1, if the dropped firms experience an increase in star coverage, and 0 otherwise, and control variables. The coefficient on *Dropped Star Increase* is positive and significant, suggesting that, when the dropped firms experience an increase in star coverage, we are likely to observe non-stars moving to cover firms with lower star coverage.

Panel D investigates the relation between the likelihood of the non-star dropping out of IBES and the increase in star coverage of firms currently covered by the non-star. Our dependent variable is a dummy, which equals 1 if the analyst drops out, and 0 otherwise. We regress it on *Dropped Star Increase*, and other analyst characteristics. The coefficient on *Dropped Star Increase* is insignificant. This result is inconsistent with the notion that our main results are due to non-stars dropping out of IBES.

Taken together, Table A1 shows that when firms currently covered by non-star analysts experience an increase in star coverage, non-stars move to firms with lower star coverage. In addition, the likelihood of non-stars dropping out of IBES is unrelated to the increase in current firms' star coverage. Overall, these findings lend support to our claim that non-stars avoid competing with stars.

2. Does non-star coverage influence consensus forecast accuracy?

Our results indicate that when the star coverage increases, non-star coverage is likely to decrease, implying that star analysts potentially thwart the competition among analysts. We now analyze the economic consequence of this finding. Specifically, we examine the impact of non-star analyst coverage on consensus forecast accuracy after controlling for star analyst coverage. We choose to focus on consensus forecast accuracy because it matters to investors and because it is an observable outcome which reflects the collective performance of all analysts following the firm.

Ex ante, it is difficult to predict whether non-star coverage has explanatory power incremental to star coverage. On one hand, we can argue that non-star coverage represents additional resources and efforts devoted to researching the firm and therefore it increases the consensus forecast accuracy; on the other hand, arguments can be made that star analysts dominate in information gathering and processing, relegating non-star analysts to a negligible role. We take our queries to the data.

Specifically, we use OLS regressions to regress the change in consensus forecast accuracy on *Star Increase/Decrease* dummies and *Non-star Increase/Decrease* dummies, controlling for changes in several firm characteristics. We report our results in Table A2.

Table A2 shows that the coefficient on the *Star Increase* dummy is 0.007, significant at the 1% level, while the coefficient on the *Non-star Increase* dummy 0.005, also significant at the 1% level. Our results suggest that non-star coverage, especially its increase, has incremental explanatory power for the consensus forecast accuracy.

To somewhat quantify the impact of the competition avoidance effect, we assume that star analyst coverage is not correlated to non-star analyst coverage, when the effect is absent. This is likely an understatement of the competition avoidance effect, because prior literature and our prior results indicate that star analysts and non-star analysts seem to be attracted by the same set of firm characteristics. Therefore, when the effect is absent, the correlation between the two types of coverage is likely positive. We nevertheless choose this assumption for simplicity.

Under the assumption above, absent the competition avoidance effect, an increase in star analyst coverage improves the accuracy of the consensus forecasts by 0.7%, and it does not alter non-star analyst coverage. The impact of the competition avoidance effect is reported in Table 3 (Panel B Model 2), which shows that increasing star coverage reduces the likelihood of increasing non-star-coverage by close to 19% (the odds ratio is reduced by 58%). Since increasing non-star coverage improves the consensus forecast accuracy by 0.5% (Table A2 Model 1), our results indicate that close to 14% of the benefits brought by increasing star coverage is offset by the competition avoidance effect[1].

Overall, we find consistent evidence that an increase in non-star coverage is associated with more accurate consensus forecasts, after controlling for the changes in star coverage. This is

[1] An increase in star coverage leads to an improvement of 0.7% in the consensus forecast accuracy. The competition avoidance effect however results in a 19% chance that the non-star coverage will decrease, which reduces the forecast accuracy by 0.5%. 14% is computed by dividing the expected value of the drop in forecast accuracy (0.5%*0.14) due to competition avoidance by the improvement in forecast accuracy (0.7%) due to the increase in star coverage.

consistent with the notion that this increase implies greater resources devoted to collecting and processing information, which results in more precise consensus prediction of future earnings. Our results suggest that the existence of competition avoidance effect negatively influences the accuracy of consensus forecasts by discouraging non-star analysts from following firms with an increase in star coverage.

