Do Brokerages Benefit from All-Star Females?

Sima Jannati
University of Missouri-Columbia

Abstract

This paper shows a positive correlation between the representation of senior female analysts (*i.e.*, all-star females) and outcomes of brokerages. A larger number of all-star females in a brokerage increases the future performance of the brokerage. Using deviation from the steady-level female composition in brokerages as an instrumental variable, I show that analysts who work in brokerages with at least one all-star female experience a higher (lower) likelihood of promotion (demotion) in the next year. Finally, a higher representation of all-star females in brokerages that are largely male-dominated, narrows the promotion gap for other female analysts.

Keywords: All-star females; gender dispersion; sell-side analyst; corporate mobility; analyst performance.

JEL Classification: G02, G24, J16, J71.

Please address all correspondence to Sima Jannati, University of Missouri, Trulaske College of Business, email: jannatis@missouri.edu. I would like to thank Vidhi Chhaochharia, Henrik Cronqvist, Sarah Khalaf, and YingChou Lin (discussant), and seminar participants at the Financial Management Association Annual Meeting 2018 for helpful comments and suggestions. Any errors or omissions are my own.

I. Introduction

Women's underrepresentation in the workplace is a well-documented problem that continues to persist despite the narrowing gender gap in education programs and labor market progress (Branson (2007); Catalyst (2015)).[1] The debate of gender dispersion has recently shifted from an issue of *equality* to a question of *superior performance* (Credit Suisse Research (2012)). Therefore, in addition to understanding what drivers gender dispersion, it is equally important to analyze whether women's representation in a workplace results in improved outcomes.[2]

The evidence on the influence of senior females on the performance of their workplace has been puzzling. On the one hand, studies have shown that female managers add to the diversity of workplace (Dezso and Ross (2012)), serve as role models (Marx and Roman (2002)), and help to narrow the promotion gap for other females (Kunze and Miller (2017)). On the other hand, other studies argue that senior females act as "Queen Bees," who instead of helping their same-sex cohorts push them out of the workplace (Staines and Jayaratne (1974)).[3]

Similarly, the finance literature has reported positive (*e.g.*, Gul, Srinidhi, and Tsui (2008); Matsa, Miller, and Bertrand (2011); Kim and Starks (2016)), negative (*e.g.*, Kanter (1977); Adams and Ferreira (2009)), and no relationship (*e.g.*, Rose (2007); Chapple and Humphrey (2014)) between adding senior females to a firm and its subsequent outcomes.

[1] According to the ISS Risk Metrics and the Bureau of Labor Statistics, among Civilian Labor force over 16, from 1995 to 2015, on average 45% of the sample are women.

[2] The issue of gender disparity has been associated with various drivers, including: taste-based discrimination (Becker (1959); Arrow (1973)), women's higher level of risk aversion (Barber and Odean (2001);Niederle (2016)), issues related to work-family balance (Frehill, Di Fabio, Hill, Trager, and Buono (2008); Bertrand, Goldin, and Katz (2010)), and lack of same-sex role models (Stout, Dasgupta, Hunsinger, and McManus (2011)).

[3] Numerous articles in the media discuss the unhealthy competition among women in the workplace (see for example, "Do Women Compete in Unhealthy Ways at Work?" in the USA Today, by Armour, 2005; "The Real Reason Women Don't Help Other Women at Work" in the Wall Street Journal, by Tennery, 2012; "When Women Derail Other Women in the Office" in Time Business, by Silverman, 2009). The media's claims have been supported by the labor market and psychology literature, which argues that compared to men, women are less supportive of the advancement of other women (*e.g.*, Mathison (1986); Ellemers, Heuvel, Gilder, Maass, and Bonvini (2004); Garcia-Retamero and Lopez-Zafra (2006)).

So far, studies have focused on the influence of female CEOs and board members, and the role of senior females in other areas of the financial market has not been throughly examined. In this study, I focus on equity analysts and examine the impact of senior female analysts on the outcomes of their brokerages. Equity research is considerably dominated by males (Kumar (2010); Jannati, Kumar, Niessen-Ruenzi, and Wolfers (2018)) and unlike most other professions (*e.g.*, Matsa and Miller (2013); Kim and Starks (2016)), it has been experiencing a downward trend in the representation of females (Green, Jegadeesh, and Tang (2009)). Given that analysts are among the key information intermediaries in contemporary capital markets (Grinblatt, Jostova, and Philipov (2016)), what affects their performance and corporate mobility is important to investigate.

To examine the role of senior female analysts, I focus on all-star females. This choice is guided by the evidence that analysts' rankings are highly tied to their reputation and also play a significant role in determining their salaries (Stickel (1992); Groysberg and Roberts (2005); Groysberg and Lee (2008)). To study the impact of all-star females on the outcomes of their workplace, I ask three research questions. First, I study whether all-star females boost the performance of their brokerages. Second, I examine if all-star females influence the career path of their cohorts. Lastly, I study whether all-star females facilitate the upward mobility for other female analysts.

I start the analysis by identifying the sample of female analysts, and find that they comprise less than 15 percentage points of the sample. Consistent with Green et al. (2009), I find a monotonically declining trend in the presence of female analysts: the number of female analysts has declined from 17 percentage points in 1995 to 11 percentage points in 2016. This result confirms that the profession of equity research has largely remained male-dominated.

To answer the first research question, I examine whether a larger number of all-star females in a brokerage leads to an increase in its future performance. Following Hong, Kubik, and Solomon (2000) and Green et al. (2009), I use the average ranking of an analyst's forecast accuracy (relative to other analysts) to proxy for his/her performance. In the analysis, I control for different characteristics of brokerages and eliminate the concern of omitted variables by including year and brokerage fixed effects (FEs). The results indicate that all-star females positively affect the outcomes of their brokerages: adding 1 more all-star female to a brokerage, increases its next year performance for over 3 percentage points. Unlike all-star females, an increase in the number of all-star males, does not have a positive effect on the performance of brokerages.

One could argue that all-star females (or males) are not randomly assigned to brokerages. Although I include brokerage FEs to mitigate this endogeneity concern, to additionally establish causality, I repeat the analysis using a difference-in-differences methodology. In particular, I identify and compare the change in the performance of brokerages that increase their total number of all-star females from 0 at time $t-1$ to a positive number at time t, with brokerages that have 0 all-star female at time $t-1$ and t. If the increase in the performance of brokerages is primarily driven by the representation of all-star females, the change in the performance of the former group should be systematically larger compared with the latter one. The results confirm this conjecture: compared to the latter group, brokerages that increase their number of all-star females experience a 13-percentage-point larger increase in their subsequent performance.

Studies have shown that the impact of senior females on their workplace is affected by the gender composition of their environment. For instance, token women are shown to perform better in their workplace (see Kanter (1977)). Motivated by this evidence, I next examine whether the gender composition of brokerages affects the influence of all-star females on the performance of brokerages. In doing so, I categorize brokerages in two groups: (1) *male-dominated* brokerages whose ratio of female analysts is below the sample's mean, and (2) *gender-diverse* brokerages that have a female composition above the sample's mean.[4] Next, I separately investigate the impact of all-star females on the average performance of male-dominated and gender-diverse brokerages.

[4] The results remain consistent if I use the sample's median or top quartile to identify male-dominated and gender-diverse brokerages.

The results indicate that the positive impact of all-star females on the performance of their workplace is most salient in brokerages with the lowest number of female analysts. All else equal, adding 1 more all-star female to a male-dominated brokerage boosts its future performance for more than 22 percentage points. Again, an increase in the number of all-star males does not have a similar effect on the future performance of male-dominated brokerages.

The positive influence of all-star females on the performance of analysts can subsequently affect analysts' career paths, such as likelihood of promotion and demotion. I investigate this conjecture by examining the effect of all-star females on the corporate mobility of their cohorts, *i.e.*, analysts who work in the same brokerage as all-star females. Following Hong et al.'s (2000) method, I identify promotions (demotions) as cases when analysts move from small (large) brokerages to large (small) ones, where small-sized brokerages are those with fewer than 25 analysts.[5] I then compare the promotion and demotion likelihood of analysts who work in brokerages with at least 1 all-star female, with those who have no all-star female in their brokerages. Controlling for various qualifications of analysts, those who work in brokerages with at least 1 all-star female experience a 3-percentage-point larger chance of promotion in the next period. At the same time, these analysts have a 60-basis-point lower chance to experience a future demotion.

As mentioned, the presence of an all-star female in a brokerage is not randomly driven. This endogeneity could, therefore, confound the causality of the above argument. To address this concern, I use an instrumental variable (IV) strategy to identify the exogenous variation in the number of all-star females in a brokerage. In doing so, I follow a similar methodology as in Bettinger and Long (2005) and use the deviation from the steady-level female composition in brokerages to construct the IV.

Specifically, I first calculate the steady-state female composition of each brokerage, using the average number of female analysts in the brokerage. Next, every year, I measure the difference between the actual number of females in the brokerage and the calculated steady-

[5]Results stay consistent if I use a different cut-off (such as 50 or 75 analysts) to define large brokerages.

state value. I use this deviation as an IV to measure the exogenous variation in the number of all-star females in the brokerage. In the estimation, I control for different characteristics of brokerages and include brokerage and year FEs. Therefore, the explained IV, to a large extent, should capture the exogenous fluctuations in the number of all-star females in brokerages.

