Gender, Competition, and Performance: International Evidence*

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Abstract

This paper is one of the first in the literature to study whether and how gender differences in performance under competition vary across countries using field evidence. Our main measure of country-level differences is the individualism dimension in Hofstede's (1980, 2001) national cultural framework. Individualistic societies emphasize independence, equality, and the importance of "speaking one's mind" (Hofstede 2011), whereas collectivistic societies emphasize in-groups' interests and harmony (Trompenaars 1993; Hofstede 2001, 2011). We expect that individualism mitigates the negative association between competition and women's on-the-job performance through its effects on women's entry into competition as well as on formal institutions (e.g., lifetime employment and accounting disclosure practices). Using a hand-collected sample of 18,269 equity analysts from 42 countries over the period 2003–2019 and firm times year fixed effects to account for time-varying unobservables that could potentially drive female analysts' coverage decision and their performance, we first show that female analysts exhibit worse forecast accuracy than their male counterparts. However, in highly individualistic countries, we show that there is no significant difference in forecast accuracy between the genders. We further show that female analysts produce more alternative forecasts and make more frequent EPS forecasts in highly individualistic countries compared to their peers in less individualistic countries, and that female analysts are more likely to drop out when underperforming in highly individualistic countries compared to their peers in less individualistic countries. In additional analysis, we show that in Nordic countries or in countries with the Communist ideology, there is no significant difference in forecast accuracy between the genders. We conclude that there are important cross-country variations in gender differences in performance under competition – gender differences in performance under competition are attenuated by national culture and social norms.

Keywords: gender; competition; equity analysts; forecast error; individualism; international evidence
JEL classification: G14; G15; G24

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Abstract

This paper is one of the first in the literature to study whether and how gender differences in performance under competition vary across countries using field evidence. Our main measure of country-level differences is the individualism dimension in Hofstede's (1980, 2001) national cultural framework. Individualistic societies emphasize independence, equality, and the importance of "speaking one's mind" (Hofstede 2011), whereas collectivistic societies emphasize in-groups' interests and harmony (Trompenaars 1993; Hofstede 2001, 2011). We expect that individualism mitigates the negative association between competition and women's on-the-job performance through its effects on women's entry into competition as well as on formal institutions (e.g., lifetime employment and accounting disclosure practices). Using a hand-collected sample of 18,269 equity analysts from 42 countries over the period 2003–2019 and firm times year fixed effects to account for time-varying unobservables that could potentially drive female analysts' coverage decision and their performance, we first show that female analysts exhibit worse forecast accuracy than their male counterparts. However, in highly individualistic countries, we show that there is no significant difference in forecast accuracy between the genders. We further show that female analysts produce more alternative forecasts and make more frequent EPS forecasts in highly individualistic countries compared to their peers in less individualistic countries, and that female analysts are more likely to drop out when underperforming in highly individualistic countries compared to their peers in less individualistic countries. In additional analysis, we show that in Nordic countries or in countries with the Communist ideology, there is no significant difference in forecast accuracy between the genders. We conclude that there are important cross-country variations in gender differences in performance under competition – gender differences in performance under competition are attenuated by national culture and social norms.

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1. Introduction

Much of our understanding of gender differences in preference for competition and performance under competition is based on laboratory studies, known to accentuate gender stereotypes (Niederle and Vesterlund 2011), and/or rely on participants and samples largely from western industrialized countries with high levels of economic development (see, for example, Booth 2009; Croson and Gneezy 2009; Reuben, Sapienza, and Zingales 2021). There is a scarcity of research on the role of gender differences in preference for competition in women's career choices and job performances in an international setting. This paper fills a gap in current research related to our understanding of gender, competition, and performance by assembling an international sample of equity analysts with information on gender. Equity analysts are known to be a highly competitive profession and their performance is precisely measured (Clement 1999; Hong, Kubik, and Solomon 2000). We address two research questions: 1) does competition hurt women's on-the-job performance? and 2) are there cross-country differences in the relation between competition and women's on-the-job performance?

National cultural values define what constitutes appropriate decisions and behaviors in a society (North 1990). Our main measure of country-level differences is the individualism dimension in Hofstede's (1980, 2001) national cultural framework—the most important driver of cultural differences across countries (Triandis 1995). Individualistic societies emphasize independence, equality, and the importance of "speaking one's mind" (Hofstede 2011, p. 11), whereas collectivistic societies emphasize in-groups' interests and harmony (Trompenaars 1993; Hofstede 2001, 2011). We expect that individualism attenuates the negative association between competition and women's on-the-job performance through its effects on women's entry into competition as well as on formal institutions (e.g., lifetime employment and accounting disclosure practices).

Individualistic societies encourage independent opinions; collectivistic societies encourage conformity based on in-groups' perspectives. Thus, women in individualistic societies are given more latitude to make decisions according to their own preferences (Hofstede 2011, p. 11; Griffin et al. 2017) than women in collectivistic societies. In contrast, women in collectivistic societies are expected to prioritize the interests of in-groups (for example, family's economic needs). Given women's aversion to competition, and that beliefs about one's relative performance affect entry to competition (Niederle and Vesterlund 2011), we expect that in individualistic societies, only women with beliefs that they can excel in competition choose to enter competition, such as becoming equity analysts.

Moreover, collectivistic societies emphasize in-groups' interests and harmony and may view employer-employee relationship like a family link (Hofstede 1997). Clement, Rees, and Swanson (2003) posit that poorly-performing analysts are more likely to be fired in individualistic societies compared to those in collectivistic societies. Kumar (2010) argues that due to workplace discrimination, there is a higher hurdle for women to enter and stay in the analyst profession compared to men. We expect that *ceteris paribus*, the greater female analyst turnover-to-performance sensitivity in individualistic societies will help narrow the performance gap between the genders.

Finally, individualistic societies emphasize speaking one's mind over preserving relationships and in-group harmony (Hofstede 2011, p. 11). In collectivistic societies, managers' preference for in-group harmony may reduce the collection and provision of information to market participants, hence reducing their firms' incentives to invest in transparent reporting (Gray and Vint 1995). In individualistic societies, managers value accountability and transparency (Gray 1988; Hofstede 2011). Eun, Wang, and Xiao (2015) show that firms' information environments are more transparent in individualistic societies. We expect that *ceteris paribus*, transparency in individualistic societies levels the playing

field when comparing analyst performance in general, and potentially narrowing the gender gap in performance in particular.

In summary, we identify two analyst-level variables – only women with beliefs that they can excel in competition choosing to enter competition and differential turnover-to-performance sensitivities between the genders – and one country-level variable – transparency – that may serve as channels linking the individualism dimension of culture to a smaller gender gap in performance under competition.

Using a hand-collected sample of 18,269 equity analysts from 42 countries over the period 2003–2019, we examine whether and how women's on-the-job performance under competition vary across countries using a difference-in-differences specification. To account for time-varying unobservables that could potentially drive female analysts' coverage decision and their performance, we include firm times year fixed effects (Clement 1999; Hong and Kacperczyk 2010; Hilary and Shen 2013).

We first show that female analysts exhibit worse forecast accuracy than their male counterparts, consistent with the negative association between competition and women's performance in economic experiments (see, for example, Gneezy, Niederle, and Rustichini 2003). We further show that in highly individualistic countries, there is no significant difference in forecast accuracy between the genders. The finding is consistent with our hypothesis in which a country's individualism score mitigates the negative association between competition and women's on-the-job performance.

In terms of the channels underlying our main finding, we show that there is evidence suggesting that in highly individualistic countries, female analysts are more hard working as measured by their forecasting output and frequency of EPS forecasts than male analysts compared to their peers in less individualistic countries. Moreover, we show that female analysts are more likely to drop out when underperforming in highly individualistic countries

compared to their peers in less individualistic countries. Finally, we show that the gender gap in performance under competition is smaller in countries with higher information transparency scores. All these findings suggest that individualism attenuates the negative association between competition and women's on-the-job performance through its effect on women's entry into competition – only women with beliefs that they can excel in competition choose to becoming equity analysts in individualistic countries, through the gender difference in turnover-to-performance sensitivities, and as well as through the country-level transparency channel.

We conduct a large number of robustness checks of our main findings. First, we remove analysts based in the U.S., a country with the largest number of analysts in the sample. Second, we control for additional national cultural values under the Hofstede's national culture framework – masculinity, power distance, and uncertainty avoidance. Third, we employ an updated version of the individualism score using the World Values Survey and European Values Survey. Fourth, we employ an alternative measure of country-level differences in national culture – affective autonomy – under the Schwartz's national culture framework (Schwartz 1999, 2004). Fifth, we include high-dimensional fixed effects such as firm times year times month fixed effects and/or model specifications that control for the timing of each forecast when comparing forecast accuracy between the genders. Finally, we remove analysts from our sample if the individualism ranking of her country of origin as determined by her name differs from that of her place of work. It is worth noting that our main findings remain.

We also implement additional subsample analysis. We first show that in U.S., a country with the highest individualism score, there is no significant gender difference in forecast accuracy. We further show that in Nordic countries or countries with the Communist ideology, there is no significant difference in forecast accuracy between the genders. The

former is known for its gender equality policies and practices, and the latter is known for its indoctrination of women being equal to men. It is worth noting that in both subsamples of countries, there is no general perception of discrimination in the analyst labor market that deters women's entry due to the labor demand side.

We conclude that there are important cross-country variations in gender differences in performance under competition – gender differences in performance under competition are shaped by national culture and social norms.

Our paper is among the first in the finance and accounting literature, as far as we are aware, to assemble an international data set on equity analysts with information on gender and to study the important role of country-level factors in mitigating the known negative association between competition and women's performance. We contribute to the literature in the following ways.

First and foremost, we offer new insights into the important relationship between gender, competition, and performance by taking an international lens. Different from prior work that largely relies on participants in a laboratory setting and field samples from western industrialized countries, we establish large cross-country variations in women's on-the-job performance under competition. We show that in highly individualistic countries, there is no significant difference in performance under competition between the genders.

Second, our evidence on the important role of national culture in narrowing the gender gap in performance under competition is new to the literature on gender and competition (see the review article by Niederle and Vesterlund 2011). Prior work in a laboratory setting where participants of both genders are randomly chosen, cannot incorporate the role of underlying beliefs (about abilities) in women's career choices and on-the-job performance that is shaped by national culture, which in turn narrows the gender performance gap under competition. Using a global sample of professionals with the same

occupation allows us to delineate the channels through which country-level factors help mitigate the negative association between competition and women's on-the-job performance.

Third and finally, our paper contributes to the ongoing debate on whether nature, nurture, and/or the interaction between the two are responsible for gender differences in preferences and performance (see, for example, Croson and Gneezy 2009; Gneezy, Leonard, and List 2009). We show that exposure to different cultures, social norms, or ideologies significantly changes individuals' behavior including their entry to competition and performance under competition, even among the most sophisticated labor market participants. The interesting question is thus the weight of each factor as well as their interaction. More research is clearly called for.

Given the ongoing debate among regulators, policy makers, and media around the world on the role of female business leaders, female board members in particular, in creating shareholder value and making societal impact including corporate environmental and social performance, the findings in our paper will inform and shape government policies and business practices involving recruitment, development, and deployment of diverse talents.

2. Literature Review and Hypothesis Development

2.1. Literature review on gender, competition, and performance

Economists have long documented gender differences in consumption, investment, trading, and in the labor market (see, for example, Sundén and Surette 1998; Goldin and Rouse 2000; Barber and Odean 2001). In a survey of gender differences in economic experiments, Croson and Gneezy (2009) identify robust differences in risk preferences, altruism, and competitive preferences. Observing participants in a laboratory setting to solve a real task, Niederle and Vesterlund (2007) find that women are generally less keen on being exposed to competition. Gneezy, Niederle, and Rustichini (2003) further present

experimental evidence that men's performance increases in competition whereas women's do not.

Much of our understanding of gender differences in preferences for competition and performance under competition is based on laboratory studies, which are known to accentuate gender stereotype (Niederle and Vesterlund 2011), and/or rely on participants and samples largely from western industrialized countries with high levels of economic development (see the review article by Croson and Gneezy 2009). Based on field evidence, a number of studies show that social norms/behaviors and ideologies affect individuals' preferences for competition.

In a highly cited study, Gneezy, Leonard, and List (2009) compare gender differences in preference for competition between a patriarchal society and a matrilineal society. They find that, while women in the patriarchal society are less competitively inclined than men, their counterparts in the matrilineal society are more competitive than men. They conclude that social norm matters and that women can be nurtured to be more competitive. Booth and Nolen (2012) compare gender gaps in competitive behavior between girls and boys aged 14 and 15 from single-sex and co-educational environments in the U.K., and find robust differences between the competitive choices of girls from single-sex and co-educational schools – girls from single-sex schools behave more like boys in their preferences for competition. Booth, Fan, Meng, and Zhang (2019) examine whether or not the gender difference in preference for competition can be altered due to changing social norms such as a country's adoption of the Communist ideology. From 1949 onwards, Mainland China experienced a series of dramatic changes in its social and economic institutions: traditional Confucian culture in which women are subordinate to men was denounced, and gender equality was promoted. A widely known political slogan in Mainland China promoting women's status in the society was "women hold up half of the sky." As a result of such

indoctrination, women's labor force participation rate in Mainland China was at similar level as their male counterparts and there was little gender gap in pay (Booth et al. 2019). Using females and males in Taipei as the benchmark where the traditional Confucian values remain intact, Booth et al. (2019) show that females in Beijing are more competitively inclined than their male counterparts.

As far as we are aware, there is no prior work exploring the role of national culture in attenuating the gender difference in performance under competition using large cross-country samples of professionals.

2.2. Hypothesis development

National culture—the "beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" (Guiso, Sapienza, and Zingales 2006, p. 23)—has been shown to affect a wide range of individual behaviors (see the survey by Guiso, Sapienza, and Zingales 2006). Our main measure of country-level differences is Hofstede's individualism (Hofstede 1980, 2001). Individualistic societies emphasize independence, equality, and the importance of "speaking one's mind" (Hofstede 2011, p. 11), whereas collectivistic societies emphasize in-groups' interests and harmony (Trompenaars 1993; Hofstede 2001, 2011). We expect individualism to attenuate the negative association between competition and women's on-the-job performance through its effects on women's entry into competition as well as on formal institutions (e.g., lifetime employment and accounting disclosure practices).

Individualistic societies encourage independent opinions; collectivistic societies encourage conformity based on in-groups' perspectives. Thus, women in individualistic societies are given more latitude to make decisions according to their own preferences than women in collectivistic societies (Hofstede 2011, p. 11; Griffin et al. 2017). In contrast,

women in collectivistic societies are expected to prioritize the interests of in-groups (for example, their family's economic needs).

Laboratory-based studies have documented that women exhibit greater aversion to competition and worse performance under competition than men (see the review article by Niederle and Vesterlund 2011). Equity analysts are known to be a highly competitive profession and their performance is precisely measured (Clement 1999; Hong, Kubik, and Solomon 2000). Given women's general aversion to competition, and that beliefs about one's relative performance affect entry to competition (Niederle and Vesterlund 2011), we expect that in individualistic societies, only women with beliefs that they can excel in competition choose to enter competition, such as becoming equity analysts.

Moreover, collectivistic societies emphasize in-groups' interests and harmony and may view employer-employee relationship like a family link (Hofstede 1997). Clement, Rees, and Swanson (2003) posit that poorly-performing analysts are more likely to be fired in individualistic societies compared to those in collectivistic societies. Kumar (2010) argues that due to workplace discrimination, there is a higher hurdle for women to enter and stay in the analyst profession compared to men.

On the one hand, if only capable women choose to becoming equity analysts in individualistic countries, it is not clear that female analysts are more likely to be fired due to poor performance in individualistic countries compared to that in collectivistic countries. On the other hand, workplace discrimination may accentuate female analyst turnover-to-performance sensitivity than their male counterparts in individualistic countries. On balance, we expect that *ceteris paribus*, the greater female analyst turnover-to-performance sensitivity in individualistic societies will help narrow the performance gap between the genders.

Finally, individualistic societies emphasize speaking one's mind over preserving relationships and in-group harmony (Hofstede 2011, p. 11). In collectivistic societies,

managers' preference for in-group harmony may reduce the collection and provision of information to market participants, hence reducing their firms' incentives to invest in transparent reporting (Gray and Vint 1995). In individualistic societies, managers value accountability and transparency (Gray 1988; Hofstede 2011). Eun, Wang, and Xiao (2015) show that firms' information environments, as measured by a country's average dispersion of analyst forecasts of a firm's earnings, are more transparent in individualistic societies. Griffin, Guedhami, Li, and Lu (2021) show that there is a positive association between a country's individualism score and its listed firms' transparency scores using the number of items disclosed by a firm in Thomson Reuters' ASSET4 database. Using U.S. data, Fang and Huang (2017) show that male analysts benefit more than female analysts from alumni ties with corporate boards and hence from access to proprietary information. Such connections improve male analysts' forecast accuracy two to three times more than that for female analysts. Li, Wong, and Yu (2020) find that in a highly collectivistic country, China, in which relational contracting is prevalent and disclosure is poor, only connected analysts have information advantage compared to their peers without such connections.

We expect that *ceteris paribus*, more transparent disclosure in individualistic countries helps reduce information asymmetry and hence levels the playing field when comparing analyst performance in general, and potentially narrowing the gender gap in performance in particular.

In summary, we identify two analyst-level variables – only women with beliefs that they can excel in competition choosing to enter competition and differential turnover-to-performance sensitivities between the genders – and one country-level variable – transparency – that may serve as channels linking the individualism dimension of culture to a smaller gender gap in performance under competition. Our culture and performance

hypothesis is thus as follows: The negative effect of competition on performance is attenuated for female analysts in highly individualistic countries.