3. Robustness Tests

3.1 Rule out mechanical reasons

3.1.1 Methodology

We have shown so far that the number of non-star analysts following increases (decreases) when the number of star analysts following decreases (increases). We attribute this finding to non-star analysts avoiding competition with stars. However, a change in the status of an analyst, from non-star to star or from star to non-star, can potentially explain our finding, because it induces simultaneous changes in the opposite direction in the number of stars and in the number of non-stars. For example, when the analyst becomes a star and retains her coverage, the firms she covers will see a simultaneous increase in the number of star analysts following and a drop in the number of non-star analysts following, leading to an ostensible manifestation of the competition avoidance effect.[2] This section discusses our empirical analysis conducted to investigate this possibility.

Specifically, we first identify a change in the analyst status and compute the necessary adjustment in the year of change. For example, if an analyst becomes a star, the adjustment to be made to the number of stars (non-star) is -1 (+1) in the year of change. Then, starting from the first year in which the firm appears in our sample, we cumulate the adjustment to be applied in each year, and our actual adjustment is based on the cumulated number. We use an example to demonstrate this adjustment process and explain why it is necessary to use the cumulated number.

[2] Conceptually, the alternative explanation is unlikely to be true because our results are based on a broad cross-section of data, and the limited occurrences of changes in status are unlikely to have a material effect on the results.

Suppose analysts A, B and C follow the same firm for three years, starting from the first year the firm appears in our sample. In the second year, analyst B becomes a star and in the third year, analyst C becomes a star and analyst B remains a star. Analyst A is a non-star for the entire three years. As there is no change in the analyst following, there is no competition avoidance effect and the changes in star analysts and non-star analysts following are entirely due to the mechanical reason. If we are successful in adjusting for the mechanical reason, we shall observe that the adjusted numbers are identical in all three years.

The unadjusted number for stars (non-stars) is 0 (3), 1 (2) and 2 (1), respectively for the first, second and third year. If we ignore the adjustments of prior years, the adjustment to be made to the number of stars (non-stars) is -1 (+1) for both the second and the third years. As a result, the adjusted number for stars (non-stars) is 0 (3), 0 (3) and 1 (2) respectively for the first, second and third year. This adjustment is not successful, because the adjusted numbers are not identical across the three years.

Using the cumulated number solves this problem. Under this approach, the adjusted number is 0 and 3 respectively for stars and non-stars in the second year. In the third year, the cumulated adjustment is -2 for the number of star analysts and +2 for the number of non-star analysts. Therefore the adjusted number is 0 and 3, respectively for stars and non-stars. The adjusted numbers are identical across all three years, accurately reflecting the absence of the competition avoidance effect. This example shows the importance of using the cumulated adjustment.

3.1.2 Results

After we adjust the number of analysts following, we conduct tests similar to those in Table 2. Our results are reported in Table A3 Panel A.

The model specification is the same as in Panel B of Table 2. Model 2 reports the results after controlling for firm characteristics. The coefficient on *Star Increase* is -0.704, significant at the 1% level. The related odds ratio is 0.495, suggesting that the odds of being in a higher non-star coverage change category is lower by 50% for firms with an increase in star analyst coverage than for firms with no change in star coverage. The coefficient on *Star Decrease* is 0.745, significant at the 1% level. The related odds ratio is 2.107, suggesting that the odds of being in a higher non-star coverage change category are higher by 111% for firms with a decrease in star analyst coverage than for firms with no change in star coverage.

In sum, Table A3 Panel A shows that the competition avoidance effect is robust towards considering the mechanical reason related to the change in the status of an analyst.

3.2 Using an alternative window to measure analyst coverage

Our prior results are based on the number of analysts following during the three months around the annual earnings announcement date. As we explained earlier, we choose this window to ensure a reasonable chance of detecting analyst coverage. However, an analyst who makes a forecast for the firm during the three months may terminate her coverage, and an analyst who fails to make a forecast during the period may initiate coverage in the later months. As analyst coverage is not based on contracts, this measurement error concern applies to all possible measurement windows.

Conceptually, it is not clear how this concern systematically affects our results related to the competition avoidance effect. Nonetheless, we test whether our results are robust to analyst coverage based on a longer one-year measurement window. This window starts after the announcement of earning of fiscal year t and ends before the announcement of earning of fiscal year t+1. From the I/B/E/S detailed file, we count the number of analysts who issue at least one one-year ahead EPS forecast for the firm in this alternative measurement window. We use hand-collected data to determine the number of star analysts among them. We repeat our prior analyses to examine whether the competition avoidance effect is robust towards the alternative way of defining analyst coverage.