The results confirm the economic relevance of the above IV. A one-unit positive deviation from the steady-state female composition in a brokerage, increases the chance that at least 1 all-star female works in the brokerage for 40 basis points. Using the IV strategy, I repeat the same analysis and find even economically stronger evidence for the role all-star females on promotion likelihood of other analysts. The results of 2SLS regressions show that analysts who work in a brokerage with at least 1 all-star female have a 58- (44-) percentage-point higher (lower) chance of promotion (demotion) in the next period.

Given the high influence of all-star females on the outcome of male-dominated brokerages, in the last set of analysis, I examine whether all-star females facilitate the upward mobility for other female analysts to brokerages that are largely dominated by males. The results indicate that, compared with a similarly qualified male counterpart, a female analyst, on average, has a 2-percentage-point lower chance to be promoted to a male-dominated brokerage. However, when only 1 all-star female works in the male-dominated brokerage, the promotion chance for female analysts increases from -2 percentage points to -23 basis points (*i.e.*, a 90-percentage-point increase in the likelihood of promotion).

Further, the positive impact of all-star females on the promotion likelihood of other female analysts monotonically increases with the total number of all-star females. In particular, in male-dominated brokerages with 2 or more all-star female analysts, the chance of promotion for female and male analysts becomes statistically identical. This result is consistent with the "*women helping women*" hypothesis of Tate and Yang (2015), and indicates that senior female analysts can considerably affect the upward mobility of their same-sex cohorts.

Overall, the evidence suggests that all-star females positively affect the future performance of their brokerages and career path of their cohorts. Analysts who work in brokerages with at least 1 all-star female have a larger (smaller) chance of promotion (demotion). Finally, in male-dominated brokerages, all-star females facilitate the upward mobility for other female analysts.

These results contribute to several strands of literature in finance and labor economics. A growing body of studies examine the benefits of gender diversity for corporations. For example, Bell, Smith, Smith, and Verner (2008), Matsa et al. (2011), and Kim and Starks (2016) find a positive relationship between gender diversity and firms' outcomes, whereas Adams and Ferreira (2009) find that gender diversity leads to a negative performance when a company is well-governed. Focusing on sell-side equity analysts, this paper finds evidence on the positive impact of senior females on the outcome of their brokerages.

The results of this paper also speak to the role of senior females on the corporate mobility of their same-sex cohorts. Evidence on whether senior females facilitate other women's corporate upward mobility has been mixed. For example, Matsa et al. (2011) document a supportive behavior of female CEOs towards other females, whereas Staines and Jayaratne (1974) and Ellemers et al. (2004) argue that senior women in masculine organizational cultures tend to act like "Queen Bees" who do not use their power to assist junior women or to change the system. The results of this paper suggest that in brokerages that are highly male-dominated, the presence of senior females improves the promotion likelihood for their same-sex counterparts.

II. Hypothesis Development

I synthesize evidence from the labor economics and finance literature to develop the main testable hypotheses. Senior women can bring positive value to their workplace through various channels. Studies have highlighted an increase in diversity (Simons and Pelled (1999)), access to wider pool of talents (Singh (2008)), higher level of engagement with employees, and serving as role models (Marx and Roman (2002); Lockwood (2006)) as important mechanisms through which a higher level of female representation is beneficial for organizations.

Dezso and Ross (2012) show that gender diversity motivates women in middle management and has a positive impact on firms' performance. The recent survey of "State of the American Manager Report" shows that, on average, employees who have a female manager are 6% more engaged compared with those who work for a male manager.

At the same time, Kumar (2010) shows that compared with similarly qualified male analysts, female analysts, on average, have better forecasting abilities. Therefore, a potential increase in the access to the pool of female analysts talent may positively affect the overall performance of brokerages. If senior female analysts bring diversity to their workplace, and if they provide brokerages with a wider pool of talents, brokerages with higher number of all-star females should have a higher level of performance. This conjecture motivates the first hypothesis of the study:

Hypothesis 1: *All else equal, brokerages with a higher number of all-star females have a higher level of performance.*

Senior females can also affect the career path of their colleagues. Rocha and van Praag (2016) use same-gender matches of bosses and employees, and show that female entrepreneurial bosses positively influence the transition of other female employees into entrepreneurship. Consistent with this finding, Kunze and Miller (2017) provide evidence for narrower gender gaps in promotions for workers with more female bosses. Kunze and Miller (2017) argue that an increase in the female representation of leadership has spillover benefits to women in lower ranks. If all-star females also positively affect the corporate mobility of their colleagues, the chance of promotion (demotion) should be higher (lower) for analysts who work in brokerages with all-star females. Specifically:

Hypothesis 2: *All else equal, equity analysts who work in brokerages with at least 1 all-star female have a higher (lower) chance of promotion (demotion).*

Finally, if all-star females facilitate the upward mobility of their same sex-cohorts, their presence in a brokerage (with existing promotion gaps for females) should narrow the promotion gap for female analysts. That is,

Hypothesis 3: *All else equal, female analysts' chance of promotion to a male-dominated brokerage should increase, when an all-star female works in the brokerage.*

III. Data and Methods

In this section, I describe the data sets used in the empirical analyses. Next, I explain the main variables and illustrate the method I use to proxy for analyst job separation. I provide detailed information about the sources of each variable in Table AI.

A. Data Sources

I obtain information about analysts and their earnings forecasts from the Institutional Brokers Estimate System (I/B/E/S) between 1995 to 2016.[6] I/B/E/S provides earnings forecasts for 18,951 analysts who cover 20,194 firms. I merge I/B/E/S with the information from Kumar (2010) and Jannati et al. (2018) and identify gender for 10,502 analysts. To obtain information about firms that analysts cover, I merge I/B/E/S with the Center for Research on Security Prices (CRSP) database. This matching reduces the number of observations to 13,559 stocks and 8,141 analysts.

Bednar and Gicheva (2014) argue that focusing only on gender to assess diversity in a workplace is not sufficient in explaining the differences between career outcomes of females and males. Therefore, I use ethnicity information from Jannati et al. (2018) as an additional demographic characteristic of analysts. Specifically, Jannati et al. (2018) survey a random sample of U.S. Amazon Mechanical Turk (AMT) workers to indicate whether an analyst's name sounds foreign by answering "Yes," "No," or "Unsure." Based on the survey responses,

[6] Many studies (*e.g.*, Cohen, Frazzini, and Malloy (2010)) suggest collecting analysts' information after 1992. Given that I need 3 years of data to proxy for analysts' *Experience* (Hong and Kubik (2003)), I use 1995 as the starting point of the sample.

I define a dummy variable, *Ethnicity*, equal to 1 if more than 75% of AMT workers have identified a name as foreign, and 0 otherwise. Finally, analysts' all-star positions are from Huang, Zang, and Zheng (2014) and Institutional Investor's annual all-star Research Team.

B. Dependent Variables

I use two main dependent variables in the analysis: analysts' *Performance* and their *Job Separation*. I follow Hong et al. (2000) and Green et al. (2009) to measure analysts' *Performance*. To do so, I first calculate a forecast score for each firm an analyst covers:

$$Score_{i,j,t} = 100 - \frac{rank_{i,j,t} - 1}{Number\ of\ analysts_{j,t} - 1} \times 100. \tag{1}$$

Above, $rank_{i,j,t}$ shows the ranking of $analyst_i$'s *Forecast Accuracy*, for $firm_j$, among all the other analysts who cover the same firm in year t. *Forecast Accuracy* is the absolute difference between an analyst's earnings forecast and the actual earnings of the firm, s/he covers. $Number\ of\ analyst_{j,t}$ shows the total number of analysts who cover $firm_j$ in year t. In the analysis, I use the most recent forecasts to the cutoff date of $July 1^{st}$ to create a level playing field for evaluating all analysts, however, the results are not sensitive to this choice.

Using the above measure, an analyst with the rank of 1 receives a score equal to 100, and an analyst who is the least accurate will get the score equal to 0. Therefore, the best analyst receives the first (*i.e.*, the lowest) rank, and the worst analyst receives the highest rank. After I calculate the scores for each firm that an analyst covers, I take an average of analyst's forecast score in year t and the two previous years to measure his/her overall $Performance$ at time t. In doing so, I stay consistent with Hong et al.'s (2000) method and assure that the measure is not noisy for analysts who only cover a small number of firms per year.

Next, I follow Hong and Kubik's (2003) method to create a job separation variable and proxy for analysts' corporate mobility. Specifically, *Job Separation* takes one of three categories: *Promotion*, *Demotion*, and *Termination*.

I define a *Promotion* as a situation when an analyst moves from a small brokerage to a large one, where small-sized brokerages are those with fewer than 25 analysts.[7] Similarly, I define a *Demotion* as dummy variable that takes a value of 1 when an analyst moves from a large brokerage to a small one. Finally, *Termination* identifies instances that an analyst stops appearing in the I/B/E/S database. Although I report summary statistics for *Termination* instances, the main focus of this study is on the *Promotion* and *Demotion* categories.

C. *Explanatory Variables*

As in prior studies (*e.g.*, McCue (1996); Holmstrom (1999); Kumar (2010); Huang et al. (2014)) I use the following variables to control for analysts' attributes that affect their corporate mobility and performance: *Experience*, *Number of Earnings Forecasts*, *All-Star* position, *Brokerage Size*, *Gender*, and *Ethnicity*.

Experience is the number of years that an analyst has worked in a brokerage.[8] *Number of Forecasts* proxies for the analyst's job load, and is defined as the total number of earnings forecasts that s/he produces in a year. *All-star* is a dummy variable equal to 1 if the analyst is ranked among the II All-Americans. *Brokerage Size* shows the total number of analysts that work in a brokerage. *Gender* is a dummy variable that takes a value of 1 for female analysts. Finally, *Ethnicity* is a dummy variable equal to 1 if the analyst's name is identified as a foreign name by more than 75% of the AMT survey (see Section III.A).