3. Sample Formation and Overview

To test our hypothesis, we assemble a global sample of equity analysts with information on gender, employment location, and performance. There are a number of reasons for us to use equity analysts as our study subject.

First, equity analysts are known to be a highly competitive profession (Clement 1999; Hong, Kubik, and Solomon 2000). Hence, working as an analyst is a reasonable proxy for entry to competition.

Second, analyst performance, as captured by earnings forecast accuracy using data from the Institutional Brokers Estimates System (I/B/E/S) international files, is precisely measured. Analysts know their performance (ranking) relative to others, leaving less room for workplace discrimination. Niederle and Vesterlund (2011) argue that beliefs about one's relative performance may play an important role in women's entry to competition and call for more research. Our global sample of analysts serves as a natural setting to explore the extent to which individualism foster freer expression of women's beliefs about their abilities, with implications for their on-the-job performance relative to men's across countries.

Third and finally, equity analysts are sophisticated professionals and key to well-functioning capital markets, it is important to gain a better understanding of drivers of their performance.

Taken together, our global sample of equity analysts is an important addition to the literature examining the complex relationships between gender, competition, and performance, complementary to existing lab evidence (see the survey by Niederle and Vesterlund 2011).

3.1. Sample formation

One way to determine an analyst's gender is to use their full name (see, for example, Kumar (2010) in a U.S. study).[1] However, I/B/E/S does not report an analyst's full name but only their last name and first name initial. Regarding an analyst's employment location, one may infer such information from where their brokerage house operates. However, I/B/E/S only provides abbreviated brokerage names.[2] As a result, we cannot determine who the analysts are, for which brokerage house they work, and their gender and employment location from I/B/E/S.

To form an international sample of equity analysts for our study, we start with a list of brokerages (with abbreviated names) that provided stock recommendations on global equities in I/B/E/S over the period 2003–2019. We start our sample period in 2003 because our key data source – Capital IQ's coverage of analyst biographies became more comprehensive since 2003.[3] We then conduct manual search in Capital IQ to obtain brokerage full name, analyst full name, analyst gender, and brokerage location which is used to determine affiliated analysts' country of origin.[4] Appendix A provides a detailed desription of our matching process.

Next, we merge the firm-analyst-year sample to the Worldscope database from which basic firm-level financial data are collected. We remove firms with stock price less than one unit of local currency and market capitalization less than USD $10 million at the end of the

[1] Kumar (2010) relies on a number of sources to obtain the full names of analysts: the Institutional Investor magazine, Nelson' s directory of investment research and analyst directories available at Yahoo Finance, and other financial Web sites, supplemented with searches of news articles on Factiva and Google.
[2] Before 2006, researchers could get brokerages' full names using the I/B/E/S broker translation file; this translation file is no longer available.
[3] Capital IQ is a market intelligence platform developed by Standard & Poor's Global. It provides detailed business history for brokerages and personal information on analysts including employment history, employment location, and gender. Capital IQ obtains such information directly from Thomson Reuters (Lourie 2019).
[4] Forecasts made by foreign analysts are those made to a firm whose country of primary listing (based on the nation code in Worldscope) differs from the country of employment of the covering analyst.

fiscal year. We also remove countries with fewer than ten firms, and countries with fewer than ten analysts or fewer than ten firm-anlayst-year observations over the sample period. Finally, we also remove country and firm observations with missing values of country- and/or firm-level control variables.

Table 1 reports the impact of various matching steps and data filters to arrive at the final sample of 18,269 (unique) equity analysts affiliated with 1,179 brokerages located in 42 countries/regions.[5] As far as we are aware, this is one of the largest global sample of equity analysts in the literature (see, for example, Bae, Stulz, and Tan 2008; Bradshaw, Huang, and Tan 2019).

3.2. Key variables

At the firm-analyst-year level, our key variable of interest is *Average forecast error*, constructed as the average of absolute forecast errors that an analyst makes during the year. We use analysts' annual earnings per share (EPS) forecasts following the extant literature (see, for example, Clement 1999; Hong and Kacperczyk 2010; Kumar 2010) as well as due to the fact that annual EPS forecasts have the widest coverage, which is important given our international sample. We merge analysts in the I/B/E/S recommendation files to those in the I/B/E/S unadjusted detail EPS files, and only retain forecasts with the forecast period indicator FPI = 1. Absolute forecast error is the absolute value of the difference between an analyst's annual EPS forecast and actual EPS normalized by the stock price at the prior fiscal year end after accounting for stock splits (i.e., using the split factor provided in I/B/E/S to account for the effect of splits on the number of shares outstanding).

The cultural dimension of individualism is related to the preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their

[5] One caveat to our sample formation and variable construction is that we only keep analysts whose gender information is available.

immediate families (Hofstede 2001, 2011). A higher value indicates higher individualism. The data is obtained from the Hofstede Culture Dimension website.[6] Appendix B provides detailed variable definitions.

3.3. Sample overview

Table 2 Panel A presents an overview of our global analyst sample by country. We note that across 42 sample countries, the average share of female analysts is 19.6%. The top three countries with the highest female analyst share (in descending order) are: Vietnam (43.1%), Thailand (37.9%), and Portugal (36.8%), and the top three countries with the lowest female analyst share are: Norway (4.2%), Denmark (7.8%), and New Zealand (9.7%). The top three countries with the largest number of earnings forecasts are: the U.S. (1,276,283 observations, representing 48.5% of the sample), the U.K. (243,251 observations; 9.2%), and Canada (194,929 observations; 7.4%).

Table 2 Panel B presents an overview of country-level variables. The top three countries in terms of individualism (IDV) are: the U.S., Australia, and the U.K., and the bottom three countries are: Indonesia, Pakistan, and South Korea. Using the WEF's GGGI as a marker for gender equality, we show that the top three countries in terms of gender equality are: Norway, Finland, and Sweden, and the bottom three countries are: Pakistan, Turkey, and the United Arab Emirates. The top three countries in terms of economic development as measured by GDP per capita are: Norway, Switzerland, and Denmark, and the bottom three countries are: India, Vietnam, and Pakistan.

Figure 1 Panel A plots the average female share of equity analysts in a country in relation to its cultural value of individualism (IDV). We do not discern a clear direction of the association between a country's individualism score and its female share of equity analysts.

[6] https://geerthofstede.com/research-and-vsm/dimension-data-matrix/.

Panel B plots the average female share of equity analysts in a country in relation to its GGGI. Again, we do not discern a clear direction of the association between a country's gender equality index and its female share of equity analysts.

Panel C plots the average female share of equity analysts in a country in relation to its level of economic development as captured by ln(GDP per capita). We show a clear negative association between the level of a country's economic development and its female share of equity analysts. In a *Science* article, Falk and Hermle (2018) find that higher levels of gender equality and economic development accentuate gender differences in preferences (e.g., risk-taking, patience, and trust) across countries. Our finding of a negative association between a country's level of economic development and its share of female analysts is consistent with their finding.

Table 3 Panel A presents the summary statistics for key country-level variables. The sample comprises 630 country-year observations. Given that we are one of the first studies with a focus on gender differences across countries, it is informative to compare our international sample of equity analysts to the U.S. sample of equity analysts used in prior studies (see, for example, Kumar 2010; Fang and Huang 2017). We show that the average female share of equity analysts across the 42 sample countries is 17.1%, whereas in the U.S., the female share of equity analysts is 10.1% over the sample period 2003–2019. Based on a sample of 12,812 unique analysts over the period 1983–2005, Kumar (2010) shows that the female share of equity analysts is 16% in the U.S. Using a more recent sample over the period 1993–2009, Fang and Huang (2017) show that the female share is 12% in the U.S. We attribute the difference to different sample periods and ways of identifying U.S. analysts.[7] We

[7] It is worth pointing out there are a couple of difference in our sample formation of U.S. analysts compared to prior work. We determine an analyst to be an U.S. analyst if his/her affiliated brokerage is located in the U.S. and we do not require those analysts cover only U.S. firms. In contrast, prior work mostly requires U.S. analysts to be based in the U.S. and to cover only U.S. firms.

further show that the sample average individualism score is 0.50, and the U.S. scores the highest in individualism at 0.91. The sample average GGGI is 0.70, and the U.S.'s average GGGI is 0.72. The sample average GDP per capita is 29.68 thousands, and the U.S.'s average GDP per capita is 49.69 thousands. In terms of other country-level control variables, we show that the across-country average of stock market capitalization normalized by GDP is 0.92, the U.S. average is 1.28. The U.S. firms also have a higher average Tobin's Q at 1.71 than that for firms in the international sample at 1.27, a negative average net income normalized by total assets compand a positve average for firms in the international sample, a much higher average institutional ownereship at 0.48 than that for firms in the international sample at 0.10.

Table IA1 Panel A in the Internet Appendix presents the correlation matrix of country-level variables. We show that there is a negative and significant association between the female share of equity analysts and the indicator variable for high individualism (*High IDV*), between the female share of equity analysts and a country's GGGI, and between the female share of equity analysts and a country's GDP per capita.

Table 3 Panel B presents the summary statistics for key analyst-level variables. The sample comprises 610,847 firm-analyst-year observations. Again, it is informative to compare our international sample to the U.S. sample, which is well studied in the analyst literature (see, for example, Clement 1999; Hong, Kubik, and Solomon 2000; Hong and Kacperczyk 2010; Clement and Tse 2005). We show that the mean (median) *Average forecast error* (in percentage points) across the 42 sample countries is 2.90% (0.74%), whereas in the U.S., the mean (median) *Average forecast error* is 2.24% (0.54%). Using a sample of stocks covered by I/B/E/S over the period 1980–2005, Hong and Kacperczyk (2010) show that the mean absolute forecast error is 3.31%. Our summary statistics for *Average forecast error* are largely consistent with theirs. As alternative measures of analyst performance, we also introduce the absolute first/last forecast error made by an analyst in her

first/last annual EPS forecast, as well as the absolute same week forecast error made by an analyst in her forecast that is within five days after the prior fiscal year's annual earnings announcement. We show that for all these three measures, the U.S. sample exhibit smaller values than those in the international sample, consistent with our conjecture that being in the country with the highest individualism score, U.S. firms' information environments are more transparent than those outside the U.S. and with the findings in Eun, Wang, and Xiao (2015).

At the firm-analyst-year level, the average female share of equity analysts in the international sample is 11.0%, whereas the average female share of equity analysts in the U.S. is 8.0%. Compared to the statistics at the country-year level in Panel A, the lower share at the firm-analyst-year level suggests that female analysts cover fewer firms than their male counterparts. Other summary statistics about the U.S. sample are largely consistent with prior work (see, for example, Clement 1999).

Table IA1 Panel B in the Internet Appendix presents the correlation matrix of analyst-firm-level variables. We show that there is no significant association between the indicator variable *Female* and three of the four performance measures: *Average forecast error*, *First forecast error*, and *Same week forecast error*, whereas a positive and significant association between the indicator variable *Female* and *Last forecast error*. We further show that the indicator variable *High IDV* is negatively and significantly correlated with all four different measures of analyst performance, consistent with the idea that in highly individualistic countries, there is more transparency in corporate disclosure compared to that in less individualistic countries.

4. Main Findings

In this section, we examine whether there is any cross-country gender difference in performance under competition.

4.1. Univariate comparisons of gender differences in performance under competition

Table 4 presents univariate comparisons of gender differences in performance within each sample country (H_0: Female analysts' performance – male analysts' performance = 0). We use four different measures of forecast accuracy to capture analyst performance: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. Panel A compares firm-analyst-year performance between the genders using averages. We present the average gender difference in performance and conduct the t-test of the difference in average performance. We find that among the top three countries scoring high in individualism, there is largely no gender difference in performance in the U.S. and U.K. (not in Australia).

Panel B compares firm-analyst-year performance between the genders using medians. We present the median gender difference in performance and conduct the Wilcoxon-test of the difference in the performance distribution between the genders. We find that among the top three countries scoring high in individualism, there is some evidence suggesting that female analysts in the U.S. and U.K. tend to outperform their male counterparts. Given that omitted variable bias in univariate comparison can mask the true relations between the variables, we next turn to multiple regressions to properly test our culture and performance hypothesis.

4.2. Multivariate analysis of gender differences in performance under competition

We employ the following panel data regression specification:

$$Forecast\ performance_{c,i,j,t} = \alpha + \beta_1 Female_j + \beta_2 Female_j \times High\ IDV_c + \beta_3 Country\ characteristics_{c,t} + \beta_4 Analyst\ characteristics_{j,t} + \beta_5 Brokerage\ characteristics_{j,t} + Firm \times Year\ FE + e_{c,i,j,t}, \quad (1)$$

where the dependent variable is analyst forecast performance. Our main measure, *Average forecast error*, is the average of absolute forecast errors made by analyst *j* residing in country

c on firm *i* when making the current year *t* EPS forecasts. For robustness checks, we also use two other performance measures: *First forecast error* and *Last forecast error*. *Female* is an indicator variable that takes the value of one if analyst *j* is a female, and zero otherwise. Our control variables largely follow prior literature, such as Clement (1999), Bae, Stulz, and Tan (2008), Hong and Kacperczyk (2010), Kumar (2010), and Bradshaw, Huang, and Tan (2019). Firm times year fixed effects are included to control for time-varying unobservables that might drive an analyst' coverage decision as well as her performance (Clement 1999; Hong and Kacperczyk 2010; Hilary and Shen 2013). The sample consists of firm-analyst-year observations.

Table 5 Panel A presents the regression results when the dependent variables are different measures of analyst forecast performance. Our variables of interest are the indicator variable, *Female*, and the interaction term: *Female* × *High IDV*. Column (1) presents the results when the dependent variable is *Average forecast error.* We first show that there is a positive and significant association between female analysts and *Average forecast error*, i.e., there is a significant underperformance of female analysts compared to their male counterparts, consistent with findings in controlled experiments that under competition females perform worse than their male counterparts (see, for example, Gneezy, Niederle, and Rustichini 2003). In terms of the economic significance, we show that *ceteris paribus*, female analysts on average produce *Average forecast error* that is 0.043% larger than their male counterparts. Given the sample average for *Average forecast error* is 2.902%, the performance gap is economically significant.[8]

[8] The mean (median) value of sample firms' market capitalization is USD 1.14 billion (USD 0.29 billion). The mean (median) value of sample firms' P/E ratio is 28.44 (17.92). In terms of the economic significance, when using mean values, a difference of 0.043% in forecast error corresponds to a difference of USD 0.49 million in earnings, and a difference of USD 13.94 million in market value; when using median values, a difference of 0.043% in forecast error corresponds to a difference of USD 0.13 million in earnings, and a difference of USD 2.24 million in market value.

Next, we show that the coefficient on the interaction term *Female × High IDV* is negative and significant, suggesting that female analysts in highly individualistic countries (for example, the U.K.) tend to perform better than their male counterparts compared to their peers in less individualistic countries (for example, Japan) – a difference-in-differences interpretation. In terms of the economic significance, we show that *ceteris paribus*, female analysts in highly individualistic countries on average produce *Average forecast error* relative to their male counterparts that is 0.059% smaller than their female peers in less individualistic countries. Given the sample average for *Average forecast error* is 2.902%, the performance gap is economically significant.[9]

To test our culture and performance hypothesis, we employ the F-test of the null that the sum of the coefficients on *Female* and *Female* × *High IDV* is zero, i.e., female analysts in *High IDV* countries perform the same as their male counterparts. The p-value shows that we fail to reject the null, suggesting that female analysts in *High IDV* countries perform the same as their male counterparts, supporting our main hypothesis.

In addition to the main findings above, we show that the coefficient on *High IDV* is negative and significant. Given our inclusion of firm times year fixed effects, this coefficient captures the effect of a foreign analyst's (say, based in the U.K.) home country's individualism score on her forecast performance of domestic (say, German) stocks. We show that for these foreign analysts, *Average forecast error* is on average smaller if they are from highly individualistic countries than that if they are from less individualistic countries.[10] We

[9] In terms of the economic significance, when using mean values, a difference of 0.059% in forecast error corresponds to a difference of USD 0.67 million in earnings, and a difference of USD 19.13 million in market value; when using median values, a difference of 0.059% in forecast error corresponds to a difference of USD 0.17 million in earnings, and a difference of USD 3.07 million in market value.

[10] The social psychology literature has established that people in individualistic countries are more overconfident and exert more effort (Markus and Kitayama 1991; Heine, Lehman, Markus, and Kitayama 1999; Chui, Titman, and Wei 2010; Gervais, Heaton, and Odean 2011) and have analytical thinking styles (Nisbett, Peng, Choi, and Norenzayan 2001). Moreover, Clement, Rees, and Swanson (2003) posit that in highly individualistic countries, only better performing analysts are retained, resulting in better forecast performance. The negative coefficient on *High IDV* in column (1) is consistent with these interpretations.

also show that the coefficient on *GGGI* is positive and significant. Given our inclusion of firm times year fixed effects, this coefficient captures the effect of a foreign analyst's (say, based in Norway) home country's gender equality policies and practices on her forecast performance of domestic (say, German) stocks.

Finally, we show that the indicator variable *Foreign analyst* and *Forecast horizon* (i.e., the average number of months between an analyst's forecast dates and the date of the annual earnings announcement) are both positively and significantly, whereas firm-specific and general experiences, and brokerage size (proxying for resources) are negatively and significantly, associated with *Average forecast error*. All these findings are consistent with prior work (see, for example, Clement 1999; Clement and Tse 2005; Bae, Stulz, and Tan 2008).

It is well established that the timing of forecasts matters for assessing analyst performance (Hong, Kubik, and Solomon 2000; Clement and Tse 2005). For example, when an analyst is making her very first forecast, the role of her private information generated by effort and skills is more prominent than when she is making subsequent forecasts. When an analyst is making her last forecast, there is more information available, and the role of her private information is diminished, likely resulting in herding among analysts. We thus expect that if there is ever any gender difference in performance, the gender difference will be more likely to show up in the first not last forecast.