Table A3 Panel B reports the results. The dependent variable is *Non-star Change*. Model 1 does not control for firm characteristics while Model 2 does. In Model 2, the coefficient on *Star Increase* dummy is -0.942 and the coefficient on *Star Decrease* dummy is 1.005, both significant at the 1% level. The related odds ratios suggesting that the odds of being in a higher non-star coverage change category are lower (higher) by 61% (173%) for firms with an increase (a decrease) in star analyst coverage than for firms with no change.

In sum, the results in Panel B indicate that our findings are robust towards using a longer measurement window to identify analyst coverage.

3.3 Using an exogenous sample

Our prior results are subject to the concern that we fail to control for firm characteristics whose correlations with star analyst coverage and non-star analyst coverage take on different signs. It is difficult to pinpoint these factors, since prior literature indicates that firm characteristics have a similar impact on both stars and non-stars.

To address this concern, we try to replicate our main finding using a sample of firms where the decrease in star-analyst coverage is not due to firm characteristics, but due to exogenous events, such as retirement or sudden death. To construct the sample, we first identify star analysts who stop providing forecasts for all firms in I/B/E/S. Then we search FACTIVA for articles containing either the name of the analyst or the name of the brokerage house employing her, in the year when she leaves I/B/E/S. We read articles to identify reasons for the disappearance. If the disappearance is due to a change in career, e.g. becoming a buy-side analyst, promotion, health issues, sudden death and retirement, we treat this disappearance as exogenous. Our sample consists of firms that experience no change in star coverage (as control firms) and firms whose decrease in star coverage is entirely due to exogenous reasons (as treatment firms). The treatment sample consists of 119 firm-year observations.

We replicate our ordered logistic regression analyses on this sample. Specifically, we regress *Non-star Change* on *Star Decrease* dummy. *Star Decrease* dummy equals one, if the number of star analysts decreases for exogenous reasons, and zero if the number of star analysts remains the same. Our results are reported in Table A3 Panel C.

Model 1 shows the regression results without controlling for firm characteristics. The coefficient on *Star Decrease* is 0.338, significant at 5% level. Model 2 shows the regression results after controlling for firm characteristics. The coefficient on *Star Decrease* is 0.518 and the odds ratio is 1.171, indicating that the odds of having an increase in non-star coverage are higher by close to 17% for firms experiencing an exogenous decrease in star coverage than for firms with no change in star coverage.

In sum, Table A3 Panel C indicates that when there is an exogenous decrease in star coverage, the non-star coverage is much more likely to increase. This result shows that our results are unlikely explained by unobservable firm characteristics that are correlated with star coverage and non-star coverage in different ways.

3.4 Using an industry-blind definition of star analyst

Our definition of star analyst is associated with industries. An analyst who is chosen as a star for Industry A but not for Industry B is deemed a star for Industry A firms but not for Industry B firms. In this section, we test whether our results are robust if we define star analysts regardless of the specific industry. That is, as long as an analyst is a star for one industry, she is deemed a star for all firms she covers.

Our results are reported in Table A3 Panel D. Model 1 does not control for firm characteristics while Model 2 does. In Model 2, the coefficient on *Star Increase* dummy is -0.882 and the coefficient on *Star Decrease* dummy is 0.819, both significant at the 1% level. The related odds ratios suggesting that the odds of being in a higher non-star coverage change category are lower (higher) by 59% (127%) for firms with an increase (a decrease) in star analyst coverage than for firms with no change.

In sum, our conclusion continues to hold if we use an industry-blind definition of star analysts.

3.5 General Competition

The competition avoidance effect is based on the understanding that analysts have strong incentives to win the firm-level competition and their odds of winning are enhanced by avoiding strong competitors. Our prior results based on the "All-star" setting can be deemed a special case in which we identify strong players through the "All-star" designation. In this section, we consider other measures of strong competitors and test whether the competition avoidance effect continues to hold. If we obtain affirmative results, they serve as evidence that our central message speaks to the general competition among analysts and is not limited to the "All-star" setting.

Specifically, we use the forecast accuracy and stock-picking abilities as a basis to re-define star analysts. Both are considered useful and important analysts' performance measures in the literature (Hong and Kubik, 2003; Wu and Zang, 2009; Mikhail et al., 1999; Groysberg et al., 2011). The forecast accuracy and stock picking ability of analyst i in year t is measured by $Accuracy_{it}$ and $Stock\ picking_{it}$ respectively. Both variables are defined in Section 4.5 of the manuscript. If $Accuracy_{it}$ / $Stock\ picking_{it}$ is among the top ten percentile of all analysts in year t, analyst i is deemed an accuracy based star/stock-picking-ability based star.