D. *Summary Statistics*

Panel A of Table I reports the number of female and male analysts per year. On average, female analysts comprise less than 15 percentage points of the sample. Table I also points

[7] I choose this definition to be consistent with Hong and Kubik's (2003) method. The results, however, are not sensitive to this cutoff. I find similar results when I define large brokerages as those with more than 50 (or 75) equity analysts.

[8] Results stay consistent if I control for a second measure of experience equal to the number of years that an analyst has appeared in the I/B/E/S database.

to a monotonically declining trend in the number of female analysts, documented also in Green et al. (2009). As shown, the average number of female analysts has declined from 16.9 percentage points in 1995 to 11.1 percentage points in 2016.

Panel B of Table I shows the average number of female and male all-stars and their average rankings.[9] Panel B also shows the average number of firms and industries analysts cover and the average number of earnings forecasts they issue per year. As shown, when selected as an all-star, the rankings of female and male analysts are not significantly different (2.80 for both groups). Compared to male analysts, female analysts cover a fewer number of firms (10.5 vs. 12.1) and industries (4 vs. 4.4), and also issue a fewer number of earnings forecasts (190.9 vs. 241.8).

Table II further compares the job load and performance of all-star females with other analysts. As shown in Panels A, B, and C of Table II, compared with all-star males, all-star females issue a lower number of earnings forecasts (363.23 vs. 427.89) and cover a fewer number of firms (16.83 vs. 18.75). However, compared to the sample of female analysts and all analysts, all-star females issue a larger number of forecasts and cover a larger number of firms and industries. Further, Panel D of Table II shows that all-star females have a higher performance compared with all-star males (53.79 vs. 53.46) and female analysts (53.79 vs. 52.55). These mean differences are statistically significant at the 1% confidence level.

Table III reports the annual number of promotions, demotions and job termination instances.[10] These figures show that, on average, there has been less than 34 annual promotions for female analysts, whereas this number is over 209 for male analysts. The annual average of demotions and terminations for female analysts are 16 and 53. These figures are 109 and 246 for male analysts.

Given that female analysts comprise a smaller proportion of the sample, I additionally calculate the conditional promotion (and demotion) likelihood for female and male analysts.

[9] All-star analysts receive a first to fourth (also known as a runner-up) ranking.

[10] Given that the sample ends in 2016, by definition, in 2016 all analysts will be categorized in the termination category. For this reason, in Table III, I report the instances up to one year before the sample ends.

In this way, I am better able to gauge the number of promotions (and demotions) between female and male analysts. In doing so, I use the figures in Table III and those in Panel A of Table I to proxy for the conditional likelihood of promotion as:

$$\begin{aligned} Pr(Female|Promotion) &= \\ \frac{Pr(Female) \times Pr(Promotion|Female)}{Pr(Promotion|Female) \times Pr(Female) + Pr(Male) \times Pr(Promotion|Male)} \end{aligned} \tag{2}$$

Using a similar method, I calculate the conditional probability of demotion and termination for female analysts. The analysis indicates that, conditional on being promoted, the possibility that a female analyst receives the promotion is, on average, 13.4%. This possibility is, on average, 12.6% and 17.6% for demotion and termination instances.

IV. Empirical Results

In this section, I report the main empirical results. I start the analysis by showing the positive impact of all-star females on the future performance of their brokerages. Next, I show that analysts who work in a brokerage with at least 1 all-star female have a higher (lower) chance of promotion (demotion) in the following year. I end this section by showing the role of all-star females on the upward mobility of other female analysts.

A. All-Star Females and Performance of Brokerages

To begin, I examine whether an increase in the number of all-star females in a brokerage affects its future performance. In doing so, I run the following panel regression:

$$\begin{aligned} Performance_{j,t} = \alpha_j + \beta_1 \ Number \ of \ All\text{-}Star \ Females_{j,t-1} + \\ \beta_2 \ Number \ of \ All\text{-}Star \ Males_{j,t-1} + \beta_3 \ X_{j,t-1} + i.Year + i.Brokerage + \epsilon_{j,t}. \end{aligned} \tag{3}$$

Above, the dependent variable is the average performance of analysts who work in brokerage j at time t. β_1, the coefficient of interest, shows the impact of all-star females in brokerage

j at time $t-1$, on its future performance. $X_{j,t-1}$ is a vector of variables that controls for different characteristics of the brokerage at $t-1$, including the brokerage's average accuracy, experience, number of issued earnings forecasts, size, and number of foreign analysts. I include year and brokerage FEs to control for unobserved characteristics, over time or within a brokerage, that may influence its future performance. Table IV reports the estimation results.

Column (1) shows that, over and above various characteristics of brokerages, adding 1 more all-star female to a brokerage increases its future performance for over 3 percentage points (coefficient = 0.0327; t-statistic = 2.34). On the contrary, an increase in the total number of male all-stars does not significantly affect the performance of brokerages (coefficient = -0.0338; t-statistic = -0.12).

One could argue that presence of all-star females (and males) in a brokerage is not randomly determined. This endogeneity could, therefore, confound the casualty of the above result. Although I include year and brokerage FEs in the baseline regression (*i.e.*, Regression (3)), to eliminate alternative explanations, I repeat the analysis, using a difference-in-differences methodology similar to Huang and Kisgen (2013).

Each year, I identify brokerages that have no all-star female. I then categorize these brokerages into two groups: (1) the treatment group, that includes brokerages with 0 all-star female at time $t-1$ and a positive number of all-star females at time t, and (2) the control group, that includes brokerages with 0 all-star female both at time $t-1$ and time t. Next, I create an indicator variable, $\textit{All-Star Female Treatment}_t$, that takes a value of 1 for brokerages in the treatment group, and 0 for those in the control group.

If an increase in the number of all-star females positively affects the performance of brokerages, I expect the change in the performance of the treatment group to be systematically higher compared to the change in the performance of the control group. To test this conjecture, I run the following panel regression:

$$\begin{aligned}\Delta\ Performance_{j,t} = \alpha + \beta_1\ \textit{All-Star Female Treatment}_{j,t-1} + \\ \beta_2\ X_{j,t-1} + i.Year + i.Brokerage + \epsilon_{j,t},\end{aligned} \tag{4}$$

where, $\Delta\ Performance_{j,t}$ shows the change in the average performance of analysts in brokerage j between the $t-1$ to t period. β_1 is the main coefficient of interest that compares the change in the performance of brokerages in the treatment group with the change in the performance of the control group. As before, I control for various characteristics of brokerages and include time and brokerage FEs in the analysis.[11]

Consistent with the above hypothesis, the estimates in Column (2) of Table IV indicate that, compared with the control group, brokerages in the treatment group experience a significantly larger increase in their performance (coefficient = 0.1335; t-statistic = 2.24).

In Column (3), I repeat the same analysis of Regression (4), but investigate the impact of an increase in the number of all-star males on the change in the performance of brokerages. That is, I create an indicator variable, $\textit{All-Star Male Treatment}_t$, that takes a value of 1 for brokerages that increase the total number of all-star males from 0 at time $t-1$ to a positive number at time t. The variable takes a value of 0 for brokerages with 0 number of all-star male both at time $t-1$ and t. Similar to the results in Column (1), the estimates in Column (3) also indicate that an increase in the number of all-star males does not increase the future performance of brokerages (coefficient = -0.0003; t-statistic = -0.00). Overall, the results in this section provide supporting evidence for the first hypothesis of the study; that an increase in the number of all-star females in a brokerage positively influences its performance.

[11]The results remain similar if instead of Regression (4), I run the following panel regression: $Performance_{j,t} = \alpha + \beta_1\ Female\ Treatment_j \times Post_{j,t-1} + \beta_2\ X_{j,t-1} + i.Year + i.Brokerage + \epsilon_{j,t}$, where $Female\ Treatment$ is an indicator variable equal to 1, if, at some point in the sample, a brokerage with no all-star female switches to having positive number of all-star females. The variable is equal to 0, if a brokerage never employs an all-star female. $Post_{j,t-1}$ is an indicator variable equal to 1 for time periods after a brokerage hires an all-star female for the first time, and 0 for time periods before the hiring. In this case the point estimate for β_1 is equal to 0.1530 (t-statistic = 2.14). However, because some brokerages may frequently switch from having a positive number of all-star females to no all-star females, β_1 in this regression may overestimate the after-treatment effect.

A.1. All-Star Females and Performance of Male-Dominated Brokerages

Prior studies have suggested that the influence of senior females on their work environment is affected by the gender composition of their workplace. For example, Kanter (1977) argues that token women feel overly visible and are pressured to perform well. Motivated by this evidence, in this section, I examine whether the gender composition of brokerages affects the prior results. Further, I examine whether the positive influence of all-star females on the performance of their brokerages, equally affects the performance of female and male analysts.

To test the above questions, I first proxy for the gender composition of brokerages using the ratio of female analysts to the total analysts per brokerage. Using this ratio, I classify brokerages in two groups: (1) *male-dominated* brokerage as those whose ratio of females to total analysts is below the sample's mean, and (2) *gender-diverse* brokerages as those with an above-the-mean female ratio. Next, I separately repeat the analysis of Regression (3) on the sample of male-dominated and gender-diverse brokerages.