In columns (2)-(3), we employ two alternative measures of performance: *First forecast error* and *Last forecast error.* We first show that when the dependent variable is *Last forecast error,* there is a positive and significant association between female analysts and *Last forecast error*, i.e., there is a significant underperformance of female analysts compared to their male counterparts, consistent with findings in controlled experiments that under

competition females perform worse than their male counterparts (see, for example, Gneezy, Niederle, and Rustichini 2003).

Interestingly, we show that when the performance measure is *First forecast error,* the F-test of the null that the sum of the coefficients on *Female* and *Female × High IDV* is zero rejects the null, suggesting that female analysts in highly individualistic countries significantly outperform their male counterparts when making their first forecasts. When the performance measure is *Last forecast error,* the F-test of the null fails to reject the null, suggesting that female analysts in highly individualistic countries perform the same as their male counterparts when making their last forecasts. The difference in findings using different measures of forecast performance is consistent with the intuition that the timing of forecasts matters in assessing the gender difference in performance under competition: *ceteris paribus,* earlier forecasts better capture abilities/skills (and/or effort), whereas later forecasts are more about information available and/or herding due to career concerns (Hong, Kubik, and Solomon 2000).

Although we control for the timing of each forecast using *Forecast horizon* in the above analyses, the first/last forecasts do not properly control for the exact timing of those forecasts made, especially if due to gender differences in overconfidence, female analysts might consistently make their forecasts later than their male counterparts do, resulting in our findings above. To level the playing field when assessing the gender difference in performance, we focus on a subsample of forecasts that are made within five days after the prior fiscal year's earnings announcement. Let's illustrate our empirical setup with an example. Suppose that firm A's earnings announcement date for fiscal year 2010 is February 16, 2011 and for fiscal year 2011 is February 4, 2012. Then analyst forecasts with FPI = 1 (i.e., limiting to the current year EPS forecasts) for fiscal year 2011 include all forecasts issued between February 16, 2011 and February 4, 2012. The subsample of same week

forecasts for our analysis comprises analyst forecasts of fiscal year 2011's earnings issued between February 16 to 21, 2011. We expect that this subsample analysis will give us a clean test of the gender difference in performance after requiring the same timing of those forecasts.

Column (4) presents the results when the dependent variable is *Same week forecast error* for which we require all forecasts are made within five days after the prior fiscal year's annual earnings announcement. This specification allows us to control for potential differences between the genders in the timing of their forecasts. We show that there is a positive and significant association between female analysts and *Same week forecast error*, consistent with findings in controlled experiments that under competition female analysts perform worse than their male counterparts. In terms of the economic significance, we show that *ceteris paribus*, female analysts produce *Same week forecast error* that is 0.114% higher than their male counterparts. Given the sample average for *Same week forecast error* is 3.322%, the performance gap is economically significant.

Importantly, we show that the coefficient on the interaction term *Female × High IDV* is negative and significant, suggesting that female analysts in highly individualistic countries tend to outperform their male peers compared to female analysts in less individualistic countries. In terms of the economic significance, we show that *ceteris paribus*, female analysts in highly individualistic countries produce *Same week forecast error* relative to their male counterparts that is 0.122% lower than their female peers in less individualistic countries. Given the sample average for *Same week forecast error* is 3.322%, the performance gap is economically significant.

The F-test of the null that the sum of the coefficients on *Female* and *Female × High IDV* is zero fails to reject the null, suggesting that female analysts in highly individualistic

countries perform the same as their male counterparts, supporting our main hypothesis that a country's individualism score mitigates gender differences in performance under competition.

Across all three alternative measures of analyst performance in columns (2)-(4), we show that *GGGI* and *Forecast horizon* are positively and significantly associated with forecast errors.

Table 5 Panel B presents the regression results when the dependent variables are different measures of analyst performance after removing analysts based in the U.S. It is worth noting that in our international sample, the U.S. belongs to the *High IDV* subsample. Importantly, we show that in three out of the four specifications, the F-test of the null that the sum of the coefficients on *Female* and *Female* × *High IDV* is zero fails to reject the null, suggesting that female analysts in highly individualistic countries perform the same as their male counterparts, supporting our main hypothesis. In the remainder specification when the dependent variable is *First forecast error,* the F-test rejects the null, suggesting that female analysts in highly individualistic countries outperform their male counterparts when making their first forecasts.

In summary, our results in Table 5 highlight the importance of national culture in attenuating or even reversing the gender differences in performance under competition, supporting our culture and performance hypothesis.

5. The channels

In Section 2, we hypothesize that there are two analyst-level variables – only women with beliefs that they can excel in competition choosing to enter competition and differential turnover-to-performance sensitivities between the genders – and one country-level variable – transparency – that may serve as channels linking the individualism dimension of culture to a

smaller gender gap in performance under competition. In this section, we conduct analysis examining whether and which of those three channels contribute to our main findings.

5.1. Univariate difference-in-differences analysis of analyst, brokerage, and firm characteristics

To shed light on cross-country gender differences in performance under competition, we employ a difference-in-differences (DID) comparison by first sorting analyst-year observations into the high IDV and low IDV subsamples, then comparing the gender differences in analyst/brokerage/firm characteristics within each subsample, and lastly comparing the gender difference in the same characteristic between the two IDV subsamples. Essentially, we want to explore whether analyst/brokerage/firm characteristics are behind our finding that female analysts in highly individualistic countries perform the same as their male counterparts, and male analysts perform better than their female peers in low individualistic countries.

Table 6 presents the results. Panel A employs the full sample. We employ two relative performance measures of an analyst in year *t*: the average of her relative performance in years *t* and *t-1 – Adjusted forecast error2yr*, and her relative performance in year *t – Adjusted forecast error*. We first show that in the high IDV subsample, there is some significant difference between the genders in *Adjusted forecast error2yr,* whereas there is no significant difference between the genders in *Adjusted forecast error.* The difference-in-differences t-test in column (13) shows that there is significant gender difference in analyst-year level measures of forecast performance in highly individualistic countries compared to that in less individualistic countries.

In terms of analyst characteristics, there is evidence suggesting that in highly individualistic countries, female analysts cover significantly fewer firms/industries than their male counterparts compared to their peers in less individualistic countries. Moreover, using

both brokerage rankings and covered firms' characteristics such as market capitalization and book assets, we show that female analysts in highly individualistic countries outperform their counterparts in less individualistic countries as the former tend to work with the more prestigious brokerages and cover more important firms.

Panel B employs the international excluding U.S. analysts. Our main findings in Panel A remain.

All these results are consistent with our first channel whereby individualism affects women's entry into competition – only capable women choose to becoming equity analysts in highly individualistic countries.

5.2. Analyst overconfidence and effort

To further explore the first channel, we introduce a proxy for overconfidence, *Deviation from consensus*, constructed as the absolute value of the average difference between an analyst's forecast and consensus forecast excluding the focal analyst's forecast, normalized by the stock price at the end of the prior fiscal year, following Hong, Kubik, and Solomon (2000). Gervais and Goldstein (2003) and Gervais, Heaton, and Odean (2011) establish that overconfident individuals exert more effort. Alternatively, only hardworking and/or capable females choose to enter the equity analyst profession. To capture this possibility, we also introduce two direct measures of effort: # *alternative forecasts,* defined as the number of other forecasts such as book value per share and dividend per share made by an analyst; and *Forecast frequency,* defined as the number of annual EPS forecasts an analyst makes in a year. We employ the same regression specification as Equation (1) and Table 7 presents the results.

Panel A presents the regression results using the global sample. Column (1) presents the results when the dependent variable is *Deviation from consensus.* We show that there is no gender difference in our proxy for overconfidence in the full sample, or any gender gap in

highly individualistic countries. Columns (2)-(3) present the results when the dependent variables are different measures of effort. We first show that there is a negative association between the indicator variable *Female* and *Ln(# alternative forecasts)*, and a positive association between the indicator variable *Female* and *Forecast frequency*. Importantly, the coefficient on the interaction term *Female × High IDV* is positive and significant in both columns, and the F-test rejects the null that the sum of the coefficients on *Female* and *Female* × *High IDV* is zero, i.e., female analysts in *High IDV* countries exert the same effort as their male counterparts.

Panel B presents the regression results removing analysts based in the U.S. Across all three outcome variables, we find some suggestive evidence that female analysts in *High IDV* countries exert more effort than their male counterparts.

Taken together, the results in Tables 6 and 7 provide support for our first channel that in highly individualistic countries, only women who are capable and are willing to work hard choose to become equity analysts, resulting in no gender differences in performance.

5.3. Analyst turnover-to-performance sensitivity

In this section, we conduct our analysis on the gender difference in analyst turnover-to-performance sensitivity (TPS) across the high IDV and low IDV subsamples. The indicator variable, *Turnover,* for analyst *j* in year *t* takes the value of one if this is the year for which analyst *j* makes her last forecasts (i.e., no more forecasts after year *t* according to I/B/E/S). As an example, if analyst A had her last forecast on 2010/09/01, we determine her turnover took place in 2010.

To mitigate any measurement error, we employ two relative performance measures of an analyst in year *t*: *Adjusted forecast error2yr* and *Adjusted forecast error*. Each year, we sort the sample of analysts in a country into performance quartiles and focus on analysts belonging to the bottom quartile. Then, for the sample of analysts (sorted either by gender or

by her country's individualism score), we compute the turnover rate in year *t+1* based on the information that she is no longer working as an analyst. In some sense, our univariate comparison of the turnover rate conditional on performance is a crude proxy for analyst TPS. Table 8 presents the results.

Panel A employs the global sample and reports the univariate DID analysis. We show that female analysts experience a significantly higher turnover rate when underperforming (as measured by her past performance being in the bottom quartile) relative to their male counterparts in highly individualistic countries (column (5)). In contrast, female analysts experience a similar turnover rate when underperforming relative to their male counterparts in less individualistic countries (column (10)). The DID test in column (11) suggests that there is a significant difference in the gender gap in TPS between the highly and less individualistic countries.

Panel B employs the global sample removing U.S. analysts. We show that female analysts relative to their male counterparts are significantly more likely to be turned over when underperforming in highly individualistic countries compared to their peers in less individualistic countries.[11]

All these results are consistent with our second channel whereby there is a greater TPS experienced by female analysts when underperforming compared to male analysts in highly individualistic countries, resulting in more capable female analysts compared to males remaining in the profession in high IDV countries and equal performance between the genders.

[11] In Table IA2 in the Internet Appendix, we run an OLS regression in which the dependent variable is an indicator variable, *Demotion,* that takes the value of one if an analyst drops the number of prestigious stocks that she covers in a year compared to that in the year before, and zero otherwise. The variables of interest are the standalone performance measure *Adjusted forecast error2yr* (*Adjusted forecast error)* and the interaction term *Female* × *Adjusted forecast error2yr* (*Adjusted forecast error*). We show that there is a significantly higher TPS experienced by female analysts in high IDV countries compared to that for male analysts when the performance measures is *Adjusted forecast error*.

5.4. Transparency and the gender gap in performance under competition

To capture country-level information transparency, we employ an earnings management measure. The greater the degree of earnings management by firms in a country, the less transparent the information environment of firms in that country is. Under our conceptual framework in Section 2, we expect that ceteris paribus, the gender gap in performance under competition is smaller in countries whose firms are in more transparent environments.

At the firm-year level, we measure information opacity using the size of accruals. The size of accruals is the absolute value of accruals divided by the absolute value of net operating cash flow of a firm in which net operating cash flow is obtained directly from the statement of cash flows, and accruals is calculated as the difference between net income and net operating cash flow.[12] We then take the median to obtain the country-year level measure for each country in our sample. *High transparency* is an indicator variable that takes the value of one if a country's size of accruals is in the bottom quartile in a year, and zero otherwise.[13]

Table 9 presents the regression results using the same specification as Equation (1) by replacing *High IDV* with *High Transparency*, and our variable of interest is the interaction term *Female* × *High Transparency.* Across all four specifications, we find that the coefficient on the interaction term is negative and significant when the dependent variable is *Same week forecast error*, suggesting that in more transparent environment, the gender gap in performance under competition becomes smaller.

We conclude that individualism attenuates the negative association between competition and women's on-the-job performance through its effect on women's entry into

[12] Following Hribar and Collins (2002), we use the cash-flow-statement approach to calculate accruals. Our results remain if we use the balance-sheet approach.
[13] In unreported analysis, we find there is a positive and significant association between a country's individualism score and its degree of transparency.

competition, greater female analyst turnover-to-performance sensitivity in highly individualistic countries, and/or on information transparency.

6. Additional Analyses

6.1. Robustness checks

We conduct a large number of robustness checks of our main findings.

6.1.1. Controlling for other Hofstede's national cultural values

First, we control for additional national cultural values under the Hofstede's national culture framework – masculinity (MAS), power distance (PDI), and uncertainty avoidance (UAI). Table IA3 in the Internet Appendix presents the results.

We show that our main findings remain: There is no gender difference in performance in highly individualistic countries. Moreover, we show that when the dependent variable is *Average forecast error,* the coefficient on the interaction term *Female × High MAS* is negative and significant, suggesting relative outperformance by females over males in highly masculine countries, whereas the coefficient on the interaction term *Female × High UAI* is positive and significant, suggesting relative underperformance by females over males in highly uncertainty avoidant countries. When the dependent variable is *Same week forecast error,* the coefficient on the interaction term *Female × High UAI* is positive and significant, suggesting relative underperformance by females over males in highly uncertainty avoidant countries. Overall, there is no consistent results using those three other national culture values of Hofstede.

6.1.2. Employing an updated version of Hofstede's individualism score

Hofstede's (1980, 2001) individualism score was constructed from answers to a survey of 117,000 IBM employees across the company's subsidiaries in 70 countries between

1967 and 1973. Although Hofstede's score is based on survey data from the late 1960s and early 1970s, Beugelsdijk, Maseland, and van Hoorn (2015) find that cultural change is absolute rather than relative, i.e., countries' scores on the Hofstede dimensions relative to the scores of other countries have changed little over time, which is important to our empirical analysis.

As a second robustness check, we employ an updated version of the individualism score derived using survey data from the World Values Survey (WVS) and its equivalent, the European Values Study (EVS) over the period 1981–2002. Based on questions in the WVS, an individual is considered to be individualistic if he/she strongly agrees with: 1) one of my main goals in life is to make my parents proud: 1. strongly agree... 4. strongly disagree; 2) private versus government ownership of business: 1. private ownership should be increased...10.government ownership should be increased; 3) justifiability; homosexuality: 1. never justifiable... 10. always justifiable; and 4) justifiability; abortion: 1. never justifiable... 10. always justifiable.[14] Prior work including Schwartz (1992, 1994), Triandis (1995), and Beugelsdijk, Maseland, and van Hoorn (2015) associates these values with individualism.

To obtain an updated version of the individualism score, first, for each WVS variable listed above, we compute a (standardized) country-mean of that variable over the period 1981–2002 for cohort 1 (the birth year before 1958) and cohort 2 (the birth year after 1958). Second, we regress Hofstede's individualism score on the country-means of the four survey responses for cohort 1 and obtain coefficients on those four country-means. Finally, we multiple the estimated coefficients with the corresponding country-means of the same four survey questions for cohort 2 to obtain an updated score for individualism. *High IDV_WVS* is an indicator variable that takes the value of one if a country is in the top quartile of updated

[14] When coding these four items, the response to item 2 corresponding to a high individualism score is the lowest order option (i.e., option 1), whereas for all other three items, the responses are the highest order options (i.e., either option 4 or option 10).

individualism scores in a year, and zero otherwise. Table IA4 in the Internet Appendix replicates the analysis in Table 5 using the updated individualism score.

We show that across all four forecast performance measures, female analysts significantly underperform their male counterparts. However, in highly individualistic countries, there is no significant difference in performance between the genders.

6.1.3. Using Schwartz's national culture value of affective autonomy

The cultural framework of Schwartz (1999, 2004) has seven cultural dimensions based on a survey of elementary school teachers and college students from over 50 countries between 1988 and 2000. Respondents rate the importance of 57 values (e.g., equality, freedom, and pleasure) as "a guiding principle in MY life" (Schwartz 2004, p. 48). According to (Schwartz 2004, pp. 51–52), his affective autonomy dimension (focusing on individual utility) has the closest correspondence to Hofstede's dimension of individualism.

As a third robustness check, we employ affective autonomy in place of individualism in Equation (1) to examine cross-country gender difference in performance under competition. Table IA5 in the Internet Appendix presents the results.

We show that across most specifications, female analysts significantly underperform their male counterparts. However, there is no gender difference in performance in highly affective autonomous countries.

6.1.4. Using forecast-level observations and including high-dimensional fixed effects

As a fourth robustness check, we include high-dimensional fixed effects using firm-forecast-analyst-year observations. We include firm times year times month fixed effects because of known gender differences that might result in females' forecasts to be later than males. Using more granular fixed effects allows us to compare forecasts made by the different genders within a short window (in this case monthly) to help control for forecast

timing differences. Table IA6 Panel A in the Internet Appendix presents the results. We show that our main findings remain unchanged when including different fixed effects and using more granular performance measures at the forecast level.

As a final robustness check, we add brokerage fixed effects to the specification in Equation (1) using firm-analyst-year observations to account for time-invariant brokerage characteristics (Bradley, Gokkaya, and Liu 2017). Table IA6 Panel B presents the results. We show that our main findings remain.

6.1.5. Removing potentially misclassified analysts

So far in our analysis, we determine an analyst's country of origin by the location of her office. It is possible that using an analyst's office location might potentially misclassify her country of origin, say, for example, an analyst coming from the U.S. (based on her name, a high IDV country) works in Japan (based on her place of work, a low IDV country), creating noise in our analysis.