Our results based on the new definitions of star analysts are reported in Table A4. Since we further require $Accuracy_{it}$ and $Stock\ picking_{it}$ to be non-missing, our sample size decreases from 39,047 to 37,494. Column (1) reports results for accuracy-based stars. As we can see, the coefficient on *Star Increase* dummy is negative and significant and the coefficient on *Star Decrease* dummy is positive and significant, regardless whether we include control variables. Specifically, when control variables are included, the coefficient on *Star Increase* dummy is -0.715, significant at the 1% level. The related odds ratio is 0.489, indicating that the odds of being in a higher non-star coverage change category are reduced by about 51% for firms that experience a star coverage increase than for firms with no change in star coverage. The coefficient estimate on *Star Decrease* dummy is 0.977, significant at the 1% level. The related odds ratio is 2.656, indicating that the odds of being in a higher non-star coverage change category are increased by close to 166% for firms that experience a star coverage decrease than for firms with no change in star coverage.

Column (2) reports results for stock-picking-ability based stars. After controlling for firm characteristics, the coefficient estimate on *Star Increase* dummy is -0.779, significant at the 1% level. The related odds ratio is 0.459, indicating that the odds of being in a higher non-star coverage change category are reduced by about 54% for firms that experience a star coverage increase than for firms with no change in star coverage. The coefficient estimate on *Star Decrease* dummy is 0.920, significant at the 1% level. The related odds ratio is 2.510, indicating that the odds of being in a higher non-star coverage change category are increased by close to 151% for firms that experience a star coverage decrease than for firms with no change in star coverage.

In sum, using different measures of performance, Table A4 shows that analysts are reluctant to compete with strong competitors. These results not only are interesting by themselves but also suggest that our finding helps to address the broad research question how competition affects analyst coverage decisions.

Table A1 Competition avoidance effect—analyst-level evidence

Our sample in Panel A and B includes 269,661 analyst-firm-year observations for analysts changing their coverage. The number of analysts following in year t is the number of analysts who issue at least one one-year-ahead EPS forecast in the three months around the earnings announcement date of year t. *Decrease_Cov* equals 1 if an analyst moves to a firm with lower star analyst coverage, 0 if an analysts moves to a firm with the same level of star analyst coverage, and -1 if an analyst moves to a firm with greater star analyst coverage. It is also the dependent variable in Panel C. *Dropped Star Increase (dummy)* equals one if average number of star analysts increases for firms dropped by the analyst, and equals zero otherwise. Control variables are constructed by taking difference of firm characteristics between initiated firms and dropped firms. Our sample in Panel D includes 4,197 analyst-year observations. The dependent variable in this panel equals one if an analyst disappears in the I/B/E/S database in year t, and equals zero otherwise. Inferences are based on standard errors clustered by analyst. Appendix provides a detailed description of the construction of the variables. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A Univariate test

	Dropped firms experience an increase in star coverage (N=80,424)	Dropped firms do not experience an increase in star coverage (N=189,237)	Test of difference (Increase-No Increase)
Decrease_Cov	0.110	-0.120	0.249***
Change in the number of star analysts following (Dropped firms- Initiated firms)	0.139	-0.340	0.479***

Panel B Distribution of *Decreaes_Cov*

	Decrease_Cov=-1	*Decrease_Cov*=0	*Decrease_Cov*=1	*Total*
Dropped firms experience an increase in star coverage	36%	16%	48%	100%
Dropped firms do not experience an increase in star coverage	38%	35%	27%	100%

Panel C Ordered logistic regression estimates.

Variable	Model 1	Odds ratio	Model 2	Odds ratio
Dropped Star Increase (dummy)	0.476*** (<0.01)	1.609	0.417*** (<0.01)	1.517
ΔTotal Assets			-0.498*** (<0.01)	0.608
ΔB/M			0.391*** (<0.01)	1.478
ΔLeverage			-0.001*** (<0.01)	0.999
ΔInstitutional ownership			-0.353*** (<0.01)	0.703
ΔR&D			-1.468*** (<0.01)	0.230
ΔAdvertising expense			1.178*** (<0.01)	3.248
ΔBeta			-0.214*** (<0.01)	0.807
ΔROA			1.035*** (<0.01)	0.355
Year fixed effects	YES		YES	
Pseudo R^2	0.03		0.21	
No of obs	269,661		269,661	