In line with Kanter's (1977) argument, the results in Column (1) of Table V indicate that the positive impact of all-star female analysts on the future performance of their brokerages is more salient in male-dominated brokerages. In particular, adding 1 additional all-star female to a male-dominated brokerage is associated with a 23-percentage-point increase in its future performance (coefficient = 0.2291; t-statistic = 2.69). Again, adding more all-star males does not have a similar influence (coefficient = -0.6576; t-statistic = -2.82).

Using the sample of gender-diverse brokerages in Column (2) of Table V, I find that although adding one more all-star female to a brokerage still has a positive effect on the performance, this impact is statistically less significant (coefficient = 0.1954; t-statistic = 1.36).

Finally, I examine whether the positive influence of all-star females on the performance of analysts is symmetric between female and male analysts. To do so, I repeat the analysis of Panel A, on the sample of female and male analysts. That is, within each group of male-dominated and gender-diverse brokerages, I examine whether the performance of female and male analysts are equally affected by the representation of senior female analysts.

Panel B of Table V shows the impact of all-star females on the average performance of female analysts. The results in Column (3) indicate that in male-dominated brokerages, a higher number of all-star females increases the future performance of other female analysts (coefficient = 0.6111; t-statistic = 2.58). Similar to the results in Panel A, the estimates in Column (4) show that, although the impact of all-star females on the performance of female analysts remains positive, this impact is less significant in gender-diverse brokerage (coefficient = 0.1281; t-statistic = 0.90).

A similar pattern appears in Columns (5) and (6), when I focus on the impact of all-star females on the performance of male analysts. In male-dominated brokerages, adding 1 more all-star female to the brokerage increases the average performance of male analysts for 14% (coefficient = 0.1391; t-statistic = 2.04). Again, this impact, while still positive, is less significant in gender-diverse brokerage (coefficient = 0.1887; t-statistic = 1.24).

B. All-Star Females and Career Paths of Their Colleagues

In this section, I test the second hypothesis of the study. Specifically, I examine whether all-star females also affect the career path of their colleagues, *i.e.*, equity analysts who work in the same brokerage as all-star females. The positive influence of all-star females on the average performance of analysts in their brokerages (see Table IV), may translate into a higher (lower) chance of future promotion (demotion). To test this conjecture, I run the following pooled-panel regressions to compare the promotion and demotion likelihood of analysts who work in brokerages with at least 1 all-star female, with those who have no all-star female in their workplace:

$$Promotion_{i,j,t} = \alpha + \beta_1\ \textit{All-Star Female}_{j,t-1} + \beta_2\ X_{i,t-1} + i.Year + i.Brokerage + \epsilon_{i,j,t}. \quad (5)$$

$$Demotion_{i,j,t} = \alpha + \beta_1\ \textit{All-Star Female}_{j,t-1} + \beta_2\ X_{i,t-1} + i.Year + i.Brokerage + \epsilon_{i,j,t}. \quad (6)$$

Here, $Promotion_{i,j,t}$ is an indicator variable equal to 1, if analyst i has moved from a small brokerage (*i.e.*, a brokerage with fewer than 25 analysts) at time $t-1$ to a large brokerage (*i.e.*, a brokerage with more than 25 analysts) at time t. Similarly, $Demotion_{i,j,t}$ is an indicator variable equal to 1, if analyst i has moved from a large brokerage at time $t-1$ to a small brokerage at time t. The main independent variable, $\textit{All-Star Female}_{j,t-1}$, is an indicator variable equal to 1, if at time $t-1$ at least 1 all-star female works in brokerage j, and 0 otherwise. $X_{i,t-1}$ is a vector of variables that controls for attributes that affect analysts' future chance of promotion (or demotion), including analysts' performance, experience, number of issued earnings forecasts, total number of all-star analysts in their brokerages, gender, and ethnicity. As in the previous regressions, I include year and brokerage FEs in the analysis. In both regressions, β_1 is the coefficient of interest.

Table VI shows the estimation results. Columns (1) and (2) show that an analyst who works in a brokerage with at least 1 all-star female has, on average, a 3-percentage-point higher chance to experience a promotion in the following period (coefficient = 0.0301; t-statistic = 3.02). At the same time, this analyst is 0.55% less likely to experience a future demotion (coefficient = -0.0055; t-statistic = -2.29).

Similar to the analysis in Section IV.A.1, I further examine whether the positive (negative) impact of all-star females on the promotion (demotion) likelihood of their colleagues is symmetric between female and male analysts. In doing so, I include an interaction term in the above regressions, (*i.e.*, $Female_i \times \textit{All-Star Female}_{j,t-1}$). Consistent with the performance results in Table V, the estimates in Columns (1) and (2) of Table VI show that the influence of all-star females on the career path of their female and male colleagues is symmetric.

Finally, I investigate the impact of all-star females on the promotion and demotion likelihood of their colleagues, controlling for the possible influence of all-star males. That is, I repeat the analysis of Regressions (5) and (6), but additionally include an indicator variable

$All\text{-}Star\,Male_{j,t-1}$ that takes a value of 1 if at least one all-star male works in brokerage j at time $t-1$. The results in Columns (3) and (4) of Table VI show that the impact of all-star females on the promotion (and demotion) likelihood of their colleagues remain statistically significant. Moreover, the positive influence of all-star females on analysts' chance of promotion is economically larger compared to the likewise influence of all-star males (coefficient = 0.0133; t-statistic = 1.79).

B.1. Establishing Causality

As mentioned in Section IV.A, the presence of all-star females in a brokerage is not randomly determined. This endogeneity could, therefore, confound the causality argument of Table VI. To address this concern, I follow Bettinger and Long's (2005) method and repeat the analysis of Section IV.B, using an IV strategy.

As shown in Table I, the number of female analysts within brokerages fluctuates over time. Therefore, although a brokerage may employ a particular number of female analysts in the *steady state*; the gender composition of the brokerage changes from one year to another. I use this fluctuation to build an IV. Specifically, for each brokerage, I measure the steady-state composition of females equal to the average number of female analysts in that brokerage. Subsequently, I measure the annual difference between the actual number of female analysts in the brokerage from the steady state value. I use this deviation as an IV to identify the exogenous variation in the annual number of all-star females in the brokerage. Specifically,

$$\begin{aligned} &Deviation\ from\ Steady\text{-}State\ Female\ Composition_{j,t} = \\ &Number\ of\ Female\ Analysts_{j,t} - \frac{1}{T}\sum_{t=1}^{T} Number\ of\ Female\ Analysts_{j,t}, \end{aligned} \tag{7}$$

where T is the total number of years that brokerage j appears in the sample.

The explained IV is economically relevant, if a larger level of positive deviation from the steady-state value in a brokerage leads to a higher chance that at least 1 all-star female work in the brokerage. To test this conjecture, I run the following pooled-panel regression:

$$\begin{aligned} \textit{All-Star Female}_{j,t} = \alpha + \beta_1 \textit{ Deviation from Steady-State Female Composition}_{j,t} + \\ \beta_2 \ X_t + i.Year + i.Brokerage + \epsilon_{j,t}. \end{aligned} \tag{8}$$

Equation (8) controls for brokerages' characteristics and also includes year and brokerage FEs. Therefore, β_1, to a large extent, should capture the *exogenous* variation in the number of all-star females in brokerages. Column (1) of Table VII confirms the economic relevance of the IV: a larger deviation from the steady-state female composition in a brokerage increases the likelihood that at least 1 female all-star works in that brokerage (coefficient = 0.0039; t-statistic = 9.85). Moreover, the Wald F-statistic value of 72.99 suggests that the analysis does not suffer from a weak instrumental variable (see Stock, Yogo, and Wright (2002)). For the instrument to be valid, it also needs to satisfy the exclusion restriction. Although there is not a direct way to test this requirement, it is unlikely that the deviation from the average number of female composition in a brokerage, is directly correlated to the future promotion and demotion likelihood of other equity analysts.

I use a similar IV to compare the influence of all-star females on the corporate mobility of female and male analysts. Specifically, I use an interaction term of *Deviation from Steady-State Female Composition* $\times$ *Female*, to investigate whether the positive (negative) impact of all-star females on the promotion (demotion) likelihood of analysts is symmetric between female and male analysts. The results in Column (2) of of Table VII show the economic relevance this IV (coefficient = 0.0280; t-statistic = 10.13). Again, the Wald F-statistic value of 13.88 suggests that the analysis does not suffer from a weak instrumental variable.

In the next step, I use the estimates from Equation (8) (*i.e.*, $\widehat{\textit{All-Star Female}}_{j,t-1}$) and test the following 2SLS regressions:

$$Promotion_{i,j,t} = \alpha + \beta_1 \ \widehat{\textit{All-Star Female}}_{j,t-1} + \beta_2 \ X_{i,t-1} + i.Year + i.Brokerage + \epsilon_{i,j,t}. \tag{9}$$

$$Demotion_{i,j,t} = \alpha + \beta_1 \ All\text{-}Star\widehat{Females}_{j,t-1} + \beta_2 \ X_{i,t-1} + i.Year + i.Brokerage + \epsilon_{i,j,t}. \quad (10)$$

The results in Panel B of Table VII confirm the positive (negative) influence of all-star females on the promotion (demotion) likelihood of other analysts. As shown in Column (3), analysts who work in brokerages with at least 1 all-star female have a higher chance of promotion (coefficient = 0.5846; t-statistic = 4.05). At the same time, these analysts experience a lower chance of demotion in the next period (coefficient = -0.4422; t-statistic = -6.72).[12]

Similar to the results in Table VI, the estimates in Columns (5) and (6) show that the positive (negative) impact of all-star females on their cohorts' promotion (demotion) remains statistically significant when I additionally control for the impact of all-star males. Moreover, the documented impact is statistically identical among the sample of female and male analysts. Together, the analysis of this section provides supporting evidence for the second hypothesis of the study: equity analysts who work in brokerages with at least 1 all-star female have a higher (lower) chance of future promotion (demotion).