As a robustness check, we resort to a proprietary database provided by Origins Info Ltd based on sources such as the American Dictionary of Family Names and international telephone directories, to identify the most likely ethnic origin for analysts in our sample. Origins Info's classification assigns an ethnicity to each name based on the family name first and, when family names are inadequate for accurate identification (e.g., for family names like Lee), uses a combination of family name and given name to identify ethnicity (Hedge and Tumlinson 2014).

Our full sample consists of 18,269 equity analysts from 42 countries. We are able to determine ethnicity using names for 16,318 analysts. Among those, we keep 11,444 equity analysts from 42 countries for whom the individualism ranking of her country of origin as determined by her name is the same as that of her place of work

Table IA7 in the Internet Appendix presents the regression results using this sample of 11,444 equity analysts. Consistent with our intuition, we show that our main findings become stronger given that we use a subsample of analysts with verified information on their country of origin.

6.2. Subsample analysis

In this section, we examine whether there is any cross-country difference in female analysts' performance under competition focusing on different subsamples. We employ the following panel data regression specification:

$$Forecast\ performance_{i,j,t} = \alpha + \beta_1 Female_j + \beta_2 Country\ characteristics_{c,t} + \beta_3 Analyst\ characteristics_{j,t} + \beta_4 Brokerage\ characteristics_{j,t} + Firm \times Year\ FE + e_{i,j,t}, \quad (2)$$

where the dependent variables are different measures of analyst performance. The variable of interest is the indicator variable *Female*. Firm times year fixed effects are included to control for time-varying unobservables that might drive an analyst' coverage decision as well as her performance. The sample consists of firm-analyst-year observations.

Table 10 Panel A presents the regression results when we limit the sample to analysts based in the U.S. Across all different measures of analyst performance, we show that in the country with the highest individualism score, there is no significant difference in performance between the genders under competition. Moreover, consistent with prior literature (see, for example, Clement and Tse 2005), we show that *Forecast horizon* is positively and significantly associated with all different measures of performance, whereas *Forecast frequency* is positively and significantly associated with *First forecast error*, and is negatively and significantly associated with *Last forecast error*. We further show that firm-specific experience is negatively and significantly associated with *Average forecast error* and *First forecast error*, and that general experience is negatively and significantly associated

with *Average forecast error* and *Last forecast error*. Finally, *Brokerage size* is positively and significantly associated with *Last forecast error*.[15]

Panel B presents the regression results when we limit the sample to analysts based in Nordic countries – Denmark, Finland, Norway, and Sweden. We show that there is no gender difference in performance for analysts located in Nordic countries. It is worth pointing out that Nordic countries are known for their gender equality policies and practices (Adams and Funk 2012). Using a survey of directors in Sweden, a country that was ranked number one out of 115 countries in the WEF's GGGI at the time of the study, Adams and Funk (2012) show that female directors are more risk loving than their male counterparts. The authors interpret their findings due to women's self-selection into leadership positions and hence female directors behaving more similar to male directors than females in the general population. Our findings are consistent with their interpretation.

Panel C presents the regression results when we limit the sample to analysts based in countries/regions that possess the Communist ideology – China, Hong Kong, and Vietnam. We show that there is no gender difference in performance for analysts located in countries that possess the Communist ideology. Booth et al. (2019) find that Beijing females growing up during the communist regime are more competitively inclined than their male counterparts. The authors conclude that exposure to different institutions/norms changes individuals' behavior including their preferences for competition. Our results suggest that due to social norms in Communist countries that promote gender equality, women's aversion to

[15] In one of the first studies on female analysts in the U.S., Kumar (2010) finds the female analysts outperform their male counterparts. We attribute the difference in findings to different sample periods and empirical methodologies employed. First, there is little overlap in sample periods between Kumar's and our study. The presence of workplace discrimination, as posited by Kumar as one possible explanation for his findings, becomes weaker in recent years. Second, when employing Kumar's Fama-Macbeth regression specification and a subsample period 2003-2010, we find the coefficient on the indicator variable *Female* is negative and marginally significant. However, after including firm times year fixed effects that help address endogeneity, we find the coefficient on the indicator variable *Female* is no longer significant.

competition is attenuated in Communist countries, resulting in their equal performance as their male counterparts.

Table 11 presents the DID analysis using subsamples to shed light on the lack of gender differences in performance under competition. Panels A and D employ the U.S. sample of analysts. We show that female analysts in the U.S. tend to work with more prestigious brokerages than their male counterparts, whereas they tend to cover firms of the same size and importance as their male counterparts. Interestingly, we show that there is no significant difference in turnover between the genders in relation to poor performance.

Panels B and E employ the Nordic country sample. We show that female analysts in Nordic countries tend to work in less prestigious brokerage, cover less significant firms compared to their male counterparts.

Panels C and D employ the Communist country sample. We show that female analysts receive equal if not better treatment than their male counterparts in terms of brokerage and covered firm characteristics. Interestingly, we show that female analysts in Communist countries are less likely to be turned over when underperforming compared to their male counterparts.

We conclude that cross-country differences in cultural values, social norms, or ideologies attenuate gender differences in performance under competition.

7. Conclusions

In an increasingly globalized world, business leaders are constantly faced with the challenges of recruiting and managing a diverse body of employees to achieve its triple bottom line of people, planet, and profit. Much has been said on the demand side. But supply side factors may also play a role including gender differences in preferences and performance

under competition. This paper is the first in the literature to study whether and how gender differences in performance under competition vary across countries.

Our main measure of country-level differences is the individualism dimension in Hofstede's (1980, 2001) national cultural framework. Individualistic societies emphasize independence, equality, and the importance of "speaking one's mind" (Hofstede 2011), whereas collectivistic societies emphasize in-groups' interests and harmony (Trompenaars 1993; Hofstede 2001, 2011). We expect that individualism mitigates the negative association between competition and women's on-the-job performance through its effects on women's entry into competition as well as on formal institutions (e.g., lifetime employment and accounting disclosure practices).

Using a hand-collected sample of 18,269 equity analysts from 42 countries over the period 2003–2019 and firm times year fixed effects to account for time-varying unobservables that could potentially drive female analysts' coverage decision and their performance, we first show that female analysts exhibit worse forecast accuracy than their male counterparts. However, in highly individualistic countries, we show that there is no significant difference in forecast accuracy between the genders. We further show that female analysts produce more alternative forecasts and make more frequent EPS forecasts in highly individualistic countries compared to their peers in less individualistic countries, and that female analysts are more likely to drop out when underperforming in highly individualistic countries compared to their peers in less individualistic countries. In additional analysis, we show that in Nordic countries or in countries with the Communist ideology, there is no significant difference in forecast accuracy between the genders. We conclude that there are important cross-country variations in gender differences in performance under competition – gender differences in performance under competition are attenuated by national culture and social norms.

The findings in our paper will inform and shape government policies and business practices involving recruitment, development, and deployment of diverse talents by recognizing the importance of national economic, social, and cultural contexts when addressing gender differences in preferences, job choices, and performance outcome under competition.

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Appendix A
Unmasking brokerage name, analyst name, and analyst gender via Capital IQ

From the I/B/E/S recommendation details file, we obtain a list of 1,687 unique brokerages (both in and outside the U.S.) providing recommendations on global equities over the period 2003-2019. I/B/E/S provides an abbreviated brokerage name in the variable *ESTIMID*, a unique brokerage identifier in the variable *EMASKCD,* the last name and first name initial of each analyst in the variable *ANALYST*, and a unique analyst identifier in the variable *AMASKCD.*

To unmask abbreviated brokerage names and analyst names from I/B/E/S, we manually search each brokerage's full name and its analysts from Capital IQ. Our matching process takes three steps. First, we match abbreviated brokerage names in I/B/E/S (*ESTIMID*) to full brokerage names in Capital IQ by resemblance. For example, the abbreviated brokerage name "ZACKSINV" in I/B/E/S resembles Zacks Investment Research, Inc. in Capital IQ. Second, we ascertain this match is correct by matching analyst names in I/B/E/S (*ANALYST*) with those in Capital IQ using the last name and first name initial.[16] For example, we are able to match 27 out of the 28 analysts affiliated with Zacks Investment Research in I/B/E/S with those in Capital IQ (more on this later). Third and finally, we supplement the above two steps by checking whether Capital IQ analysts' stock coverage is the same as that by matched I/B/E/S analysts. To do so, we search through Bloomberg's "*PEOP*" function. Of the 1,687 brokerages in I/B/E/S, we are able to unmask full brokerage names for 1,557 observations (a 92.3% matching rate).

We then obtain individual analyst information including biography, prefix (Mr. vs. Ms.), and office address from their employment history in Capital IQ. Figures A1-A4

[16] We keep observations with perfect match on brokerage name and analyst names. In cases in which multiple analysts have identical last names and first name initials in a brokerage, we drop those analysts. We also drop analysts with name as "RESEARCH TEAM" (referring to team coverage) or "PERMDENIED" (referring to those permanently denied).

illustrate how we obtain such information using Zacks Investment Research, Inc. as an example.

We start by searching "Zacks Investment Research, Inc." in Capital IQ. Figure A1 shows that each brokerage is assigned a unique *companyId* by Capital IQ that we use as the brokerage identifier. Figure 1 also shows that we can search employment history for analysts affiliated with Zacks by navigating to the "*Professionals"* page under the "*People"* tab. Figure A2 shows that we can identify both former and current analysts affiliated with the brokerage, with each analyst having a unique personal ID (*personId*). By clicking on an analyst, we get to their personal profile in Capital IQ shown in Figure A3. We rely on the biography (i.e., "He" vs. "She" is used when referring to an analyst) and the prefix(es) to determine an analyst's gender. We use office address as the location of employment and to proxy for an analyst' residential address as analysts often reside in countries where they are employed. Figure A4 shows that in the case of Zacks Investment Research, Inc., we are able to match all 28 unique analysts in I/B/E/S to those in Capital IQ. However, we note one analyst "BECKER M" has two I/B/E/S analyst IDs (*AMASKCD*) pointing to the same analyst in Capital IQ. Out of precaution, we remove this analyst in our sample.[17]

In the end, we are able to unmask 29,285 out of the 37,459 unique analysts in the I/B/E/S recommendation details file (a 78.2% matching rate).

[17] BROKER_NAME in Figure 4 is the full brokerage name identified via Capital IQ. For analyst "BERCKER M", we are able to match their prior brokerage affiliations in four out of the seven employers, suggesting that Capital IQ have broader coverage in terms of analyst employment history than I/B/E/S.

Figure A1
Zacks Investment Research, Inc. main page in Capital IQ

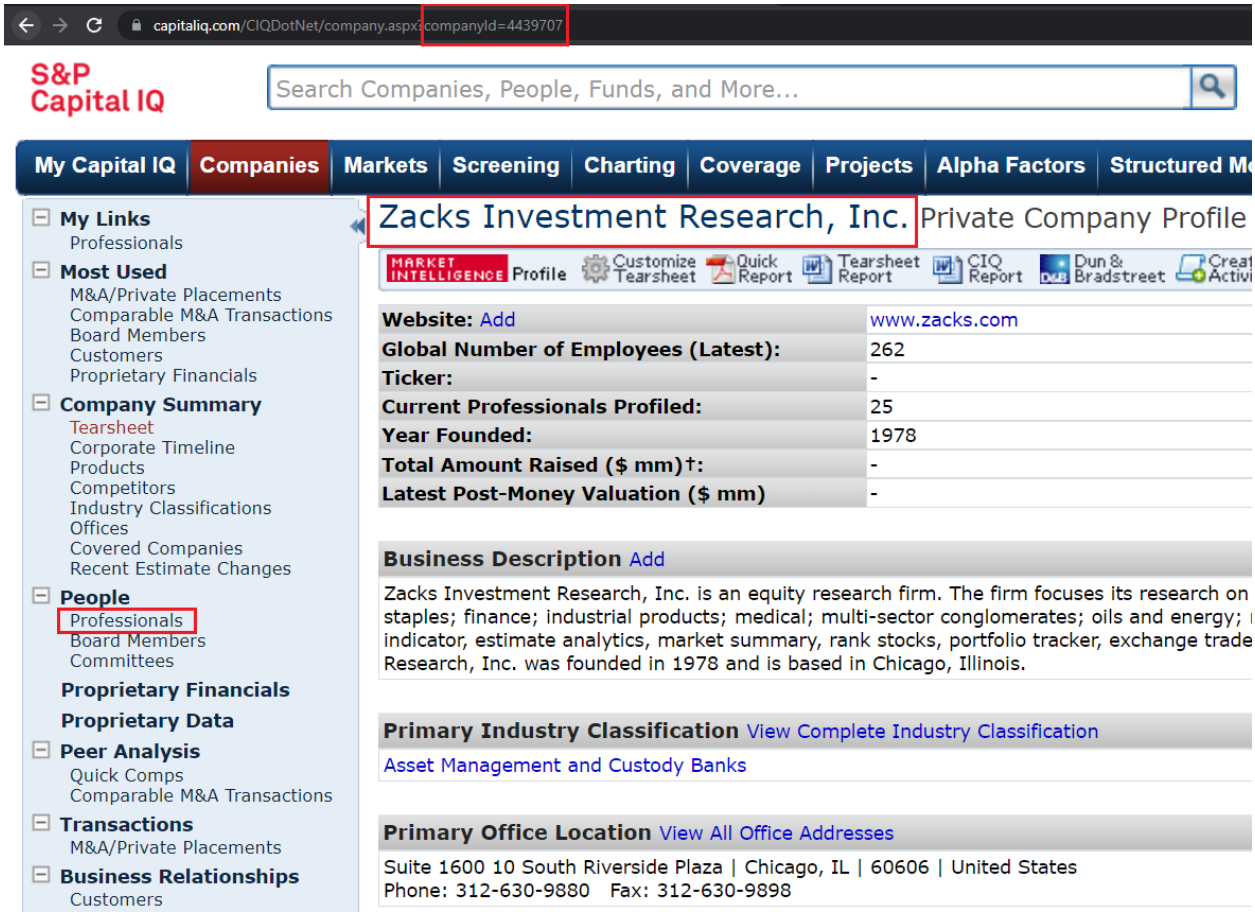
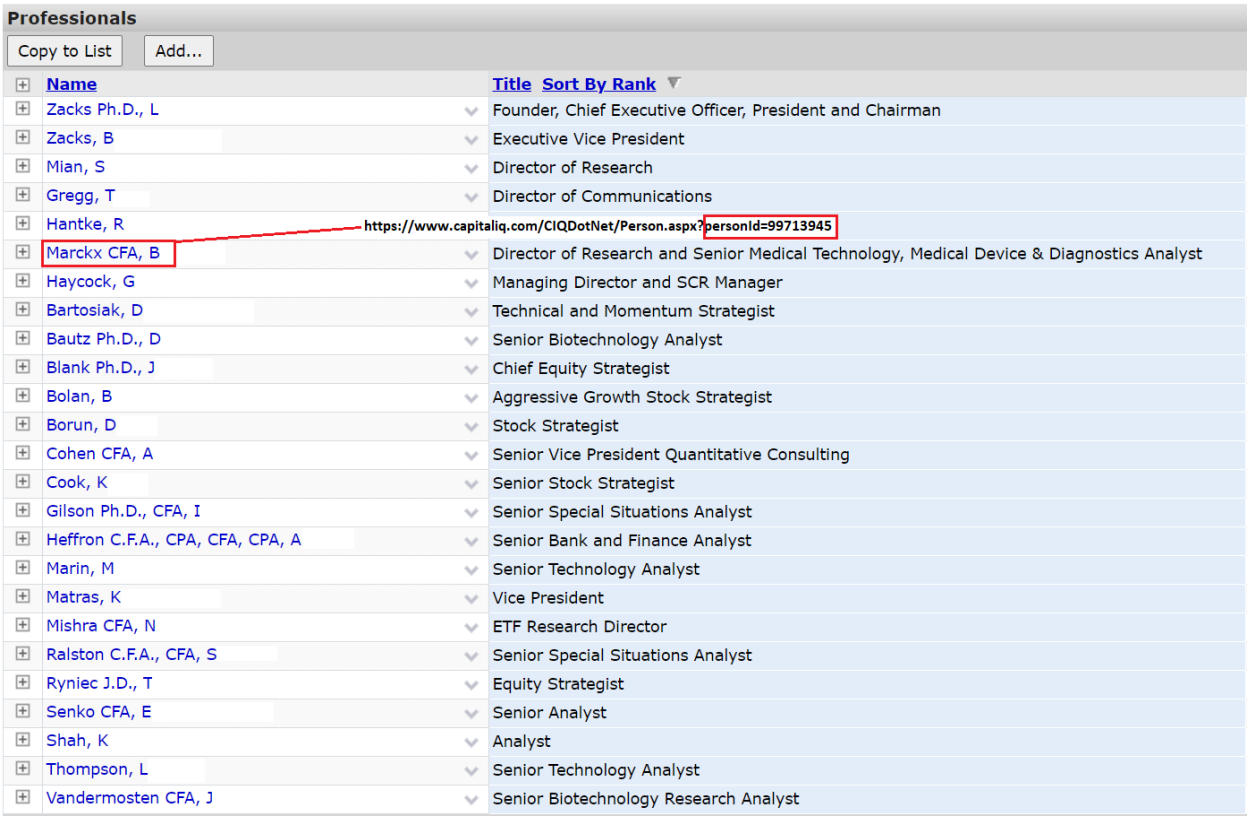


Figure A2
Analysts affiliated with Zack Investment Research, Inc. as recorded by Capital IQ