Panel D Logistic regression estimates of the likelihood of dropping out of IBES

Variable		Odds ratio
Dropped Star Increase (dummy)	0.725 (0.18)	2.065
Accuracy	-1.130 (0.34)	0.323
Stock picking	2.594 (0.13)	13.379
Boldness	-0.622 (0.95)	0.537
Optimism	0.992 (0.93)	2.696
Frequency	-7.040*** (<0.01)	<0.01
Brokerage size	2.422*** (<0.01)	11.265
Following	-0.203 (0.98)	0.816
Experience	0.559 (0.47)	1.750
Pseudo R^2	0.01	
No of obs	4,197	

Table A2 Non-star coverage and the consensus forecast accuracy

The sample consists of 35,001 firm-year observations between 1994 and 2010. The number of analysts following in year t is the number of analysts who issue at least one one-year-ahead EPS forecast in the three months around the earnings announcement date of year t. The consensus forecast accuracy is minus one times the consensus forecast error, defined as the absolute value of the difference between consensus forecast before earnings announcement and actual EPS deflated by stock price two days before the actual earnings announcement date. Inferences are based on standard errors clustered by firm. Appendix provides a detailed description of the construction of the variables. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively. The values in the parentheses are p-values.

Variable	Model 1
Star Increase (dummy)	0.007*** (<0.01)
Non-star Increase (dummy)	0.005*** (<0.01)
Star Decrease (dummy)	-0.001 (0.50)
Non-star Decrease (dummy)	-0.001 (0.16)
ΔTotal Assets	0.009*** (<0.01)
ΔB/M	-0.039*** (<0.01)
ΔLeverage	-0.033*** (<0.01)
ΔInstitutional ownership	0.007*** (0.01)
ΔR&D	0.005 (0.69)
ΔAdvertising expense	-0.111 (0.12)
ΔBeta	-0.001 (0.33)
ΔROA	0.025*** (<0.01)
Year fixed effects	YES
R^2	0.08
No of obs	35,001

Table A3 Robustness checks

The sample consists of 39,047 firm-year observations between 1993 and 2010. The dependent variable in all panels equals 1 if the number of non-star analysts following increases, equals 0 if the number of non-star analysts remains the same and equals -1 if number of non-star analysts following decreases. We run ordered logit models. In Panel A, the number of analysts following in year t is the adjusted number of analysts who issue at least one one-year ahead EPS forecast in the three months around the earnings announcement date of year t. The adjustment is done as follows. We first identify a change in the analyst status and compute the necessary adjustment in the year of change. For example, if an analyst becomes a star, the adjustment to be made to the number of stars (non-star) is -1 (+1) in the year of change. Then, starting from the first year in which the firm appears in our sample, we cumulate the adjustment to be applied in each year, and our actual adjustment is based on the cumulated number. In Panel B, the number of analysts following in year t is the number of analysts who issue at least one one-year ahead EPS forecast after the announcement of earning of fiscal year t and before the announcement of earning of fiscal year t+1. In Panel C, *Star Decrease (exogenous)* is a dummy variable which equals one for firms whose number of star analysts following decreases entirely for exogenous reasons, and zero for firms whose number of star analysts following remains the same. To identify analysts whose departure is due to exogenous reasons, we first identify analysts who stop providing forecasts for all firms in I/B/E/S. Then we search FACTIVA using name of the analyst and brokerage house for articles in the disappearing year. We read articles to identify reasons for the disappearance. If the disappearance is due to change in career, promotion, health problem, sudden death and retirement, we treat this disappearance as exogenous. In Panel D, Star analysts are defined as analysts ranked by *Institutional Investor* as all-star irrespective of the industry for which they are selected. Inferences are based on standard errors clustered by firm. In Panel E Column (1) ((2)), the star analyst is defined as analysts ranked within the top 10 percentile in forecast accuracy (stock picking ability). Inferences are based on standard errors clustered by firm. Appendix 1 provides a detailed description of the construction of the variables. The symbols *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Panel A Competition avoidance effect--excluding mechanical explanation

Variable	Model 1		Model 2	
		Odds ratio		Odds ratio
Star Increase (dummy)	-0.623*** (<0.01)	0.537	-0.704*** (<0.01)	0.495
Star Decrease (dummy)	0.666*** (<0.01)	1.946	0.745*** (<0.01)	2.107
ΔTotal assets			1.883*** (<0.01)	6.571
ΔB/M			-0.351*** (<0.01)	0.704
ΔLeverage			-1.932*** (<0.01)	0.145
ΔInstitutional ownership			1.549*** (<0.01)	4.705
ΔR&D			2.034*** (<0.01)	7.641
ΔAdvertising expense			10.485*** (<0.01)	>1,000
ΔBeta			-0.096*** (<0.01)	0.909
ΔROA			0.175 (0.14)	1.191
Year fixed effects	YES		YES	
Pseudo R^2	0.02		0.10	
No of obs	39,047		39,047	