C. *All-Star Females and Promotion Gap*

Section IV.A shows that a larger number of all-star females in a male-dominated brokerage is associated with an increase in the future performance of the brokerage. In this section, I perform additional tests on the role of all-star females in brokerages that are largely dominated by male analysts. Specifically, I examine whether all-star females facilitate the corporate upward mobility of other female analysts to brokerages that have a low

[12]In an untabulated analysis, I repeat the same analysis of Table VII, focusing on the sample of male-dominated brokerages only. Given that in male-dominated brokerages the impact of all-star female analysts on the performance is higher, I expect all-star females to also have a stronger impact on the career of their colleagues, when they work in brokerages with low representation of females. Consistent with this hypothesis, the results indicate that the positive (negative) effect of all-star females on future promotion (demotion) likelihood of their colleagues is most salient in the sample of male-dominate brokerages (coefficient = 0.3169; t-statistic = 5.13 for promotion and coefficient = -0.1353; t-statistic = -5.11).

representation of females.

To answer the above question, I first examine whether the likelihood of promotion to male-dominated brokerages is systematically different for female and male analysts (*i.e.*, whether there is a promotion gap for female analysts). If the gender composition of male-dominated brokerages is randomly determined, the promotion likelihood of similarly qualified female and male analysts should be statistically identical. I run the following pooled-panel regression to test this hypothesis:[13]

$$\begin{aligned} Promotion\ to\ Male\text{-}Dominated\ \ Brokerage_{i,j,t} = \alpha + \beta_1\ Female_i + \beta_2\ X_{i,j,t} + \\ i.Year_t + i.Brokerage_j + \epsilon_{i,j,t}. \end{aligned} \tag{11}$$

β_1, the coefficient of interest, shows the promotion likelihood of female a analyst to a brokerage that is largely dominated by male analysts. As before, I control for different attributes of analysts ($X_{i,j,t}$) that may influence their chance of promotion. Further, to ensure that the results are not driven by the unobserved characteristics over time, or within brokerages I include year and brokerage FEs in the analysis.

The results in Column (1) of Table VIII confirm the existence of promotion gap for female analysts: compared to a similarly qualified male analyst, a female analyst, on average, has a 2-percentage-point lower chance of promotion to a brokerage that is largely dominated by male analysts (coefficient = -0.0202; t-statistic = -7.20). This result suggests that the gender composition of male-dominated brokerages is not randomly driven.[14]

Next, I study whether presence of all-star females in male-dominated brokerages narrows the above promotion gap for female analysts. To this end, in Column (3) of Table VIII, I estimate the promotion likelihood of a female analyst to a male-dominated brokerage that has *only 1* all-star female. Consistent with the "*women helping women*" hypothesis of Tate and Yang (2015), the results confirm the positive role of all-star females in narrowing the

[13]The results stay consistent if I use logit regression.

[14]Olson and E. (1983); McCue (1996); Brewis and Linstead (1999); Blau and DeVaro (2006); and Ibrarra, Carter, and Silva (2010), also find that females, on average, are less likely to be promoted.

promotion gap for other female analysts: with only 1 all-star female in a male-dominated brokerage, the promotion likelihood of female analysts increases from -2 percentage points (in Column (1)) to -23 basis points (coefficient = -0.0023; t-statistic = -2.27). This increase is statistically significant at the 5% confidence level.

One could argue that a female analyst may choose not to move to a larger brokerage (that happens to be male-dominated) because of unobserved reasons, such as responsibilities at home (Bertrand et al. (2010); Adams, Barber, and Odean (2016)), a higher level of risk aversion (Eckel and Grossmann (2008); Niederle (2016)), or lower interest on being exposed to competition (Gneezy, Niederle, and Rustichini (2003)). To address this concern, I reexamine the estimates, focusing only on promoted analysts. That is, I restrict the sample to analysts who have already selected to go through the promotion at time t.

Columns (4) to (6) of Table VIII show that, conditioned on being promoted, female analysts still have a lower chance to be promoted to male-dominated brokerages (coefficient = -0.1111; t-statistic = -8.65). Similar to the prior results, when an all-star female is present in the male-dominated brokerage, the promotion chance significantly increases for female analysts (coefficient = -0.0118; t-statistic = -2.36). Again, this increase is statistically significant at the 5% confidence level.

C.1. All-Star Females and Promotion Gap: Marginal Impact

If the presence of an all-star female in a male-dominated brokerage narrows the promotion gap for other female analysts, adding additional all-star female to the (male-dominated) brokerage should *incrementally* improve the promotion likelihood for female analysts. To test this conjecture, I examine the marginal impact of all-star females on the promotion likelihood of other female analysts. Specifically, in Table IX, I repeat the same analysis of Section IV.C, but focus on the promotion likelihood of a female analyst to a male-dominated brokerage that has 0, 1, 2, or more than 2 all-star females.

Consistent with the above conjecture, the results show that the addition of each all-star female to a male-dominated brokerage monotonically increases the chance of promotion for other female analysts. With no all-star female in a male-dominated brokerage, female analysts have 1.58 percentage points lower chance of promotion (t-statistic = -6.54). The promotion likelihood increases to -23 basis points, when 1 all-star female works in the brokerage (t-statistic = -2.27). Moreover, the estimates in Columns (4) and (5) of Table IX show that, within the same male-dominated brokerage, the chance of promotion for male and female analysts becomes statistically equal when 2 or more all-star females work in the brokerage. Overall, the results of Table VIII and Table IX suggest that all-star females facilitate the chance of upward mobility for their same-sex cohorts.

V. Summary and Conclusions

Female underrepresentation in workplaces has long been an important topic in the labor market. In addition to understanding where the gender pipeline leaks, it is equally important to examine whether senior females bring value to their workplace. This paper aims to answer this question, by focusing on equity research which is among the male-dominated professions. Given that equity analysts are among key information intermediaries in the capital markets, what affects their performance and corporate mobility is important to investigate.

I study whether all-star females (as senior analysts) add positive value to their brokerages. Moreover, I examine whether all-star females affect the corporate mobility of their cohort analysts. The results show that brokerages benefit from all-star females. Specifically, a larger number of all-star females in a brokerage is associated with an increase in the future performance of the brokerage. Compared to a similarly qualified counterpart, an analyst who works in a brokerage with at least one all-star female experiences a higher (lower) chance of promotion (demotion). Finally, in male-dominated brokerages, all-star females considerably facilitate the upward mobility for their same-sex cohorts.

REFERENCES

Adams, Rene B., Brad M. Barber, and Terrance Odean, 2016, Family, values, and women in finance, *Working Paper* .

Adams, Renee B., and Daniel Ferreira, 2009, Women in the Boardroom and Their Impact on Governance and Performance, *Journal of Financial Economics* 94, 291–309.

Arrow, Kenneth J., 1973, The Theory of Discrimination, in *In Discrimination in Labor Markets*, 3–33 (Princeton University Press).

Barber, Brad M., and Terrance Odean, 2001, Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment, *Quarterly Journal of Economics* 116, 261–292.

Becker, Gary S., 1959, The Economics of Discrimination, *University of Chicago Press* .

Bednar, Steven, and Dora Gicheva, 2014, Are Female Supervisors More Female-Friendly?, *American Economic Review: Papers and Proceedings* 104, 370–375.

Bell, Linda, N. Smith, Valdemar Smith, and Mette Verner, 2008, Gender Differences in Promotion Into Top-management Jobs, *Working Papers* .

Bertrand, Marianne, Claudia Goldin, and Lawrence F. Katz, 2010, Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors, *American Economic Journal: Applied Economics* 2, 228–255.

Bettinger, Eric P., and Bridget Terry Long, 2005, Do Faculty Serve as Role Models? The Impact of Instructor Gender on Female Students, *American Economic Review* 95, 152–157.

Blau, Francine D., and Jed DeVaro, 2006, New Evidence on Gender Differences in promotion Rates: An Empirical Analysis of A Sample New Hires, *NBER Working Paper Series* 1–40.

Branson, Douglas M, 2007, No Seat at the Table: How Corporate Governance and Law Keep Women Out of the Boardroom, *Working Paper* .

Brewis, J, and Stephen Andrew Linstead, 1999, *Gender and Management*, 48–81 (Macmillan;).

Chapple, C., and J. E. Humphrey, 2014, Does board gender diversity have a financial impact? evidence using stock portfolio performance., *Journal of Business Ethics* 112, 709723.

Cohen, Lauren, Andrea Frazzini, and Christopher Malloy, 2010, Sell-Side School Ties., *Journal of Finance* 65, 1409–1437.

Dezso, Cristian L., and David Gaddis Ross, 2012, Does Female Representation in Top Management Improve Firms Performance? A Panel Data Investigation, *Strategic Management Journal* 33, 1072–1089.

Eckel, C. C, and P. J. Grossmann, 2008, Men, women, and risk aversion: Experimental evidence, *C. R. Plott, V. L. Smith, eds. Handbook of Experimental Results. Elsevier, Amsterdam* 1061–1073.