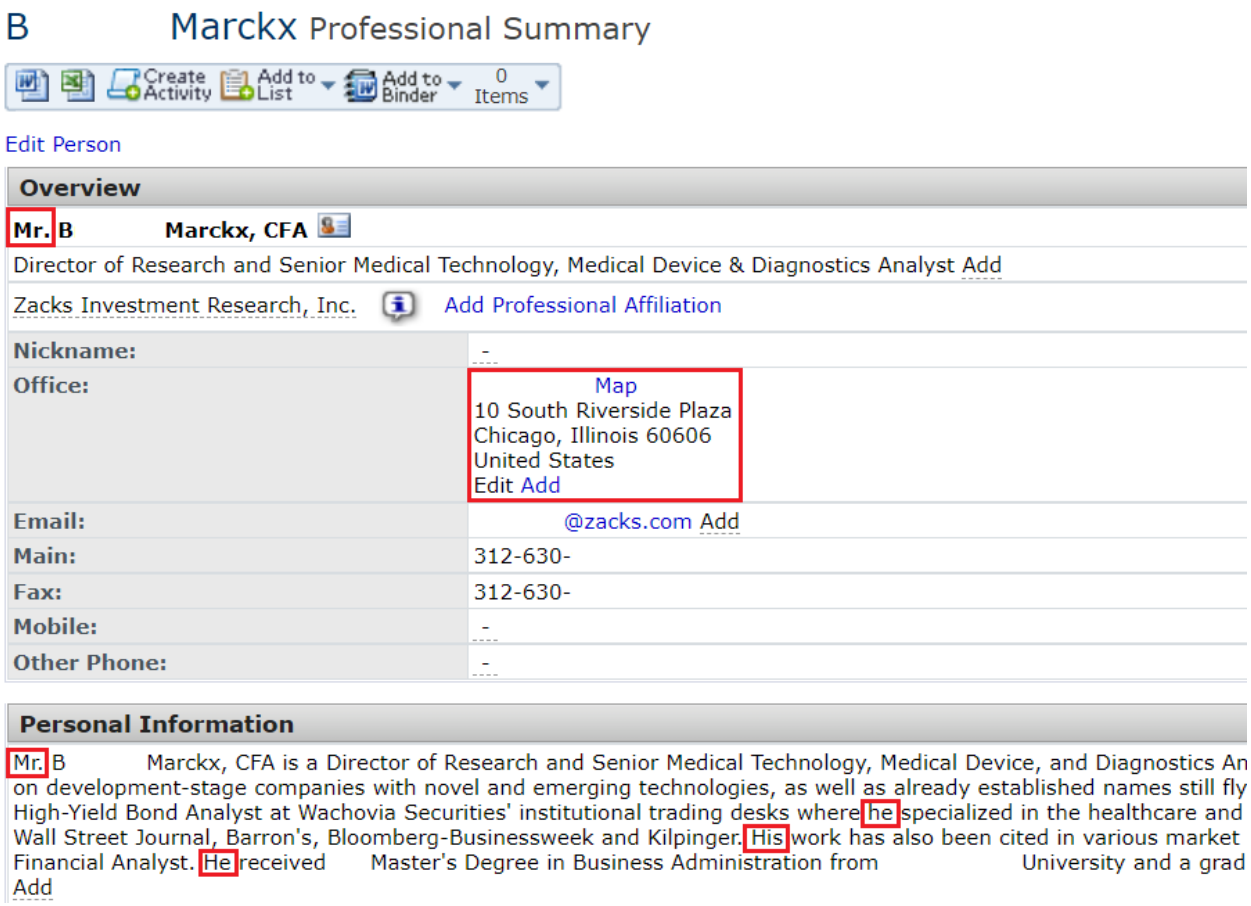


Professionals

Copy to List | Add...

Name	Title Sort By Rank
Zacks Ph.D., L	Founder, Chief Executive Officer, President and Chairman
Zacks, B	Executive Vice President
Mian, S	Director of Research
Gregg, T	Director of Communications
Hantke, R	
Marckx CFA, B	Director of Research and Senior Medical Technology, Medical Device & Diagnostics Analyst
Haycock, G	Managing Director and SCR Manager
Bartosiak, D	Technical and Momentum Strategist
Bautz Ph.D., D	Senior Biotechnology Analyst
Blank Ph.D., J	Chief Equity Strategist
Bolan, B	Aggressive Growth Stock Strategist
Borun, D	Stock Strategist
Cohen CFA, A	Senior Vice President Quantitative Consulting
Cook, K	Senior Stock Strategist
Gilson Ph.D., CFA, I	Senior Special Situations Analyst
Heffron C.F.A., CPA, CFA, CPA, A	Senior Bank and Finance Analyst
Marin, M	Senior Technology Analyst
Matras, K	Vice President
Mishra CFA, N	ETF Research Director
Ralston C.F.A., CFA, S	Senior Special Situations Analyst
Ryniec J.D., T	Equity Strategist
Senko CFA, E	Senior Analyst
Shah, K	Analyst
Thompson, L	Senior Technology Analyst
Vandermosten CFA, J	Senior Biotechnology Research Analyst

Figure A3
Analyst personal information in Capital IQ



B Marckx Professional Summary

Create Activity | Add to List | Add to Binder | 0 Items

Edit Person

Overview

Mr. B Marckx, CFA

Director of Research and Senior Medical Technology, Medical Device & Diagnostics Analyst Add

Zacks Investment Research, Inc. Add Professional Affiliation

Nickname:	-
Office:	Map 10 South Riverside Plaza Chicago, Illinois 60606 United States Edit Add
Email:	@zacks.com Add
Main:	312-630-
Fax:	312-630-
Mobile:	-
Other Phone:	-

Personal Information

Mr. B Marckx, CFA is a Director of Research and Senior Medical Technology, Medical Device, and Diagnostics An on development-stage companies with novel and emerging technologies, as well as already established names still fly High-Yield Bond Analyst at Wachovia Securities' institutional trading desks where he specialized in the healthcare and Wall Street Journal, Barron's, Bloomberg-Businessweek and Kilpinger. His work has also been cited in various market Financial Analyst. He received Master's Degree in Business Administration from University and a grad Add

Figure A4
An example of two different I/B/E/S analyst IDs pointing to the same analyst in Capital IQ

I/B/E/S file for analyst "BACKER M"

	ANALYST	AMASKCD	ESTIMID	EMASKCD	BROKER_NAME
BACKER	M	171815	ZACKSINV	7654	Zacks Investment Research, Inc.
BACKER	M	79164	RESASSOC	5797	Research Associates, LLC
BACKER	M	79164	HUDSONSQ	7844	Hudson Square Research, Inc.
BACKER	M	79164	ASCENDIA	41105	Ascendiant Capital Markets LLC, Research Division

Capital IQ file for analyst "BACKER M"

personId		ANALYST	companyId	BROKER_NAME
24165186	BACKER	M	129926045	Ascendiant Capital Markets LLC, Research Division
24165186	BACKER	M	12765513	Hudson Square Research, Inc.
24165186	BACKER	M	24165184	Research Associates, LLC
24165186	BACKER	M	7923367	Sidoti & Company, LLC
24165186	BACKER	M	4891357	Soleil Securities Corporation
24165186	BACKER	M	34211035	Wm Smith & Co.
24165186	BACKER	M	4439707	Zacks Investment Research, Inc.

Two I/B/E/S analyst IDs point to the same analyst in Capital IQ

Appendix B
Variable definitions

All continuous variables are winsorized at the 1st and 99th percentiles. All values are reported in 2010 constant US dollars (USD).

Variable	Definition	Source
Country-level variables		
Individualism	In individualistic cultures, the ties between individuals are loose: Everyone is expected to look after him/herself and his/her immediate family. In collectivistic cultures, people from birth onwards are integrated into strong, cohesive in-groups, often extended families that continue protecting them in exchange for unquestioning loyalty, and oppose other in-groups (Hofstede 1980, 2001, 2011). In a general review of his cultural dimensions, Hofstede (2011) provides 10 contrasts between individualism (IDV) and collectivism. Here are the first five contrasts, which are the most relevant to organizational/individual behaviors:	Hofstede Culture Dimension website
	Individualism / *Collectivism* "I" – consciousness / "We" – consciousness Right of privacy / Stress on belonging Speaking one's mind is healthy / Harmony should always be maintained Others classified as individuals / Others classified as in-group or out-group Personal opinion expected: one person, one vote / Opinions and votes predetermined by in-group	
High IDV	Indicator equals one if a country is in the top quartile of individualism in a year, and zero otherwise.	Hofstede Culture Dimension website
Global Gender Gap Index	The Global Gender Gap Index (GGGI) was first introduced by the World Economic Forum (WEF) in 2006 to benchmark progress towards gender parity and compare countries' gender gaps across four dimensions: economic opportunities, education, health and political leadership (WEF 2021). We fill the missing values before 2006 with applicable values in 2006.	World Economic Forum
GDP per capita	GDP per capita (in thousands of dollars).	World Bank
Ln(GDP per capita)	Natural logarithm of GDP per capita (in thousands of dollars).	World Bank
Market cap/GDP	Market capitalization of listed domestic companies divided by GDP.	World Bank

Female ratio	Number of unique female analysts divided by the total number of unique analysts in a country-year. We determine whether an I/B/E/S analyst is a female or not based on hand-collected biographic information from Capital IQ, Bloomberg, and online search. Please see Appendix A for details.	I/B/E/S, Capital IQ, Bloomberg
Sales growth	Average of listed domestic firms' annual growth in sales in a country-year.	Worldscope
Total assets	Average of listed domestic firms' book assets (in millions of dollars) in a country-year.	Worldscope
Ln(Total assets)	Natural logarithm of the average of listed domestic firms' book assets in a country-year.	Worldscope
Tobin's Q	Average of a listed domestic firm's sum of market value of equity and book value of debt divided by book assets in a country-year.	Worldscope
Net income	Average of a listed domestic firm's net income divided by book assets in a country-year.	Worldscope
Institutional ownership	Average of a listed domestic firm's ownership by institutional investors in a country-year. Missing values are assigned a value of zero.	Thomson Reuters Global Ownership
High transparency	An indicator variable that takes the value of one if a country's size of accruals is in the bottom quartile in a year, and zero otherwise. We measure the size of accruals as the absolute value of accruals divided by the absolute value of net operating cash flow of a firm (Leuz, Nanda, and Wysocki 2003). We obtain net operating cash flow from the statement of cash flows and calculate accruals as the difference between net income and net operating cash flow (Hribar and Collins 2002). We take the median to obtain the country-year level measure for each country in our sample.	Worldscope
Nordic	Indicator equals one if a country resides in the Nordic region, which includes Denmark, Finland, Norway, and Sweden.	
Communist	Indicator equals one if a country/region possesses the Communist ideology, which includes China, Hong Kong SAR, and Vietnam.	
Analyst-level variables		
Average forecast error	Average of absolute forecast errors that an analyst makes during the year. Absolute forecast error is the absolute value of the difference between an analyst's annual EPS forecast and actual EPS normalized by the stock price at the prior fiscal year end.	I/B/E/S
First forecast error	Absolute value of the forecast error made in an analyst's first forecast during the year.	I/B/E/S

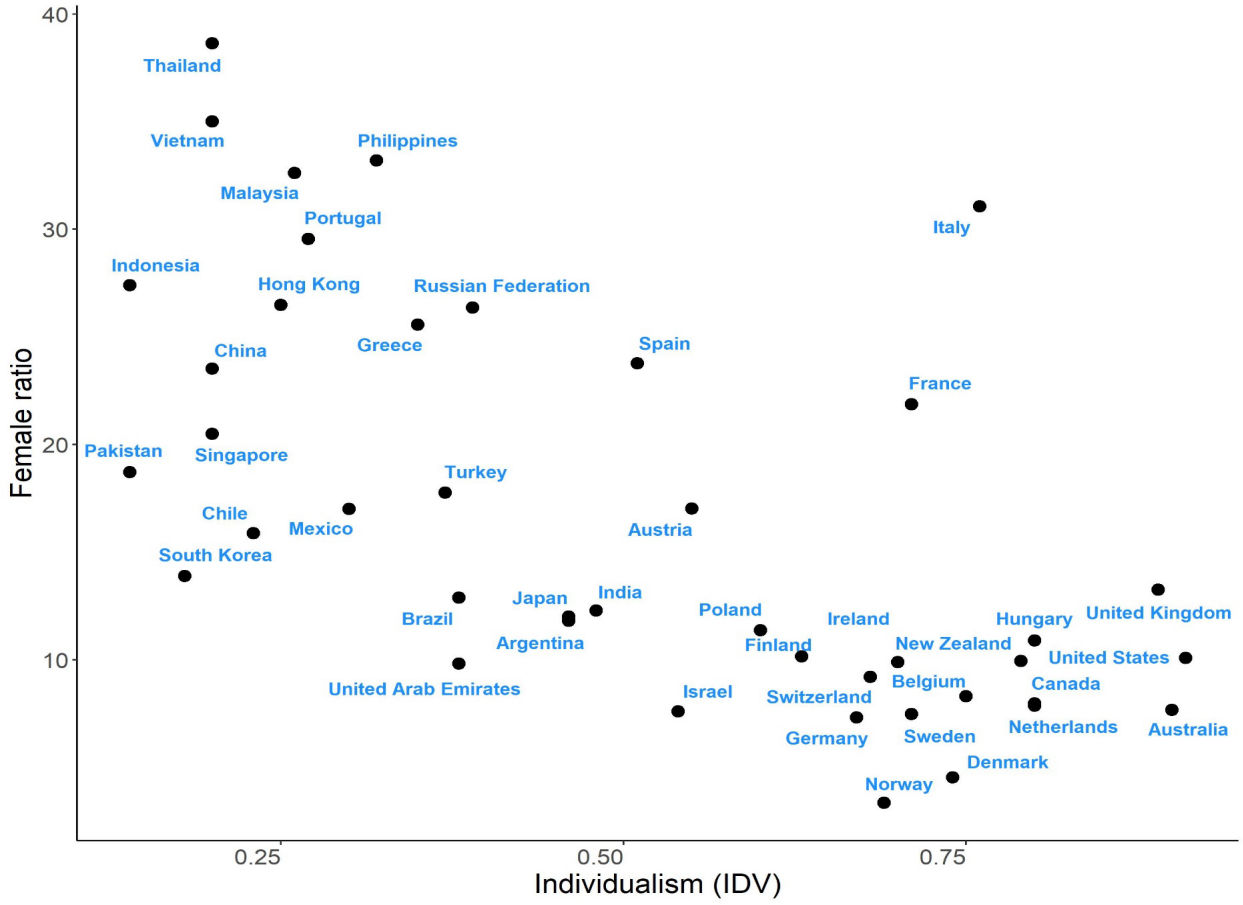
Last forecast error	Absolute value of the forecast error made in an analyst's last forecast during the year.	I/B/E/S
Same week forecast error	Absolute value of the forecast error made in an analyst's forecast that is within five days after the prior fiscal year's annual earnings announcement.	I/B/E/S
Deviation from consensus	For each forecast made by analyst *j* for firm *i* in year *t*, we obtain the most recent forecast consensus for firm *i* in year *t* reported by I/B/E/S before analyst *j*'s forecast. We modify the consensus by excluding any analyst *j*'s forecasts made within half year before the consensus reporting date. We take the absolute difference between analyst forecast and the modified consensus for each forecast by analyst *j* for firm *i* in year *t*, and use the average difference for firm *i* in year *t* as our measure of *Deviation from consensus*.	I/B/E/S
# alternative forecasts	Number of other types of forecasts excluding EPS such as book value per share (BPS), dividend per share (DPS), and capital expenditures (CAPX) issued by an analyst during the year.	I/B/E/S
Adjusted forecast error	Average forecast error minus the mean of the same variable across analysts following the same firm in the same year.	I/B/E/S
Adjusted forecast error2yr	Average of an analyst's adjusted forecast errors in year *t* and *t-1*.	I/B/E/S
Female	Indicator equals one if an analyst is a female, and zero otherwise.	I/B/E/S; Capital IQ; Bloomberg
Foreign analyst	Indicator equals one if an analyst's affiliated brokerage is in a country different from the country of primary listing of the firm she follows, and zero otherwise.	Capital IQ; Worldscope
Forecast horizon	Average number of months between forecast dates of an analyst during the year to the date of the annual earnings announcement.	I/B/E/S
Timely forecast	Number of days between the prior fiscal year's annual earnings announcement and an analyst's first annual EPS forecast for the current fiscal year.	I/B/E/S
Forecast frequency	Number of annual EPS forecasts made by an analyst during the year.	I/B/E/S
# firms followed	Number of firms for which an analyst makes at least one forecast during the year.	I/B/E/S
# industries followed	Number of two-digit SIC industries for which an analyst makes at least one forecast during the year.	I/B/E/S
Firm experience	Number of years for which an analyst makes at least one forecast of the focal firm during the year.	I/B/E/S

General experience	Number of years for which an analyst makes at least one forecast of any firm during the year.	I/B/E/S
Brokerage size	Number of analysts making at least one forecast at the focal brokerage during the year.	I/B/E/S
Ln(Brokerage size)	Natural logarithm of the number of analysts in a brokerage-year.	I/B/E/S
Firm-level variables		
Market capitalization	Product of share price and number of shares outstanding.	Worldscope
Tobin's Q	Sum of market value of equity and book value of debt divided by book assets.	Worldscope
Net income	Net income divided by book assets.	Worldscope
Sales growth	Annual growth in sales.	Worldscope