Panel B Competition avoidance effect—using the whole forecasting year

Variable	Model 1		Model 2	
		Odds ratio		Odds ratio

Star Increase (dummy)	-0.871*** (<0.01)	0.418	-0.942*** (<0.01)	0.390
Star Decrease (dummy)	0.927*** (<0.01)	2.526	1.005*** (<0.01)	2.733
ΔTotal Assets			1.710*** (<0.01)	5.530
ΔB/M			-0.724*** (<0.01)	0.485
ΔLeverage			-1.924*** (<0.01)	0.146
ΔInstitutional ownership			1.247*** (<0.01)	3.479
ΔR&D			3.397*** (0.01)	29.873
ΔAdvertising expense			8.173*** (<0.01)	>1,000
ΔBeta			0.035* (0.07)	1.035
ΔROA			0.999*** (<0.01)	2.718
Year fixed effects	YES		YES	
Pseudo R^2	0.08		0.14	
No of obs	39,047		39,047	

Panel C Competition avoidance effect—exogenous event

	Model 1		Model 2	
Variable		Odds ratio		Odds ratio
Star Decrease (exogenous)	0.338*** (0.05)	1.402	0.518*** (<0.01)	1.171
ΔTotal Assets			1.964*** (<0.01)	7.126
ΔB/M			-0.409*** (<0.01)	0.665
ΔLeverage			-2.111*** (<0.01)	0.121
ΔInstitutional ownership			1.576*** (<0.01)	4.833
ΔR&D			2.146*** (<0.01)	8.553
ΔAdvertising expense			11.123*** (<0.01)	>1,000
ΔBeta			-0.075*** (<0.01)	0.928
ΔROA			0.314** (0.02)	1.369
Year fixed effects	YES		YES	
Pseudo R^2	0.02		0.09	
No of obs	28,074		28,074	

Panel D Competition avoidance effect: using an industry-blind definition of star analyst

Variable		Odds ratio		Odds ratio
Star Increase (dummy)	-0.817*** (<0.01)	0.442	-0.882*** (<0.01)	0.414
Star Decrease (dummy)	0.733*** (<0.01)	2.081	0.819*** (<0.01)	2.268

ΔTotal Assets			1.927*** (<0.01)	6.866
ΔB/M			-0.362*** (<0.01)	0.697
ΔLeverage			-1.953*** (<0.01)	0.142
ΔInstitutional ownership			1.567*** (<0.01)	4.791
ΔR&D			2.396*** (<0.01)	10.973
ΔAdvertising expense			10.621*** (<0.01)	>1,000
ΔBeta			-0.105*** (<0.01)	0.901
ΔROA			0.316*** (<0.01)	1.372
Year fixed effects	YES		YES	
Pseudo R^2	0.06		0.13	
No of obs	39,047		39,047	

Panel E: Competition avoidance effect: alternative measures of strong competitors

Variable	Star measured by forecast accuracy Model 1				Star measured by stock picking ability Model 2			
		Odds ratio		Odds ratio		Odds ratio		Odds ratio
Star Increase (dummy)	-0.627*** (<0.01)	0.534	-0.715*** (<0.01)	0.489	-0.716*** (<0.01)	0.489	-0.779*** (<0.01)	0.459
Star Decrease (dummy)	0.938*** (<0.01)	2.556	0.977*** (<0.01)	2.656	0.876*** (<0.01)	2.401	0.920*** (<0.01)	2.510
ΔTotal Assets			1.963*** (<0.01)	7.121			1.927*** (<0.01)	6.872
ΔB/M			-0.353*** (<0.01)	0.703			-0.367*** (<0.01)	0.693
ΔLeverage			-2.061*** (<0.01)	0.127			-1.964*** (<0.01)	0.140
ΔInstitutional ownership			1.561*** (<0.01)	4.764			1.606*** (<0.01)	4.980
ΔR&D			2.452*** (<0.01)	11.611			2.338*** (<0.01)	10.357
ΔAdvertising expense			10.130*** (<0.01)	>1,000			10.481*** (<0.01)	>1,000
ΔBeta			-0.099*** (<0.01)	0.906			-0.091*** (<0.01)	0.913
ΔROA			0.225* (0.07)	1.252			0.262** (0.03)	1.300
Year fixed effects	YES		YES		YES		YES	
Pseudo R^2	0.06		0.12		0.07		0.13	
No of obs	37,494		37,494		37,494		37,494	