Ellemers, Naomi, Henriette Van Den Heuvel, Dick De Gilder, Anne Maass, and Alessandra Bonvini, 2004, The underrepresentation of women in science: Differential commitment or the queen bee syndrome?, *British Journal of Social Psychology* 43, 315–338.

Frehill, L. M., N. Di Fabio, S. Hill, K. Trager, and J. Buono, 2008, Women in engineering: A review of the 2007 literature, *SWE Magazine* 54, 6–30.

Garcia-Retamero, Rocio, and Esther Lopez-Zafra, 2006, Prejudice against women in male-congenial environments: Perceptions of gender role congruity in leadership, *Sex Roles* 55, 51–61.

Gneezy, U, M. Niederle, and A. Rustichini, 2003, Performance in com- petitive environments: Gender differences, *Quarterly Journal of Economics* 118, 1049–1074.

Green, T Clifton, Narasimhan Jegadeesh, and Yue Tang, 2009, Gender and Job Performance : Evidence from Wall Street, *Financial Analysts Journal* 65, 65–78.

Grinblatt, Mark, Gergana Jostova, and Alexander Philipov, 2016, Analyst Bias and Mispricing, *Working Paper* .

Groysberg, Boris, and LindaEling Lee, 2008, The effect of colleague quality on top performance : the case of security analysts, *Journal of Organizational Behavior* 29, 1123–1144.

Groysberg, Boris, and Laura Morgan Roberts, 2005, Leading the Josie Esquivel Franchise (B) Life at Morgan Stanley, *Harvard Business Review* 1–5.

Gul, F., B. Srinidhi, and J. Tsui, 2008, Board diversity and the demand for higher audit effort, *Working Paper* .

Holmstrom, Benget, 1999, Managerail Incentive Problem: A Dynamic Perspective, *The Review of Economic Studies* 66, 169–182.

Hong, H, JD Kubik, and A Solomon, 2000, Security Analysts' Career Concerns and Herding of Earnings Forecasts, *The RAND Journal of Economics* 31, 121.

Hong, Harrison, and Jeffrey D. Kubik, 2003, Analyzing the Analysts: Career Concerns and Biased Earnings Forecasts, *The Journal of Finance* 58, 313–351.

Huang, Allen H., Amy Y. Zang, and Rong Zheng, 2014, Evidence on the information content of text in analyst reports, *The Accounting Review* 89, 2151–2180.

Huang, Jiekun, and Darren J. Kisgen, 2013, Gender and corporate finance: Are male executives overconfident relative to female executives?, *Journal of Financial Economics* 108, 822–839.

Ibrarra, Herminia, Nancy M. Carter, and Christina Silva, 2010, Why Men Still Get More Promotions Than Women, *Harvard Business Review* .

Jannati, Sima, Alok Kumar, Alexandra Niessen-Ruenzi, and Justin Wolfers, 2018, In-Group Bias in Financial Markets, *Working paper* .

Kanter, R. M., 1977, *Men and Women of the Corporation* (New York: Basic Books).

Kim, Daehyun, and Laura T. Starks, 2016, Gender diversity on corporate boards: Do women contribute unique skills?, *American Economic Review: Papers and Proceedings* 106, 267271.

Kumar, Alok, 2010, Self-selection and the forecasting abilities of female equity analysts, *Journal of Accounting Research* 48, 393–435.

Kunze, Astrid, and Amalia R. Miller, 2017, Women Helping Women? Evidence from Private Sector Data on Workplace Hierarchies, *Review of Economics and Statistics* 99, 769–775.

Lockwood, Penelope, 2006, someone like me can be successful: Do college students need same-gender role models?, *Psychology of Women Quarterly* 30, 36–46.

Marx, David M., and Jasmin S. Roman, 2002, Female role models: Protecting womens math test performance, *Personality and Social Psychology Bulletin* 28, 1183–1193.

Mathison, David L., 1986, Sex Differences in the Perception of Assertiveness Among Female Managers.

Matsa, David, and Amalia R. Miller, 2013, A female style in corporate leadership? evidence from quotas, *American Economic Journal: Applied Economics* 5, 136169.

Matsa, David A, Amalia R Miller, and Marianne Bertrand, 2011, Chipping away at the Glass Ceiling : Gender Spillovers in Corporate Leadership, *The American Economic Review* 101, 635–639.

McCue, Kristin, 1996, Promotions and Wage Growth, *Journal of Labor Economics* 14, 175–209.

Niederle, Murielz, 2016, Gender, in: Handbook in experimental economics, *Princeton University Press, NJ* .

Olson, Craig A., and Brian E., 1983, Sex Discrimination in the Promotion Process, *Industrial and Labor Relations Review* 36, 624–641.

Rocha, Vera, and Mirjam van Praag, 2016, How Do Entrepreneurial Bosses Influence Their Employees' Future Entrepreneurship Choices?, *Working Paper* .

Rose, Caspar, 2007, Does female board representation influence firm performance? The Danish evidence, *Corporate Governance* 15, 404–413.

Simons, T., and L. Pelled, 1999, Understanding Executive Diversity: More than Meets the Eye, *Human Resource Planning* 22, 49–51.

Singh, Siri; Vinnicombe Susan, Val; Terjesen, 2008, Newly Appointed Directors in the Boardroom:: How Do Women and Men Differ?, *European Management Journal* 26, 48–58.

Staines, Tavris C., G., and T.E. Jayaratne, 1974, The queen bee syndrome, *Psychology Today* .

Stickel, Scott E., 1992, Reputation and Performance Among Security Analysts, *The Journal of Finance* 47, 1811–1836.

Stock, J., M. Yogo, and J. Wright, 2002, A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments, *Journal of Business and Economic Statistics* 20, 518 529.

Stout, J. G., N. Dasgupta, M. Hunsinger, and M. A. McManus, 2011, STEMing the tide: Using ingroup experts to inoculate womens self-concept in science, technology, engineering, and mathematics (STEM), *Journal of Personality and Social Psychology* 100, 255–270.

Tate, Geoffrey, and Liu Yang, 2015, Female leadership and gender equity: Evidence from plant closure, *Journal of Financial Economics* 117, 77–97.

Table I. Summary Statistics

Panel A reports the total number of equity analysts and female analysts per year. Panel B reports the average number all-star analysts, their rankings, the average number of firms and industries analysts cover, and the average number of earnings forecast they issue. Analyst and earnings announcement data are from I/B/E/S. All-star information is from Huang et al. (2014). Industry classification is based on Fame-French 48 industry portfolios. The sample period is from 1995 to 2016.

Panel A: Analysts' Demographic			
Year	Total Analysts	Female Analysts	Total Female (%)
1995	2,399	406	16.9
1996	2,585	440	17.0
1997	2,778	452	16.3
1998	3,019	492	16.3
1999	3,291	525	16.0
2000	3,371	532	15.8
2001	3,609	558	15.5
2002	3,300	503	15.2
2003	3,349	487	14.5
2004	3,318	454	13.7
2005	3,386	466	13.8
2006	3,162	424	13.4
2007	2,955	405	13.7
2008	2,627	354	13.5
2009	2,306	299	13.0
2010	2,337	305	13.1
2011	2,314	293	12.7
2012	2,174	275	12.6
2013	2,023	250	12.4
2014	1,889	225	11.9
2015	1,728	198	11.5
2016	1,509	169	11.1

Panel B: Analysts' Job Load						
	Mean	Median	75th pctl	25th pctl	Std.	# of Obs.
Sample: Female Analysts						
Number of All-Stars	46.8	44.0	62.0	36.0	11.9	960
Ranking of All-Stars	2.8	2.7	2.9	2.7	0.1	7,920
Number of Covered Firms	10.5	10.6	11.3	9.4	1.5	8,512
Number of Forecasts	190.9	147.2	253.5	133.9	74.9	8,512
Number of Covered Industries	4.0	3.9	4.5	3.5	0.5	8,512
Sample: Male Analysts						
Number of All-Stars	230.5	228.0	246.0	216.0	22.8	5,020
Ranking of All-Stars	2.8	2.8	2.8	2.8	0.0	46,383
Number of Covered Firms	12.1	12.3	13.1	10.8	1.6	50,917
Number of Forecasts	241.8	218.2	345.8	153.8	96.1	50,917
Number of Covered Industries	4.4	4.3	4.7	4.0	0.4	50,917

Table II. Job Load and Performance of All-Star Females
This table compares the average job load and performance of all-star female analysts with the sample of all-star males, female analysts and all analysts. Table AI describes all variables in detail. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016.