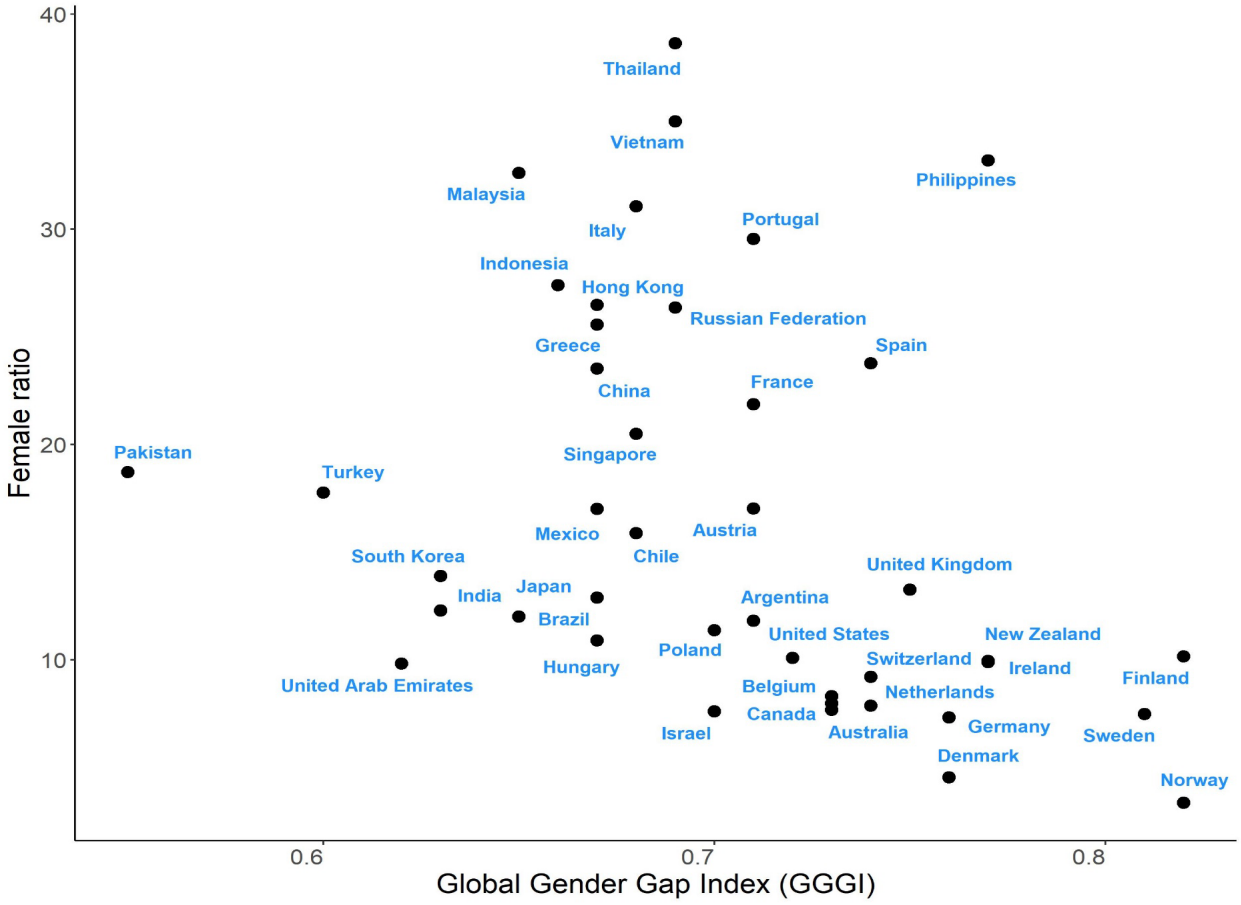
Figure 1
Scatterplot of country-level characteristics and female share of equity analysts

This figure presents an overview of our sample countries. Our sample consists of 18,269 equity analysts from 42 countries for the period 2003–2019 for which we have analyst forecast data from I/B/E/S, firm-level data from Worldscope, and country-level data from the World Economic Forum (WEF), World Bank, and Hofstede Culture Dimension website. Panel A plots individualism (IDV) and country-means of the female share of equity analysts. Panel B plots the Global Gender Gap Index (GGGI) and country-means of the female share of equity analysts. Panel C plots Ln(GDP per capita) and country-means of the female share of equity analysts.

Panel A: Individualism and female share of equity analysts



Panel B: Global Gender Gap Index and female share of equity analysts



Panel C: Ln(GDP per capita) and female share of equity analysts

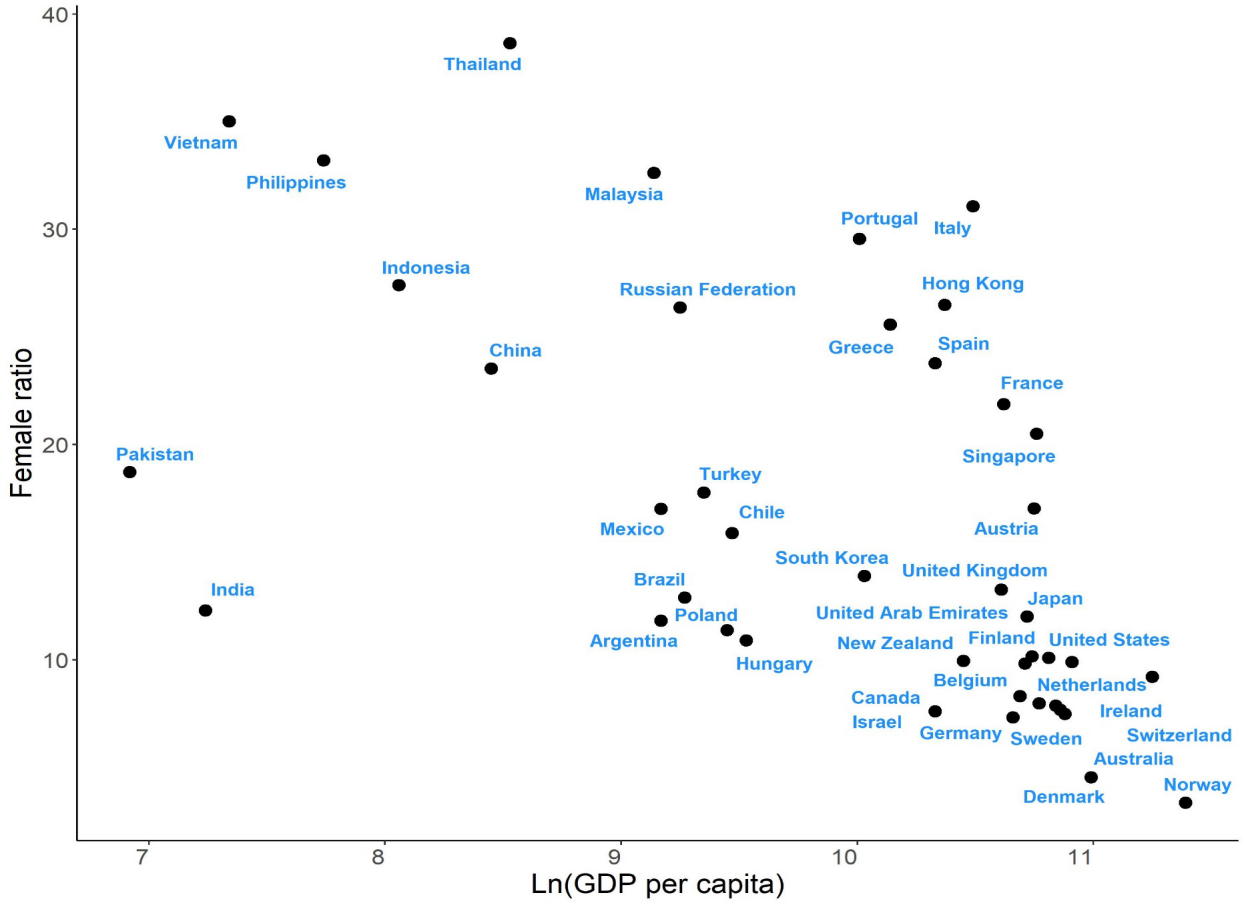


Table 1
Sample formation

This table reports the impact of various matching steps and data filters on the initial sample of analysts covered in the I/B/E/S recommendation files over the period 2003–2019.

	# analysts	# analysts removed	# brokerage	# brokerage removed	# countries	# countries removed
Obtain unique abbreviated institution names and analyst names in I/B/E/S recommendation files from 2003 to 2019.	43,193	5,734	1,687	25		
Match abbreviated institution names to full institution names in Capital IQ.	29,285		1,557		83	
Remove observations with missing information on analyst gender and employment address, and analysts with multiple employment addresses in a year in Capital IQ.	26,841	2,444	1,535	22	80	3
Match I/B/E/S recommendation files with I/B/E/S EPS files.	23,932	2,909	1,448	87	80	0
Match with Worldscope; remove observations with missing Worldscope unique identifier (ws_id).	19,769	4,163	1,316	132	77	3
Remove firms with stock price less than one unit of local currency and market capitalization less than USD $10 million at the end of the fiscal year.	19,539	230	1,307	9	77	0
Remove countries with fewer than 10 firms over the sample period.	19,472	67	1,288	19	71	6
Remove countries with fewer than 10 analysts or fewer than 10 firm-female analyst-year observations over the sample period.	19,397	75	1,270	18	55	16
Remove countries with missing information on GGGI or Hofstede's individualism measure.	18,583	814	1,191	79	42	13
Remove observations with missing analyst forecast variables.	18,269	314	1,179	12	42	0

Table 2
Sample overview

This table provides an overview of our sample. Our sample consists of 18,269 equity analysts from 42 countries for the period 2003–2019 for which we have analyst forecast data from I/B/E/S, firm-level data from Worldscope, and country-level data from the World Economic Forum (WEF), World Bank, and Hofstede Culture Dimension website. Panel A presents an overview of our global analyst sample by country. Panel B presents an overview of country-level variables. Definitions of the variables are provided in Appendix B.

Panel A: Overview of our global analyst sample

Country	# firm-year obs.	# firms	# analysts	# female analysts	% female analysts	# forecasts	# forecasts made by female analysts	% forecasts made by female analysts
Argentina	328	68	19	5	26.32%	1,204	78	6.48%
Australia	4,619	1,163	597	63	10.55%	62,358	3,814	6.12%
Austria	929	155	53	8	15.09%	3,847	487	12.66%
Belgium	1,648	401	112	19	16.96%	9,582	1,082	11.29%
Brazil	2,521	402	211	35	16.59%	18,894	2,315	12.25%
Canada	9,681	1,840	910	94	10.33%	194,929	12,616	6.47%
Chile	234	63	49	7	14.29%	525	56	10.67%
China	10,266	2,474	1,062	209	19.68%	38,501	8,311	21.59%
Denmark	846	161	64	5	7.81%	8,197	242	2.95%
Finland	1,617	265	148	26	17.57%	22,516	1,873	8.32%
France	8,307	1,323	528	123	23.30%	64,854	15,057	23.22%
Germany	7,964	1,500	668	70	10.48%	76,984	3,822	4.96%
Greece	477	85	88	20	22.73%	3,771	840	22.28%
Hong Kong SAR, China	8,671	1,879	878	245	27.90%	56,274	13,002	23.10%
Hungary	218	44	20	3	15.00%	995	65	6.53%
India	5,406	1,079	1,057	149	14.10%	94,214	8,681	9.21%
Indonesia	1,085	174	176	48	27.27%	7,747	2,070	26.72%
Ireland	609	151	78	12	15.38%	2,688	134	4.99%
Israel	349	77	34	5	14.71%	1,567	44	2.81%
Italy	2,486	479	145	44	30.34%	22,416	6,451	28.78%
Japan	15,015	2,048	797	113	14.18%	158,187	14,301	9.04%

Korea, Rep.	2,677	602	526	84	15.97%	44,430	7,501	16.88%
Malaysia	2,041	424	224	71	31.70%	15,750	5,433	34.50%
Mexico	857	171	48	11	22.92%	4,930	626	12.70%
Netherlands	2,921	852	234	36	15.38%	15,274	592	3.88%
New Zealand	665	91	31	3	9.68%	4,406	349	7.92%
Norway	2,638	498	265	11	4.15%	32,338	582	1.80%
Pakistan	199	56	89	15	16.85%	738	122	16.53%
Philippines	654	88	69	23	33.33%	3,747	1,289	34.40%
Poland	927	200	103	13	12.62%	3,944	241	6.11%
Portugal	616	115	57	21	36.84%	2,430	535	22.02%
Russian Federation	1,140	289	161	44	27.33%	7,716	2,474	32.06%
Singapore	3,353	831	251	61	24.30%	19,497	3,659	18.77%
Spain	1,618	285	127	30	23.62%	10,557	2,937	27.82%
Sweden	2,964	525	263	27	10.27%	35,129	1,660	4.73%
Switzerland	4,663	1,277	293	43	14.68%	27,990	2,148	7.67%
Thailand	2,100	357	198	75	37.88%	20,810	8,816	42.36%
Turkey	810	125	116	28	24.14%	5,439	476	8.75%
United Arab Emirates	1,051	232	37	7	18.92%	4,410	606	13.74%
United Kingdom	20,553	3,862	1,985	338	17.03%	243,251	29,017	11.93%
United States	56,816	9,248	5,426	704	12.97%	1,276,283	103,229	8.09%
Vietnam	240	79	72	31	43.06%	628	293	46.66%
Total	192,779	36,038	18,269	2,979		2,629,947	267,926	

Panel B: Overview of country-level variables

Country	Female ratio (%)	IDV	GGGI	GDP per capita ($000)	Ln(GDP per capita)
Argentina	11.81	0.46	0.71	9.64	9.17
Australia	7.67	0.90	0.73	52.00	10.86
Austria	17.02	0.55	0.71	46.83	10.75
Belgium	8.30	0.75	0.73	44.02	10.69
Brazil	12.89	0.38	0.67	10.67	9.27
Canada	7.97	0.80	0.73	47.53	10.77
Chile	15.87	0.23	0.68	12.90	9.47
China	23.52	0.20	0.67	4.66	8.45
Denmark	4.54	0.74	0.76	59.52	10.99
Finland	10.16	0.63	0.82	46.27	10.74
France	21.87	0.71	0.71	41.08	10.62
Germany	7.31	0.67	0.76	42.45	10.66
Greece	25.56	0.35	0.67	25.30	10.14
Hong Kong SAR, China	26.49	0.25	0.67	32.04	10.37
Hungary	10.89	0.80	0.67	13.79	9.53
India	12.29	0.48	0.63	1.39	7.24
Indonesia	27.39	0.14	0.66	3.18	8.06
Ireland	9.89	0.70	0.77	54.89	10.91
Israel	7.59	0.54	0.70	30.63	10.33
Italy	31.06	0.76	0.68	35.99	10.49
Japan	12.00	0.46	0.65	45.32	10.72
Korea, Rep.	13.89	0.18	0.63	22.77	10.03
Malaysia	32.62	0.26	0.65	9.37	9.14
Mexico	17.01	0.30	0.67	9.59	9.17
Netherlands	7.86	0.80	0.74	50.78	10.84
New Zealand	9.94	0.79	0.77	34.66	10.45
Norway	3.36	0.69	0.82	88.72	11.39
Pakistan	18.71	0.14	0.55	1.01	6.92
Philippines	33.20	0.32	0.77	2.31	7.74
Poland	11.36	0.60	0.70	12.71	9.45
Portugal	29.54	0.27	0.71	22.24	10.01
Russian Federation	26.36	0.39	0.69	10.39	9.25
Singapore	20.49	0.20	0.68	46.96	10.76
Spain	23.77	0.51	0.74	30.79	10.33
Sweden	7.47	0.71	0.81	52.90	10.88
Switzerland	9.21	0.68	0.74	76.53	11.25
Thailand	38.63	0.20	0.69	5.06	8.53
Turkey	17.77	0.37	0.60	11.55	9.35
United Arab Emirates	9.81	0.38	0.62	44.62	10.71
United Kingdom	13.26	0.89	0.75	40.57	10.61
United States	10.09	0.91	0.72	49.69	10.81
Vietnam	35.01	0.20	0.69	1.54	7.34

Table 3
Summary statistics

This table provides the summary statistics for our global analyst sample and the U.S. analyst sample. Panel A provides the summary statistics of country-level variables. The sample consists of 630 country-year observations over the period 2003–2019. Panel B provides the summary statistics of analyst-level variables. The sample consists of 610,847 firm-analyst-year observations over the period 2003–2019 (the sample size for *Same week forecast error* is 318,622 because we require those forecasts are made within five days after the prior fiscal year's annual earnings announcement). Definitions of the variables are provided in Appendix B.