Appendix 1 Variable definition

Variable name	Variable definition
Non-star Change$_{jt}$	A variable used to measure the change in non-star analyst coverage. It equals 1 if the number of non-star analysts following increases, 0 if the number of non-star analysts remains the same, and -1 if number of non-star analysts following decreases.
Star Increase/Decrease$_{jt}$	It equals 1 in year t if the number of star analysts increases/decreases from year t-1 to year t, and 0 otherwise.
ROA$_{jt}$	Earnings before extraordinary items divided by total assets
Total assets$_{jt}$	Log transformation of total assets
B/M$_{jt}$	Book value of equity divided by market value of equity
Leverage$_{jt}$	Book value of long-term debt and short-term debt divided by total assets
R&D$_{jt}$	R&D expenses deflated by total assets
Beta$_{jt}$	Beta estimated by market model by using 30 month returns before beginning of fiscal year. CRSP value-weighted return is used as a proxy for the market return.
Advertising expense$_{jt}$	Advertising expenses deflated by total assets
Institutional ownership$_{jt}$	Percentage of outstanding shares owned by institutions
Star Decrease$_{jt}$ (exogenous)	A dummy variable which equals one if the number of star analyst decreases exogenously, and zero if the number of star analyst remains the same.
Accuracy$_{it}$	A measure of forecast accuracy of analyst i in year t. Specifically, $Accuracy_{ijt} = \frac{\text{AFE max}_{\text{jt}} - \text{AFE}_{\text{ijt}}}{\text{AFE max}_{\text{jt}} - \text{AFE min}_{\text{jt}}}$, where $\text{AFE max}_{\text{jt}}$ and $\text{AFE min}_{\text{jt}}$ are the maximum and minimum absolute forecast errors for analysts following firm j in year t. AFE_{ijt} is the absolute forecast error (absolute value of difference between forecasted value and actual value) for analyst i following firm j in year t. The forecast error is based on the last one-year-ahead EPS forecast an analyst issues before the fiscal year-end. We average across all firms followed by analyst i in year t to compute *Accuracy$_{it}$*. A higher value of Accuracy indicates that this analyst is more accurate in the current year.
Stock picking$_{it}$	A measure of stock picking ability of analyst i in year t. $Stock\ picking_{ijt} = \frac{\text{Ret}_{\text{ijt}} - \text{Ret min}_{\text{jt}}}{\text{Ret max}_{\text{jt}} - \text{Ret min}_{\text{jt}}}$, where $\text{Ret max}_{\text{jt}}$ and $\text{Ret min}_{\text{jt}}$ are the maximum and minimum abnormal return for analysts following firm j in year t; Ret_{ijt} is abnormal return for analyst i following firm j in year t. Abnormal return is defined as the four-day [0,+3] size-adjusted abnormal returns for buy and sell recommendations (returns for sell recommendations are multiplied by –1). Day 0 is the announcement date of analyst investment recommendations. We average across all firms followed by analyst i in year t to compute *Stock picking$_{it}$*.