	Mean	Median	25th pctl	75th pctl	Std.	# of Obs.
Panel A: Number of Earnings Forecasts						
All-Star Females	363.23	312.53	236.42	514.29	150.12	960
All-Star Males	427.89	380.80	280.28	556.26	169.30	5,020
Females Analysts	190.94	147.22	133.86	253.53	74.94	8,512
All Analysts	234.63	212.78	150.13	315.76	93.92	59,554
Panel B: Number of Covered Firms						
All-Star Females	16.83	16.46	15.35	17.76	2.07	960
All-Star Males	18.75	18.26	16.80	20.37	2.13	5,020
Females Analysts	10.50	10.61	9.41	11.33	1.45	8,512
All Analysts	11.87	12.02	10.71	12.76	1.61	59,554
Panel C: Number of Covered Industries						
All-Star Females	4.55	4.55	4.17	4.83	0.43	960
All-Star Males	4.31	4.21	4.04	4.61	0.36	5,020
Females Analysts	3.96	3.90	3.52	4.49	0.48	8,512
All Analysts	4.33	4.36	4.04	4.60	0.38	59,554
Panel D: Performance						
All-Star Females	53.79	54.05	52.80	55.45	56.03	960
All-Star Males	53.46	53.45	52.62	54.16	55.64	5,020
Females Analysts	52.55	52.67	52.16	53.11	57.38	8,512
All Analysts	52.33	52.25	51.94	52.99	54.69	59,554

Table III. Analysts' Job Separations

This table presents the average number of job separations for female and male analysts over the sample period. Following Hong et al. (2000), I define *Promotions* as cases that analysts moves from small to large brokerages, where small-sized brokerages are those with fewer than 25 analysts. Similarly, I define *Demotions* as cases that analysts move from large brokerages to small ones. Finally, *Termination* shows cases that analysts stop appearing in I/B/E/S. Columns (1) and (2) show the promotion instances per female and male analysts. Columns (3) and (4) show the demotion instances. Columns (5) and (6) show the termination instances. Analyst and earnings announcement data are from I/B/E/S. The sample period is from 1995 to 2016.

	Panel A: Promotion		Panel B: Demotion		Panel C: Termination	
Year	Females	Males	Females	Males	Females	Males
	(1)	(2)	(3)	(4)	(5)	(6)
1995	35	199	11	98	25	113
1996	52	269	16	105	26	126
1997	39	216	22	131	32	139
1998	45	263	13	100	44	165
1999	73	406	13	94	54	223
2000	72	367	17	106	60	297
2001	73	472	19	76	85	412
2002	42	216	22	145	101	386
2003	35	256	31	172	84	324
2004	34	150	26	222	60	298
2005	32	242	24	121	67	325
2006	18	153	23	159	54	321
2007	20	179	8	82	79	347
2008	31	205	21	129	77	328
2009	15	177	21	123	33	171
2010	28	148	11	105	42	153
2011	18	93	10	70	42	203
2012	11	91	3	45	39	214
2013	13	91	3	43	36	197
2014	8	101	16	91	39	213
2015	14	101	12	76	30	201

Table IV. All-Star Females and Performance of Brokerages

This table examines the impact all-star female analysts on the performance of their brokerages. Column (1) shows the estimates for a panel regression that studies the correlation between the number of of all-star females in a brokerage and its future performance (Regression (3)). Columns (2) and (3) use difference-in-differences regressions to capture the influence of all-star females and males on the change in performance of their brokerages. In particular, $\textit{All-Star Female Treatment}_t$ ($\textit{All-Star Male Treatment}_t$) is an indicator variable equal to 1, if the total number of all-star females (males) in a brokerage has increased from 0 at time $t-1$ to a positive number at t. The variable takes a value of 0, if the total number of all-star females (males) in a brokerage at time $t-1$ and t is 0. Additional control variables include brokerages' accuracy, size, number of issued earnings forecasts, experience, and number of foreign analysts. Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The t-statistics are shown below the estimates. Standard errors are clustered at the brokerage level. Coefficients of interest are shown in bold text.

	Dependent Variable:		
	Performance (t)	Δ Performance (t)	Δ Performance (t)
	(1)	(2)	(3)
Number of All-Star Females (*t-1*)	**0.0327**		
	(2.34)		
Number of All-Star Males (*t-1*)	**-0.0338**		
	(-0.12)		
All-Star Female Treatment (*t-1*)		**0.1335**	
		(2.24)	
All-Star Male Treatment (*t-1*)			**-0.0003**
			(-0.00)
Brokerage's Controls	✓	✓	✓
Year FEs	✓	✓	✓
Brokerage FEs	✓	✓	✓
Number of Obs.	2,795	2,502	2,216
Adjusted R^2	0.434	0.047	0.057

Table V. All-Star Females and Performance of Male-Dominated Brokerages

This table the influence of gender composition of brokerages on the impact that all-star females have on the performance of their brokerages. I classify brokerages based on the ratio of their female analysts to total analysts: (1) *male-dominated* brokerages as those with a female ratio below the sample's mean, and (2) *gender-diverse* brokerages as those with a female ratio above the sample's mean. Columns (1) and (2) show the estimation results from Regression (3) for the sample of male-dominated and gender-diverse brokerages, respectively. Columns (3) and (4) show the impact of all-star females on the performance of female analysts in male-dominated and gender-diverse brokerages. Columns (5) and (6) show the impact of all-star females on the performance of male analysts in male-dominated and gender-diverse brokerages. Additional control variables include brokerages' accuracy, size, number of issued earnings forecasts, experience, and number of foreign analysts. Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The t-statistics are shown below the estimates. Standard errors are clustered at the brokerage level. Coefficients of interest are shown in bold text.

	Panel A: All Analysts		Panel B: Female Analysts		Panel C: Male Analysts	
	Dependent Variable: Performance (t)		Dependent Variable: Performance (t)		Dependent Variable: Performance (t)	
	(1)	(2)	(3)	(4)	(5)	(6)
Number of All-Star	**0.2291**	**0.1954**	**0.6111**	**0.1281**	**0.1391**	**0.1887**
Females *(t-1)*	**(2.69)**	**(1.36)**	**(2.58)**	**(0.90)**	**(2.04)**	**(1.24)**
Number of All-Star	**-0.6576**	**0.1996**	**-0.9084**	**0.1549**	**-0.5265**	**0.0547**
Males *(t-1)*	**(-2.82)**	**(0.92)**	**(-1.60)**	**(0.70)**	**(-2.21)**	**(0.16)**
Brokerage's Controls	✓	✓	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓	✓	✓
Brokerage FEs	✓	✓	✓	✓	✓	✓
Number of Obs.	677	1,010	593	978	677	997
Adjusted R^2	0.555	0.398	0.346	0.244	0.459	0.439
Sample	Male-Dominated	Gender-Diverse	Male-Dominated	Gender-Diverse	Male-Dominated	Gender-Diverse

Table VI. All-Star Females and Career Path of Their Colleagues
This table tests whether all-star females affect the corporate mobility of their cohorts (*i.e.*, analysts who work in the same brokerage as all-star females). Following Hong et al.'s (2000) method, I define *Promotions* as cases that analysts moves from small brokerages to large ones, where small-sized brokerages are those with fewer than 25 analysts. Similarly, I define *Demotions* as cases that analysts move from large brokerages to small ones. The main independent variable, *All-Star Female (t-1)*, is an indicator variable equal to 1 if at least one all-star female work at a brokerage at time $t-1$. Column (1) (Column (2)) shows the impact of all-star females on their cohorts' chance of promotion (demotion). Columns (3) and (4) further control for the effects of all-star males on the promotion and demotion likelihood of equity analysts. Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcements data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The t-statistics are shown below the estimates. Standard errors are clustered at analyst and brokerage levels. Coefficients of interest are shown in bold text.

	Dependent Variable:			
	Promotion (t)	Demotion (t)	Promotion (t)	Demotion (t)
	(1)	(2)	(3)	(4)
All-Star Female (*t-1*)	**0.0301**	**-0.0055**	**0.0319**	**-0.0047**
	(3.02)	**(-2.29)**	**(3.16)**	**(-1.98)**
All-Star Male (*t-1*)			**0.0133**	**-0.0248**
			(1.79)	**(-7.22)**
Female × All-Star Male (*t-1*)			0.0201	0.0060
			(1.36)	(0.93)
Female × All-Star Female *(t-1)*	-0.0078	0.0033	-0.0221	-0.0008
	(-0.73)	(0.87)	(-1.44)	(-0.17)
Female	-0.0092	-0.0023	-0.0142	-0.0039
	(-1.58)	(-0.64)	(-2.15)	(-0.85)
Performance (*t-1*)	0.0038	-0.0024	0.0038	-0.0024
	(2.30)	(-2.69)	(2.32)	(-2.73)
Experience (*t-1*)	-0.0684	-0.0074	-0.0684	-0.0075
	(-29.40)	(-7.67)	(-29.34)	(-7.88)
Number of Forecasts (*t-1*)	0.0157	-0.0006	0.0156	-0.0005
	(7.47)	(-0.69)	(7.42)	(-0.50)
Foreign	-0.0056	0.0056	-0.0055	0.0053
	(-1.14)	(2.18)	(-1.11)	(2.07)
Number of All-Stars (*t-1*)	-0.0005	-0.0001	-0.0006	0.0001
	(-1.17)	(-1.22)	(-1.41)	(1.37)
Year FEs	✓	✓	✓	✓
Brokerage FEs	✓	✓	✓	✓
Number of Obs.	38,483	38,483	38,483	38,483
Adjusted R^2	0.105	0.097	0.105	0.098

Table VII. All-Star Females and Career Paths of Their Colleagues: IV Regression This table uses an IV regression method to test the impact of all-star females on the career path of their cohorts. Following Bettinger and Long's (2005) method, I use the deviation from the steady-state female composition of brokerages as an IV to measure the exogenous variation in the number of female analysts in brokerages (Equation 7). Following Hong et al. (2000), I define *Promotions* as cases that analysts moves from small to large brokerages, where small-sized brokerages are those with fewer than 25 analysts. Similarly, I define *Demotions* as cases that analysts move from large brokerages to small ones. *All-star Female (Male) (t-1)*, is an indicator variable equal to 1 when an analyst works in a brokerage that has at least one all-star female (male). Panel A shows the economic relevance of the IV. Column (1) shows the correlation between deviation from steady-state female composition in a brokerage, and the likelihood that at least one all-star female works in the brokerage. Column (2) shows the economic relevance of the explained IV, interacted with female analyst variable. Panel B shows the results of 2SLS regressions. Columns (3) and (4) compare the likelihood of promotion and demotion for analysts who work in brokerages with at least one all-star female, with those who have no all-star female in their brokerage. Columns (5) and (6) repeat the same analysis of Columns (3) and (4), but additionally control for the effects of all-star males. Control variables are similar to those used in Table VI. Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The t-statistics are shown below the estimates. Standard errors are clustered at analyst and brokerage levels. Coefficients of interest are shown in bold text.