Panel A: Country-level variables

	Global sample					U.S. sample				
	Mean	Median	STD	P25	P75	Mean	Median	STD	P25	P75
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female ratio (%)	17.090	14.670	11.737	8.333	25.000	10.091	9.697	1.119	9.285	11.117
Individualism (IDV)	0.500	0.480	0.239	0.270	0.710	0.910	0.910	0.000	0.910	0.910
High IDV	0.249	0.000	0.433	0.000	0.000	1.000	1.000	0.000	1.000	1.000
GGGI	0.700	0.698	0.053	0.661	0.737	0.721	0.718	0.016	0.704	0.739
GDP per capita	29.684	30.042	21.550	10.340	45.166	49.694	49.406	2.621	48.467	51.052
Ln(GDP per capita)	2.964	3.403	1.109	2.336	3.810	3.905	3.900	0.053	3.881	3.933
Market cap/GDP	0.922	0.599	1.441	0.346	0.980	1.278	1.337	0.223	1.153	1.432
Sales growth	0.164	0.150	0.114	0.088	0.230	0.173	0.186	0.066	0.148	0.214
Total assets	8,748.102	6,776.543	6,465.975	3,678.739	13,057.690	6,817.556	6,325.460	1,985.568	5,218.567	8,258.000
Ln(Total assets)	8.750	8.821	0.895	8.210	9.477	8.788	8.752	0.290	8.560	9.019
Tobin's Q	1.266	1.218	0.374	0.987	1.514	1.707	1.776	0.230	1.620	1.835
Net income	0.020	0.031	0.044	-0.003	0.052	-0.051	-0.047	0.027	-0.079	-0.028
Institutional ownership	0.097	0.070	0.089	0.048	0.120	0.481	0.518	0.055	0.453	0.518
N	630					17				

Panel B: Analyst-level variables

	Global sample					U.S. sample				
	Mean	Median	STD	P25	P75	Mean	Median	STD	P25	P75
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Average forecast error	2.902	0.740	7.798	0.276	2.073	2.244	0.539	6.677	0.210	1.494
First forecast error	3.684	0.912	9.627	0.300	2.729	3.054	0.714	8.563	0.243	2.142
Last forecast error	1.988	0.370	5.867	0.107	1.240	1.371	0.214	4.878	0.067	0.702
Same week forecast error	3.322	0.881	8.109	0.301	2.603	2.962	0.745	7.669	0.261	2.188
Female	0.110	0.000	0.313	0.000	0.000	0.080	0.000	0.271	0.000	0.000
Individualism (IDV)	0.724	0.890	0.246	0.480	0.910	0.910	0.910	0.000	0.910	0.910
High IDV	0.654	1.000	0.476	0.000	1.000	1.000	1.000	0.000	1.000	1.000
GGGI	0.714	0.718	0.040	0.691	0.740	0.724	0.720	0.016	0.704	0.740
GDP per capita	41.893	47.403	15.643	40.059	49.856	49.934	49.596	2.351	48.467	51.052
Ln(GDP per capita)	3.533	3.859	0.870	3.690	3.909	3.910	3.904	0.047	3.881	3.933
Foreign analyst	0.185	0.000	0.388	0.000	0.000	0.115	0.000	0.319	0.000	0.000
Forecast horizon	7.559	7.400	1.983	6.367	8.483	7.616	7.500	1.761	6.546	8.292
Forecast frequency	4.197	4.000	2.518	2.000	5.000	4.665	4.000	2.472	3.000	6.000
# firms followed	15.313	14.000	8.299	10.000	19.000	17.875	17.000	8.014	13.000	22.000
# industries followed	4.262	4.000	2.792	2.000	6.000	3.814	3.000	2.489	2.000	5.000
Firm experience	4.029	3.000	3.269	2.000	6.000	4.222	3.000	3.382	2.000	6.000
General experience	7.927	7.000	4.778	4.000	11.000	8.578	8.000	4.874	5.000	12.000
Brokerage size	105.481	43.000	118.575	18.000	173.000	106.813	47.000	119.367	19.000	175.000
Ln(Brokerage size)	3.902	3.761	1.328	2.890	5.153	3.914	3.850	1.345	2.944	5.165
N	610,847					263,758				

Table 4
Gender differences in performance under competition within each sample country

This table presents univariate comparisons of gender differences in performance under competition within each sample country (H_0: Female analysts' performance – male analysts' performance = 0). We use four different measures of forecast accuracy to capture analyst performance: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. Panel A compares firm-analyst-year performance between the genders using averages. We present the average gender difference in performance and conduct the t-test. Panel B compares firm-analyst-year performance between the genders using medians. We present the median gender difference in performance and conduct the Wilcoxon-test. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Mean differences between female and male analysts in performance within each sample country

	Mean difference between female and male analysts in			
Country	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (3)
Argentina	7.504**	8.266**	3.548	7.536
Australia	0.679***	0.678***	0.612***	0.561***
Austria	-0.540	-0.342	-0.671	-1.538
Belgium	-0.134	-0.763	0.223	-1.954
Brazil	-1.466***	-1.927***	-1.030**	-1.594
Canada	-0.946***	-1.346***	-0.739***	-1.255***
Chile	-3.006	-3.197	-1.834	-1.362
China	0.130	0.250***	-0.010	0.651***
Denmark	-2.558	-2.666	-2.067*	-2.699
Finland	-0.307	-0.794**	0.050	-0.986**
France	-0.520***	-0.577***	-0.491***	-0.548**
Germany	0.222	0.034	0.436**	-0.765
Greece	0.691	0.708	0.444	1.520
Hong Kong SAR, China	-0.151	-0.228*	-0.100	0.132
Hungary	-1.277	-0.927	-1.604	N/A
India	-0.282*	-0.353*	-0.203	-0.561***
Indonesia	0.253	0.480	-0.093	-0.016
Ireland	0.498	0.605	0.460	1.697
Israel	-1.419	-1.267	-1.524	-3.072
Italy	-0.198	-0.246	-0.059	-0.599
Japan	0.025	-0.066	0.134	0.502
Korea, Rep.	-1.348***	-1.679***	-0.894***	-0.836*
Malaysia	-0.090	-0.134	-0.059	-0.234
Mexico	-0.363	-0.706	-0.021	0.261
Netherlands	1.949***	2.272***	1.360***	-1.100
New Zealand	-0.038	0.186	-0.090	0.415
Norway	0.981	0.953	0.869	-0.049
Pakistan	-0.067	-0.467	0.251	6.360
Philippines	-0.001	0.127	-0.133	2.130**
Poland	0.389	0.687	-0.179	-0.453
Portugal	-0.813*	-1.070*	-0.642	1.223
Russian Federation	2.715***	3.263***	2.026***	3.270*
Singapore	0.263	0.438*	0.050	0.725**
Spain	0.833**	0.787**	0.661**	1.943**
Sweden	-0.596	-0.533	-0.343	-0.665
Switzerland	0.674	0.802	0.424	-0.429
Thailand	-0.260	-0.361	-0.259	0.607

Turkey	1.310**	1.137	1.117**	-2.209
United Arab Emirates	-0.059	-0.069	0.231	0.596
United Kingdom	0.010	-0.011	0.040	0.148
United States	0.031	0.041	0.040	0.008
Vietnam	-0.645	-0.756	-0.601	0.177

Panel B: Median differences between female and male analysts in performance within each sample country

	Median difference between female and male analysts in			
Country	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Argentina	4.887*	5.470	1.873	-4.985
Australia	0.175***	0.249***	0.088***	0.302***
Austria	-0.048	0.216	-0.125	-1.179
Belgium	-0.260	-0.323	-0.063	-0.308
Brazil	-0.174*	-0.241	-0.127	-0.420
Canada	-0.338***	-0.421***	-0.134***	-0.425***
Chile	0.093	-0.102	0.277	-0.326
China	0.001	0.011	0.001	0.107**
Denmark	-0.721***	-0.996***	-0.358***	-0.940***
Finland	-0.214**	-0.322***	0.018	-0.387**
France	-0.121***	-0.118***	-0.113***	-0.172***
Germany	-0.151***	-0.232***	-0.008	-0.283**
Greece	-0.048	-0.129	-0.158	0.595
Hong Kong SAR, China	-0.118***	-0.105***	-0.056***	-0.081**
Hungary	-1.032	-0.542	-0.813	-2.581***
India	-0.213***	-0.251***	-0.123***	-0.229
Indonesia	-0.150	-0.121	-0.114**	0.116
Ireland	0.336	0.247	0.326**	0.166
Israel	-0.358	-0.334	-0.205	-0.542***
Italy	-0.176***	-0.189***	-0.111***	-0.320
Japan	-0.039**	-0.061**	-0.002	-0.122***
Korea, Rep.	-0.515***	-0.619***	-0.313***	-0.838**
Malaysia	-0.111**	-0.118**	-0.073*	-0.122
Mexico	-0.207	-0.300	0.061	-0.318
Netherlands	-0.019	-0.062	0.067	-0.239
New Zealand	0.028	0.034	0.008	0.057
Norway	-0.375	-0.265	0.005	0.004
Pakistan	-0.341	-0.408	-0.106	7.585
Philippines	-0.092	-0.094	-0.045	-0.044
Poland	-0.288	-0.204	-0.172	-0.158
Portugal	-0.145	-0.178*	-0.057	0.441
Russian Federation	0.155*	0.171**	0.138*	0.352
Singapore	-0.095	-0.078	-0.077***	-0.012
Spain	0.006	-0.061	0.040	0.114
Sweden	-0.077	-0.120	-0.043	-0.142
Switzerland	0.057	0.059	0.059	-0.142
Thailand	-0.030	-0.090	-0.032	0.000*
Turkey	0.010	-0.227	0.025	-1.255
United Arab Emirates	0.396**	0.420**	0.610***	-0.422
United Kingdom	-0.059***	-0.053***	-0.026**	0.007***
United States	-0.020***	-0.033***	-0.005	-0.032
Vietnam	-0.074	-0.384	-0.055	0.057***

Table 5
Cross-country gender differences in performance under competition

This table examines cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. Panel A presents the regression results using the global sample. Panel B presents the results removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in performance under competition using the global sample

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.043**	0.040	0.051**	0.114***
	(0.021)	(0.025)	(0.024)	(0.038)
Female × High IDV	-0.059**	-0.089***	-0.030	-0.122***
	(0.026)	(0.030)	(0.029)	(0.041)
High IDV	-0.073***	-0.045	-0.058**	-0.061**
	(0.026)	(0.029)	(0.028)	(0.030)
GGGI	0.770**	0.882**	1.537***	0.891*
	(0.352)	(0.408)	(0.396)	(0.461)
Ln(GDP per capita)	-0.012	-0.008	-0.011	-0.060***
	(0.017)	(0.021)	(0.018)	(0.022)
Foreign analyst	0.054***	0.005	0.076***	0.020
	(0.019)	(0.022)	(0.019)	(0.021)
Forecast horizon	0.156***	0.081***	0.215***	0.011***
	(0.003)	(0.003)	(0.003)	(0.003)
Forecast frequency	-0.001	0.016***	-0.028***	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)
# firms followed	0.000	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.002	-0.005*	0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Firm experience	-0.003**	-0.004**	-0.003*	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.003***	-0.001	-0.005***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.008***	-0.003	-0.012***	-0.011***
	(0.003)	(0.004)	(0.003)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	1.25	8.6	1.59	0.22
P-value	0.26	0.00	0.21	0.64
Obs.	610,847	610,847	610,847	318,622
adj-R^2	0.910	0.915	0.782	0.943

Panel B: Cross-country gender differences in performance under competition excluding U.S. analysts

	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Female	0.043**	0.038	0.054**	0.106***
	(0.021)	(0.026)	(0.024)	(0.039)
Female × High IDV	-0.086**	-0.139***	-0.051	-0.140***
	(0.039)	(0.044)	(0.041)	(0.052)
High IDV	-0.034	-0.018	0.021	-0.028
	(0.033)	(0.036)	(0.035)	(0.041)
GGGI	0.453	0.793*	0.884**	0.976**
	(0.375)	(0.426)	(0.422)	(0.486)
Ln(GDP per capita)	-0.012	-0.007	0.000	-0.050*
	(0.019)	(0.024)	(0.021)	(0.026)
Foreign analyst	0.074***	0.010	0.092***	0.036
	(0.028)	(0.032)	(0.027)	(0.034)
Forecast horizon	0.159***	0.096***	0.210***	0.015***
	(0.004)	(0.004)	(0.005)	(0.005)
Forecast frequency	0.002	0.022***	-0.034***	-0.001
	(0.003)	(0.004)	(0.004)	(0.005)
# firms followed	-0.001	0.000	-0.002*	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)
# industries followed	-0.004	-0.007*	0.004	-0.006*
	(0.003)	(0.004)	(0.004)	(0.004)
Firm experience	-0.005*	-0.004	-0.006**	-0.001
	(0.002)	(0.003)	(0.003)	(0.003)
General experience	-0.002	-0.000	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Ln(Brokerage size)	-0.019***	-0.003	-0.039***	-0.025***
	(0.005)	(0.006)	(0.006)	(0.007)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	1.77	8.36	0.01	1.00
P-value	0.18	0.00	0.93	0.32
Obs.	347,089	347,089	347,089	139,469
adj-R^2	0.897	0.902	0.772	0.934

Table 6
Difference-in-differences analysis of analyst, brokerage, and firm characteristics

This table presents difference-in-differences analysis to help explain female analysts' performance. We sort analyst-year observations into the high IDV (top quartile) and low IDV (the remainder) subsamples. Within each subsample, we compare the female and male differences in their performance, analyst, brokerage, and firm characteristics. We further conduct difference-in-differences (DID) analysis of the female and male difference between the high IDV and low IDV subsamples. Columns (5) and (6) report the female and male differences in the high IDV subsample. Columns (11) and (12) report the female and male differences in the low IDV subsample. We conduct both the t-test and Wilcoxon test for the gender differences. We report the difference-in-differences analysis comparing columns (5) and (11) in column (13). Panel A presents the analysis using the global sample. Panel B presents the analysis removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Difference-in-differences analysis between the genders in the high versus low IDV countries

	High IDV						Low IDV						
	Female		Male		Difference between female and male analysts in		Female		Male		Difference between female and male analysts in		DID test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean
Adjusted forecast error2yr	-0.005	0.000	-0.003	0.000	-0.002***	0.000	-0.002	0.000	-0.003	-0.001	0.001	0.000	-0.003***
Adjusted forecast error	-0.003	0.000	-0.002	0.000	-0.001	0.000	0.000	0.000	-0.001	0.000	0.001	0.000	-0.002**
# firms followed	9.920	9.000	12.115	11.000	-2.194***	-2.000***	8.976	8.000	10.046	9.000	-1.071***	-1.000***	-1.124***
# industries followed	3.261	3.000	3.572	3.000	-0.311***	0.000***	3.870	3.000	3.934	3.000	-0.064*	0.000***	-0.247***
Firm experience	3.208	2.500	3.598	3.000	-0.389***	-0.500***	2.871	2.091	3.208	2.500	-0.337***	-0.409***	-0.052
General experience	5.977	5.000	7.103	6.000	-1.126***	-1.000***	5.266	4.000	6.046	5.000	-0.781***	-1.000***	-0.345***
ln(Brokerage size)	4.133	4.174	3.863	3.761	0.270***	0.413***	3.752	3.526	3.660	3.434	0.093***	0.092***	0.178***
Top10 brokerage	0.367	0.000	0.254	0.000	0.113***	0.000***	0.253	0.000	0.201	0.000	0.052***	0.000***	0.061***
Top20 brokerage	0.439	0.000	0.351	0.000	0.088***	0.000***	0.331	0.000	0.283	0.000	0.047***	0.000***	0.041***
Ln(Market capitalization)	8.436	8.624	8.438	8.619	-0.001	0.005	8.293	8.390	8.365	8.503	-0.072***	-0.113***	0.071**
Ln(Total assets)	8.632	8.708	8.644	8.711	-0.012	-0.003	8.535	8.442	8.735	8.762	-0.200***	-0.320***	0.188***
Tobin's Q	1.663	1.363	1.647	1.388	0.015	-0.025	1.624	1.263	1.497	1.152	0.127***	0.112***	-0.112***
Net income	0.030	0.043	0.020	0.037	0.010***	0.006***	0.060	0.054	0.051	0.048	0.009***	0.006***	0.001
Sales growth	0.112	0.072	0.130	0.084	-0.018***	-0.011***	0.125	0.094	0.112	0.083	0.013***	0.011***	-0.031***

Panel B: Difference-in-differences analysis between the genders in the high versus low IDV countries excluding U.S. analysts

	High IDV						Low IDV						
	Female		Male		Difference between female and male analysts in		Female		Male		Difference between female and male analysts in		DID test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean
Adjusted forecast error2yr	-0.007	-0.001	-0.005	-0.001	-0.002	0.000	-0.002	0.000	-0.003	-0.001	0.001	0.000	-0.002*
Adjusted forecast error	-0.004	0.000	-0.003	-0.001	-0.001	0.000	0.000	0.000	-0.001	0.000	0.001	0.000	-0.002*
# firms followed	8.464	8.000	9.826	9.000	-1.362***	-1.000***	8.976	8.000	10.046	9.000	-1.071***	-1.000***	-0.292*
# industries followed	3.486	3.000	3.731	3.000	-0.245***	0.000***	3.870	3.000	3.934	3.000	-0.064*	0.000***	-0.181***
Firm experience	3.259	2.429	3.585	3.000	-0.325***	-0.571***	2.871	2.091	3.208	2.500	-0.337***	-0.409***	0.012
General experience	5.956	5.000	6.981	6.000	-1.026***	-1.000***	5.266	4.000	6.046	5.000	-0.781***	-1.000***	-0.245**
ln(Brokerage size)	4.167	4.290	3.967	3.892	0.200***	0.399***	3.752	3.526	3.660	3.434	0.093***	0.092***	0.107***
Top10 brokerage	0.361	0.000	0.276	0.000	0.085***	0.000***	0.253	0.000	0.201	0.000	0.052***	0.000***	0.033***
Top20 brokerage	0.462	0.000	0.402	0.000	0.060***	0.000***	0.331	0.000	0.283	0.000	0.047***	0.000***	0.012
Ln(Market capitalization)	8.359	8.598	8.327	8.475	0.033	0.123	8.293	8.390	8.365	8.503	-0.072***	-0.113***	0.105***
Ln(Total assets)	8.682	8.727	8.680	8.672	0.003	0.056	8.535	8.442	8.735	8.762	-0.200***	-0.320***	0.203***
Tobin's Q	1.447	1.167	1.404	1.180	0.043**	-0.013	1.624	1.263	1.497	1.152	0.127***	0.112***	-0.084***
Net income	0.038	0.043	0.033	0.040	0.006***	0.003***	0.060	0.054	0.051	0.048	0.009***	0.006***	-0.003**
Sales growth	0.094	0.058	0.118	0.065	-0.023***	-0.007***	0.125	0.094	0.112	0.083	0.013***	0.011***	-0.037***

Table 7
Cross-country gender differences in analysts' other output under competition

This table examines cross-country gender differences in analysts' other output under competition using OLS regression with firm times year fixed effects. We use three analyst output measures as the dependent variables: *Deviation from consensus, # alternative forecasts,* and *Forecast frequency*. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. Panel A presents the regression results using the global sample. Panel B presents the results removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in analysts' other output under competition using the global sample