Boldness$_{it}$	A measure of the relative boldness in earnings forecasts issued by analyst i in year t. $Boldness_{ijt} = \frac{Dev_{ijt} - Dev\ min_{jt}}{Dev\ max_{jt} - Dev\ min_{jt}}$. $Dev\ max_{jt}$ and $Dev\ min_{jt}$ are the maximum and minimum deviation from the consensus forecast for analysts following firm j in year t. Dev_{ijt} is the deviation from the consensus forecast for analyst i following firm j in year t. The consensus forecast is the average of all forecasts made in the prior three months. Forecast deviation is computed as the absolute value of the difference between the analyst's forecast (the last one-year-ahead EPS forecast an analyst issues before the fiscal year-end) and the consensus forecast. These relative rankings are then averaged across the firms followed by analyst i in year t.
Optimism$_{it}$	A measure of the relative optimism of forecasts issued by analyst i in year t. $Optimism_{ijt} = \frac{Bias_{ijt} - Bias\ min_{jt}}{Bias\ max_{jt} - Bias\ min_{jt}}$. $Bias\ max_{jt}$ and $Bias\ \ min_{jt}$ are the maximum and minimum forecast bias for analysts following firm j in year t. $Bias_{ijt}$ is the forecast bias for analyst i following firm j in year t. Bias is computed as the analyst forecast (the last one-year-ahead EPS forecast an analyst issues before the fiscal year-end) minus the actual earnings. These relative rankings are then averaged across the firms followed by analyst i in year t.
Frequency$_{it}$	A measure of the relative frequency at which analyst i issues forecasts one-year-ahead forecast in year t. $Frequency_{ijt} = \frac{freq_{ijt} - freq\ min_{jt}}{freq\ max_{jt} - freq\ \ min_{jt}}$. $freq\ max_{jt}$ and $freq\ \ min_{jt}$ are the maximum and minimum forecast frequency for analysts following firm j in year t. $freq_{ijt}$ is forecast frequency for analyst i following firm j in year t. Forecast frequency refers to the number of times the analyst issues an one-year-ahead EPS forecast. These relative rankings are then averaged across the firms followed by analyst i in year t.
Brokerage size$_{it}$	A measure of the relative size of the brokerage house employing analyst i in year t. $Brokererage\ size_{it} = \frac{Broker_{it} - Broker\ min_t}{Broker\ max_t - Broker\ \ min_t}$. $Broker\ max_t$ and $Broker\ min_t$ are the maximum and minimum number of analysts employed by a brokerage firm in year t. $Broker_{it}$ is the number of analysts employed by the brokerage house with which analyst i is affiliated in year t.
Following$_{it}$	A measure of the relative following by analyst in in year t. $\text{Following}_{it} = \frac{follow_{it} - follow\ min_t}{follow\ max_t - follow\ \ min_t}$. $follow\ max_t$ and $follow\ min_t$ are the maximum and minimum number of firms an analyst follows in year t. $follow_{it}$ is number of firms analyst i follows in year t.
Experience$_{it}$	A measure of the relative experience of analyst i in year t. $Experience_{it} = \frac{Years_{it} - Years\ min_t}{Years\ max_t - Years\ min_t}$. $Years\ max_t$ and $Years\ min_t$ are the maximum and minimum experience of all analysts in year t. $Years_{it}$ is the experience of analyst i in year t. Experience refers to the number of the years the analyst has appeared in I/B/E/S.

$Decrease\_Cov_{ijt}$	It equals 1/0/-1 if analyst i initiates coverage for firm j and firm j' star coverage is lower than/the same as/higher than the average star coverage of firms dropped by analyst i in year t. t.
Dropped Star Increase$_{it}$	It equals 1, if the firms dropped by analyst i experience an increase in star coverage in year t, and 0, otherwise.

Appendix 2 An excerpt from the 2008 *Institutional Investor* All-star Ranking Report

GAMING & LODGING
FIRST TEAM
Joseph Greff JP Morgan

SECOND TEAM
Celeste Mellet Brown Morgan Stanley

THIRD TEAM
Steven Kent Goldman Sachs

RUNNERS-UP
Robin Farley UBS;
William Lemer Deutsche

In the top spot for a third consecutive year is Joseph Greff, who, according to one money manager, "has conviction and communicates it clearly." Greff, 38, joined JPMorgan Securities in June, when it absorbed Bear, Stearns & Co., and among his first calls was a recommendation to sell Las Vegas Sands Corp., at $50.19, on concerns about earnings at the Nevada-based casino operator's holdings in the U.S. and China. The stock had plunged 24.9 percent, to $37.71, from the downgrade through mid-September. During the same period the sector gained 6.0 percent. Also in June, Greff downgraded MGM Mirage to neutral, at $38.90, following a disappointing second-quarter earnings report. By mid-September shares of the Las Vegas-based resort operator had fallen to $31.72. "His downgrade hit that stock right at the top," marvels one investor. Celeste Mellet Brown of Morgan Stanley leaps from runner-up to second place. Clients hail her as much for her deep understanding of fundamentals as for the speed of her calls. Brown downgraded Scientific Games Corp., a New York-based lottery ticket manufacturer, to underweight in January, at $28.15, citing increased competition. Two weeks later, after the stock had fallen 26.8 percent, to $20.61, she upgraded it to equal weight, on valuation. In mid-September the share price was back up to $26.72. "She's been all over that stock," cheers one backer. Repeating at No. 3 is Steven Kent, who "really explains the gaming industry," says one buy-side fan. In January the Goldman, Sachs & Co. analyst reiterated his sell rating on Shuffle Master, on declining demand. Shares of the Las Vegas-based gaming equipment manufacturer had plunged 52.3 percent by mid-September.