	Panel A: First-Stage Estimates		Panel B: Second-Stage Estimates			
	Dependent Variable:		Dependent Variable:			
	All-Star Female	All-Star Female×Female Analyst	Promotion (t)	Demotion (t)	Promotion (t)	Demotion (t)
	(1)	(2)	(3)	(4)	(5)	(6)
Deviation from Steady-State Female Composition (*t-1*)	**0.0039**	-0.0042				
	(9.85)	(-7.81)				
Deviation from Steady-State Female Composition (*t-1*) × Female Analysts	-0.0008	**0.0280**				
	(-1.25)	**(10.13)**				
All-Star Female (*t-1*)			**0.5846**	**-0.4422**	**0.4723**	**-0.4410**
			(4.05)	**(-6.72)**	**(2.64)**	**(-6.03)**
All-Star Female (*t-1*)× Female Analyst			-0.0395	-0.0003	-0.1016	0.0601
			(-1.10)	(-0.02)	(-0.42)	(0.78)
All-Star Male (*t-1*)					**0.4100**	**-0.0156**
					(2.70)	**(-0.28)**
All-Star Male (*t-1*) × Female Analyst					0.0694	-0.0710
					(0.26)	(-0.80)
Analyst's Controls	✓	✓	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓	✓	✓
Brokerage FEs	✓	✓	✓	✓	✓	✓
Number of Obs.	38,483	38,483	38,483	38,483	38,483	38,483
Adjusted R^2	0.803	0.451				
First-Stage F Statistic	72.99	13.88				

Table VIII. All-Star Females and Promotion Gap

This table examines the impact of all-star females on the promotion likelihood of other female analysts to male-dominated brokerages, where male-dominated brokerages are those with a female composition below the sample's mean. Column (1) shows the likelihood that a female analyst gets promoted to a male-dominated brokerage. Column (2) shows the promotion chance to a brokerage, male-dominated or gender-diverse, that has only one all-star female analysts. Column (3) shows the chance of promotion to a male-dominated brokerage that has only one all-star female. Columns (4) to (6) repeat the same analysis as in Columns (1) to (3), but restrict the sample to promoted analysts only, *i.e.*, analysts who have moved from a small brokerage at time *t-1* to a large brokerage at time *t*). Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The t-statistics are shown below the estimates. Standard errors are clustered at analyst and brokerage levels. Coefficients of interest are shown in bold text.

	Panel A: All Analysts			Panel B: Promoted Analysts		
	Dependent Variable: Promotion to			Dependent Variable: Promotion to		
	a Male-Dominated Brokerage (t)	a Brokerage with 1 All-Star Female (t)	a Male-Dominated Brokerage with 1 All-Star Female (t)	a Male-Dominated Brokerage (t)	a Brokerage with 1 All-Star Female (t)	a Male-Dominated Brokerage with 1 All-Star Female (t)
	(1)	(2)	(3)	(4)	(5)	(6)
Female	**-0.0202**	**-0.0013**	**-0.0023**	**-0.1111**	**-0.0059**	**-0.0118**
	(-7.20)	**(-0.70)**	**(-2.27)**	**(-8.65)**	**(-0.60)**	**(-2.36)**
Performance (*t-1*)	0.0023	0.0018	0.0007	-0.0027	0.0060	0.0026
	(2.07)	(3.04)	(2.17)	(-0.60)	(1.71)	(1.29)
Number of All-Stars in Brokerage (*t-1*)	0.0293	0.0059	0.0052	0.0165	0.0184	0.0188
	(7.90)	(2.31)	(3.22)	(1.23)	(1.49)	(2.32)
Experience (*t-1*)	-0.0337	-0.0085	-0.0047	-0.0028	-0.0169	-0.0152
	(-22.42)	(-12.11)	(-8.89)	(-0.44)	(-4.01)	(-4.82)
Number of Forecast (*t-1*)	0.0064	0.0011	0.0007	0.0183	0.0006	0.0025
	(4.60)	(2.02)	(2.07)	(3.09)	(0.15)	(1.04)
Foreign	-0.0039	-0.0016	-0.0017	-0.0115	-0.0115	-0.0090
	(-1.18)	(-0.97)	(-1.83)	(-0.87)	(-1.27)	(-1.83)
Year FEs	✓	✓	✓	✓	✓	✓
Brokerage FEs	✓	✓	✓	✓	✓	✓
Number of Obs.	44,518	44,518	44,518	6,946	6,946	6,946
Adjusted R^2	0.115	0.086	0.053	0.519	0.276	0.210

Table IX. All-Star Females and Promotion Gap: Marginal Impact

This table examines the marginal impact of all-star females on the promotion likelihood of female analysts to a male-dominated brokerage. To facilitate the comparison, I report the result from Column (1) of Table VIII again. Columns (2) to (5) show the promotion chance of a female analyst to a male-dominated brokerage with 0, 1, 2, and more than 2 all-star female analysts. Table AI describes all variables in detail. All continuous variables are standardized to have a mean of 0 and a standard deviation of 1. Analyst and earnings announcement data are from I/B/E/S. All-star and gender information is from Huang et al. (2014) and Kumar (2010). The sample period is from 1995 to 2016. The *t*-statistics are shown below the estimates. Standard errors are clustered at analyst and brokerage levels. Coefficients of interest are shown in bold text.

	Dependent Variable: Promotion to a Male-Dominated Brokerage with				
	Any Number of All-Star Females	0 All-Star Female	1 All-Star Female	2 All-Star Females	More than 2 All-Star Females
	(1)	(2)	(3)	(4)	(5)
Female	**-0.0202**	**-0.0158**	**-0.0023**	**-0.0014**	**-0.0007**
	(-7.20)	**(-6.54)**	**(-2.27)**	**(-1.39)**	**(-1.00)**
Performance (*t-1*)	0.0023	0.0018	0.0007	0.0000	-0.0002
	(2.07)	(1.80)	(2.17)	(0.03)	(-1.02)
Number of All-Stars in Brokerage (*t-1*)	0.0293	0.0167	0.0052	0.0022	0.0051
	(7.90)	(6.42)	(3.22)	(1.17)	(3.43)
Experience (*t-1*)	-0.0337	-0.0243	-0.0047	-0.0041	-0.0006
	(-22.42)	(-18.75)	(-8.89)	(-8.87)	(-1.63)
Number of Forecast (*t-1*)	0.0064	0.0057	0.0007	0.0001	-0.0001
	(4.60)	(4.41)	(2.07)	(0.27)	(-0.41)
Foreign	-0.0039	-0.0032	-0.0017	0.0002	0.0007
	(-1.18)	(-1.10)	(-1.83)	(0.22)	(0.84)
Year FEs	✓	✓	✓	✓	✓
Brokerage FEs	✓	✓	✓	✓	✓
Number of Obs.	44,518	44,518	44,518	44,518	6,946
Adjusted R^2	0.115	0.119	0.053	0.053	0.210

Appendices

to accompany

Do Brokerages Benefit from All-Star Females?

This Appendix presents a set of supplementary and robustness tests that support the main analyses in the paper. The order of the items in this Appendix follows that of the main text.

Table AI. Definition and Sources of Main Variables

This table defines the main variables used in the empirical analyses. The main data sources are: (1) Center for Research on Security Prices (CRSP), and (2) Institutional Brokers Estimate System (I/B/E/S).

Variable's Name	Description	Source
Female Dummy	Set to 1 if an analyst is female	Kumar 2010 and Jannati et al. 2018
Foreign Dummy	Set to 1 if an analyst is identified as foreigner	Jannati et al. 2018
Promotion Dummy	Set to 1 if analyst moves from a small brokerage to large brokerage	I/B/E/S
Demotion Dummy	Set to 1 if analyst moves from a large brokerage to small brokerage	I/B/E/S
Termination Dummy	Set to 1 if analyst stops appearing in the I/B/E/S database	I/B/E/S
All-star Dummy	Set to 1 if analyst ranked among II All Americans	Huang et al. 2014
Analyst Accuracy	$\mid (AnalystForecast - ActualEarnings)/Price \mid$	I/B/E/S, CRSP
Brokerage Size	Number of analysts working in a brokerage	I/B/E/S
Deviation from Steady-state Female Composition	$Number\ of\ Females_{j,t} - \frac{1}{T}\sum_{t=1}^{T} Number\ of\ Females_{j,t}$	I/B/E/S
Experience Dummy	Number of years an analyst has worked in a brokerage	I/B/E/S
Male-dominated Brokerage Dummy	Set to 1 if the ratio of females to all analysts in a brokerage is less than the sample's mean	I/B/E/S
Number of Earnings Forecast	Total number of earnings an analyst issues per year	I/B/E/S
Performance	$\sum_{j=1}^{N} Score_{j,j,t}$, where $Score_{j,j,t} = 100 - \dfrac{rank_{i,j,t} - 1}{numberofanalysts_{j,t} - 1} \times 100$	I/B/E/S
Industry Identification	Fama-French 48 industry portfolios	K. French's Website