	Deviation from consensus	Ln(# alternative forecasts)	Forecast frequency
	(1)	(2)	(3)
Female	-0.024	-0.009***	0.051***
	(0.015)	(0.003)	(0.014)
Female × High IDV	0.010	0.031***	0.044**
	(0.017)	(0.004)	(0.020)
Forecast frequency	-0.001	0.010***	
	(0.001)	(0.000)	
High IDV	-0.071***	-0.158***	0.229***
	(0.016)	(0.003)	(0.018)
GGGI	0.531**	-0.252***	3.094***
	(0.230)	(0.052)	(0.306)
Ln(GDP per capita)	0.011	0.050***	0.154***
	(0.011)	(0.003)	(0.011)
Foreign analyst	-0.006	-0.091***	-0.532***
	(0.011)	(0.003)	(0.015)
Forecast horizon	0.005***	-0.033***	-0.007***
	(0.002)	(0.000)	(0.002)
# firms followed	-0.001**	-0.002***	0.016***
	(0.000)	(0.000)	(0.001)
# industries followed	-0.002	-0.008***	-0.042***
	(0.001)	(0.000)	(0.002)
Firm experience	0.001	-0.000	0.118***
	(0.001)	(0.000)	(0.001)
General experience	0.000	0.006***	-0.015***
	(0.001)	(0.000)	(0.001)
Ln(Brokerage size)	-0.006***	0.086***	0.213***
	(0.002)	(0.001)	(0.003)
Firm × Year Fixed Effects	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0			
F value	2.19	59.13	50.20
P-value	0.14	0.00	0.00
Obs.	577,270	610,847	610,847
adj-R^2	0.789	0.369	0.350

Panel B: Cross-country gender differences in analysts' other output under competition excluding U.S. analysts

	Deviation from consensus	Ln(# alternative forecasts)	Forecast frequency
	(1)	(2)	(3)
Female	-0.023	-0.006*	0.054***
	(0.015)	(0.003)	(0.015)
Female × High IDV	0.022	0.006	0.068**
	(0.025)	(0.005)	(0.028)
Forecast frequency	0.003*	0.013***	
	(0.002)	(0.000)	
High IDV	-0.047**	-0.073***	0.252***
	(0.021)	(0.004)	(0.022)
GGGI	0.215	-0.992***	3.851***
	(0.256)	(0.053)	(0.338)
Ln(GDP per capita)	0.014	0.071***	0.196***
	(0.013)	(0.003)	(0.013)
Foreign analyst	0.000	-0.096***	-0.591***
	(0.016)	(0.003)	(0.018)
Forecast horizon	-0.001	-0.036***	-0.003
	(0.003)	(0.001)	(0.002)
# firms followed	-0.001*	-0.003***	0.018***
	(0.001)	(0.000)	(0.001)
# industries followed	-0.002	-0.004***	-0.032***
	(0.002)	(0.001)	(0.003)
Firm experience	-0.000	0.000	0.126***
	(0.002)	(0.000)	(0.002)
General experience	0.003**	0.007***	-0.011***
	(0.001)	(0.000)	(0.001)
Ln(Brokerage size)	-0.024***	0.058***	0.236***
	(0.004)	(0.001)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0			
F value	0.00	0.04	27.06
P-value	0.96	0.85	0.00
Obs.	325,719	347,089	347,089
adj-R^2	0.779	0.332	0.309

Table 8
Difference-in-differences analysis of analyst turnover-to-performance sensitivity

This table presents difference-in-differences analysis to help explain female analysts' performance. We compare the female and male differences in analyst turnover-to-performance sensitivity in the high (low) IDV subsample. The indicator variable, *Turnover*, takes the value of one for the year when it is the last year that an analyst makes her last forecasts. We use two relative performance measures of an analyst in year *t*: the average of her performance in years *t* and *t-1* – *Adjusted forecast error2yr*, and adjusted forecast error in year *t* – *Adjust forecast error*. Each year, we sort the sample of analysts in a country into performance quartiles and focus on the bottom quartile. For the sample of analysts (sorted either by gender or by her country's individualism score), we compute the turnover rate in year *t+1* based on the information that she is no longer working as an analyst. We report the gender difference in turnover rates in column (5) for the high IDV subsample and that in column (10) for the low IDV subsample, and the difference-in-differences test in column (11). Panel A presents the analysis using the global sample. Panel B presents the analysis excluding U.S. analysts. Definitions of the variables are provided in Appendix B. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Difference-in-differences analysis of analyst turnover-to-performance sensitivity using the global sample

	High IDV					Low IDV					
	Female		Male		Difference between female and male analysts in	Female		Male		Difference between female and male analysts in	DID test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Using adjusted forecast error2yr	Obs.	Mean	Obs.	Mean	Mean	Obs.	Mean	Obs.	Mean	Mean	Mean
Bottom quartile forecast performance	1,184	0.104	10,786	0.071	0.033***	1,268	0.121	6,412	0.122	-0.001	0.035***
Using adjust forecast error											
Bottom quartile forecast performance	1,412	0.100	11,996	0.071	0.030***	1,490	0.130	7,414	0.126	0.004	0.026**

Panel B: Difference-in-differences analysis of analyst turnover-to-performance sensitivity excluding U.S. analysts

	High IDV					Low IDV					
	Female		Male		Difference between female and male analysts in	Female		Male		Difference between female and male analysts in	DID test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Using adjusted forecast error2yr	Obs.	Mean	Obs.	Mean	Mean	Obs.	Mean	Obs.	Mean	Mean	Mean
Bottom quartile forecast performance	579	0.159	4,769	0.100	0.059***	1,268	0.121	6,412	0.122	-0.001	0.062***
Using adjust forecast error											
Bottom quartile forecast performance	6,76	0.152	5,288	0.100	0.052***	1,490	0.130	7,414	0.126	0.004	0.048***

Table 9
Cross-country gender differences in performance under competition: The role of information transparency

This table examines the role of country-level information transparency in the cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error*, *First forecast error*, *Last forecast error*, and *Same week forecast error*. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. *High transparency* is an indicator variable that takes the value of one if a country is in the top quartile of information transparency (i.e., in the bottom quartile of the size of accruals) in a year, and zero otherwise. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Female	0.018	-0.005	0.035**	0.049**
	(0.016)	(0.019)	(0.018)	(0.021)
Female × High Transparency	-0.031	-0.013	-0.013	-0.066**
	(0.023)	(0.028)	(0.028)	(0.030)
GGGI	0.478	0.656	1.149***	1.002**
	(0.371)	(0.427)	(0.409)	(0.477)
Ln(GDP per capita)	-0.007	-0.007	-0.006	-0.059***
	(0.017)	(0.021)	(0.017)	(0.021)
Foreign analyst	0.035*	-0.004	0.060***	0.014
	(0.018)	(0.021)	(0.020)	(0.020)
Forecast horizon	0.158***	0.082***	0.218***	0.011***
	(0.003)	(0.003)	(0.004)	(0.003)
Forecast frequency	-0.001	0.016***	-0.029***	-0.002
	(0.002)	(0.003)	(0.002)	(0.003)
# firms followed	-0.000	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.002	-0.004	0.002	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Firm experience	-0.004***	-0.003*	-0.003**	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.003***	-0.001	-0.005***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.009***	-0.003	-0.012***	-0.010***
	(0.003)	(0.004)	(0.004)	(0.004)
Tests if Female + Female × High Transparency = 0				
F value	0.53	0.75	1.10	0.63
P-value	0.47	0.39	0.29	0.43
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Obs.	590,277	590,277	590,277	310,398
adj-R^2	0.912	0.915	0.784	0.944

Table 10
Gender differences in performance under competition using subsamples

This table examines gender differences in performance under competition using OLS regression focusing on different subsamples. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. Panel A presents the regression results limiting the sample to analysts based in the U.S. Panel B presents the results limiting the sample to analysts based in Nordic countries—Denmark, Finland, Norway, and Sweden. Panel C presents the results limiting the sample to analysts based in Communist countries/regions—China, Hong Kong, and Vietnam. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Gender differences in performance under competition focusing on U.S. analysts

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	-0.005	-0.008	0.021	0.003
	(0.013)	(0.017)	(0.018)	(0.018)
Forecast horizon	0.152***	0.057***	0.224***	0.009***
	(0.004)	(0.003)	(0.005)	(0.003)
Forecast frequency	-0.003	0.011***	-0.018***	-0.000
	(0.002)	(0.003)	(0.003)	(0.002)
# firms followed	0.000	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	0.004	0.001	-0.000	0.005*
	(0.003)	(0.003)	(0.003)	(0.003)
Firm experience	-0.002*	-0.004**	-0.001	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.003**	-0.000	-0.007***	-0.002
	(0.001)	(0.001)	(0.002)	(0.001)
Ln(Brokerage size)	0.003	-0.004	0.013***	-0.004
	(0.003)	(0.004)	(0.004)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Obs.	263,758	263,758	263,758	179,153
adj-R^2	0.937	0.939	0.800	0.950

Panel B: Gender differences in performance under competition focusing on analysts based in Nordic countries

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.066	0.138	0.054	0.043
	(0.105)	(0.143)	(0.145)	(0.197)
GGGI	-4.264	-5.187	0.500	-2.290
	(3.111)	(3.535)	(4.072)	(4.912)
Ln(GDP per capita)	-0.409	-0.207	-0.178	-0.256
	(0.332)	(0.265)	(0.372)	(0.335)
Foreign analyst	-0.030	-0.202**	0.022	-0.184*
	(0.089)	(0.081)	(0.113)	(0.111)
Forecast horizon	0.201***	0.080***	0.289***	-0.006
	(0.021)	(0.022)	(0.025)	(0.026)
Forecast frequency	0.009	0.033**	-0.012	0.025**
	(0.010)	(0.014)	(0.013)	(0.013)
# firms followed	-0.016*	-0.007	-0.026**	0.008

	(0.009)	(0.012)	(0.011)	(0.014)
# industries followed	-0.031*	-0.004	-0.031*	-0.020
	(0.017)	(0.022)	(0.019)	(0.018)
Firm experience	-0.029**	-0.033**	-0.030**	-0.013
	(0.012)	(0.016)	(0.013)	(0.013)
General experience	0.016*	0.016	0.024**	-0.002
	(0.009)	(0.012)	(0.010)	(0.010)
Ln(Brokerage size)	-0.020	0.013	-0.059	-0.006
	(0.036)	(0.055)	(0.045)	(0.045)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Obs.	16,473	16,473	16,473	9,581
adj-R^2	0.899	0.881	0.761	0.922

Panel C: Gender differences in performance under competition focusing on analysts based in Communist countries

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.030	0.011	0.040	0.161**
	(0.032)	(0.036)	(0.040)	(0.068)
Ln(GDP per capita)	0.045	0.011	0.100***	0.006
	(0.027)	(0.036)	(0.033)	(0.040)
Foreign analyst	-0.078	-0.028	-0.102*	-0.087
	(0.052)	(0.067)	(0.059)	(0.079)
Forecast horizon	0.150***	0.087***	0.202***	0.014
	(0.007)	(0.006)	(0.010)	(0.013)
Forecast frequency	-0.014	0.011	-0.042***	-0.011
	(0.009)	(0.010)	(0.011)	(0.019)
# firms followed	-0.006***	-0.002	-0.008***	0.009**
	(0.002)	(0.002)	(0.002)	(0.004)
# industries followed	0.013*	-0.002	0.027***	-0.035***
	(0.007)	(0.007)	(0.008)	(0.012)
Firm experience	-0.020**	-0.009	-0.026**	-0.029*
	(0.009)	(0.009)	(0.011)	(0.017)
General experience	0.005	0.008	0.012**	0.020**
	(0.005)	(0.006)	(0.006)	(0.010)
Ln(Brokerage size)	-0.013	-0.004	-0.024	-0.035
	(0.013)	(0.014)	(0.016)	(0.021)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Obs.	36,861	36,861	36,861	13,667
adj-R^2	0.875	0.900	0.724	0.913

Table 11
Difference-in-differences analysis using subsamples

This table presents difference-in-differences analysis to help explain female analysts' performance in different subsamples. We compare the female and male differences in performance, analyst, brokerage, firm characteristics, and turnover-to-performance sensitivity. The indicator variable, *Turnover*, takes the value of one for the year when it is the last year that an analyst makes her last forecasts. We use two relative performance measures of an analyst in year *t* to mitigate the measurement error. The first one is the average of her performance in years *t* and *t-1 – Adjusted forecast error2yr*. The second one is adjusted forecast error in year *t – Adjust forecast error*. Then in each year, we sort the sample of analysts into the quartile performance groups. Finally, we compute the turnover rate in year *t+1* based on the information that she is no longer working as an analyst. Panels A and D present the analysis focusing on analysts based in the U.S. Panels B and E present the analysis focusing on analysts based in Nordic countries—Denmark, Finland, Norway, and Sweden. Panels C and F present the analysis focusing on analysts based in Communist countries/regions—China, Hong Kong, and Vietnam. Definitions of the variables are provided in Appendix B. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Difference-in-differences analysis focusing on analysts based in the U.S.

	Female		Male		Difference between female and male analysts in	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Median	Mean	Median	Mean	Median
Adjusted forecast error2yr	-0.003	0.000	-0.001	0.000	-0.002***	0.000
Adjusted forecast error	-0.001	0.000	0.000	0.000	0.000	0.000
# firms followed	11.353	11.000	13.906	13.000	-2.554***	-2.000***
# industries followed	3.040	2.000	3.448	3.000	-0.408***	-1.000***
Firm experience	3.158	2.500	3.608	3.000	-0.450***	-0.500***
General experience	5.998	5.000	7.198	6.000	-1.200***	-1.000***
ln(Brokerage size)	4.101	4.094	3.782	3.714	0.319***	0.381***
Top10 brokerage	0.373	0.000	0.237	0.000	0.136***	0.000***
Top20 brokerage	0.416	0.000	0.310	0.000	0.106***	0.000***
Ln(Market capitalization)	8.512	8.653	8.525	8.725	-0.012	-0.072
Ln(Total assets)	8.582	8.697	8.616	8.740	-0.034	-0.043
Tobin's Q	1.874	1.577	1.837	1.572	0.037	0.005
Net income	0.022	0.042	0.010	0.034	0.012***	0.008***
Sales growth	0.130	0.088	0.139	0.098	-0.009*	-0.010***

Panel B: Difference-in-differences analysis focusing on analysts based in Nordic countries

	Female		Male		Difference between female and male analysts in	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Median	Mean	Median	Mean	Median
Adjusted forecast error2yr	-0.003	0.000	-0.005	-0.001	0.002	0.001
Adjusted forecast error	0.000	0.000	-0.003	0.000	0.002	0.001
# firms followed	6.422	6.000	8.022	7.000	-1.600***	-1.000***
# industries followed	3.412	3.000	3.937	3.000	-0.525***	0.000***
Firm experience	2.779	2.000	3.385	2.667	-0.606***	-0.667***
General experience	4.392	3.000	6.092	5.000	-1.700***	-2.000***

ln(Brokerage size)	3.112	3.401	3.309	3.584	-0.196***	-0.182***
Top10 brokerage	0.000	0.000	0.009	0.000	-0.009	0.000
Top20 brokerage	0.000	0.000	0.038	0.000	-0.038***	0.000***
Ln(Market capitalization)	7.844	7.685	7.823	7.917	0.022	-0.232
Ln(Total assets)	7.898	7.845	8.138	8.100	-0.239**	-0.255**
Tobin's Q	1.683	1.404	1.477	1.221	0.205***	0.183***
Net income	0.054	0.058	0.036	0.046	0.018***	0.011***
Sales growth	0.087	0.055	0.107	0.072	-0.020	-0.017*

Panel C: Difference-in-differences analysis focusing on analysts based in Communist countries

	Female		Male		Difference between female and male analysts in	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Median	Mean	Median	Mean	Median
Adjusted forecast error2yr	-0.003	-0.001	-0.002	-0.001	-0.001	0.000
Adjusted forecast error	-0.001	0.000	-0.001	0.000	0.000	0.000
# firms followed	9.450	8.000	10.556	8.000	-1.106***	0.000***
# industries followed	3.725	3.000	3.856	3.000	-0.131*	0.000***
Firm experience	2.354	1.857	2.266	1.833	0.088*	0.024
General experience	4.403	3.000	4.404	3.000	-0.002	0.000
ln(Brokerage size)	4.157	4.078	3.990	3.912	0.167***	0.166***
Top10 brokerage	0.299	0.000	0.215	0.000	0.085***	0.000***
Top20 brokerage	0.396	0.000	0.317	0.000	0.080***	0.000***
Ln(Market capitalization)	8.495	8.493	8.484	8.455	0.011	0.038
Ln(Total assets)	8.588	8.355	8.604	8.475	-0.016	-0.120
Tobin's Q	1.743	1.421	1.783	1.392	-0.040	0.029
Net income	0.063	0.057	0.061	0.056	0.002	0.001
Sales growth	0.194	0.149	0.193	0.155	0.001	-0.006

Panel D: Gender differences in analyst turnover-to-performance sensitivity focusing on analysts based in the U.S.

	Female		Male		Difference between female and male analysts in
	(1)	(2)	(3)	(4)	(5)
Using adjusted forecast error2yr	Obs.	Mean	Obs.	Mean	Mean
Bottom quartile forecast performance	605	0.051	6,017	0.048	0.003
Using adjust forecast error					
Bottom quartile forecast performance	736	0.052	67,08	0.047	0.005

Panel E: Gender differences in analyst turnover-to-performance sensitivity focusing on analysts based in Nordic countries

	Female		Male		Difference between female and male analysts in
	(1)	(2)	(3)	(4)	(5)
Using adjusted forecast error2yr	Obs.	Mean	Obs.	Mean	Mean

Bottom quartile forecast performance	39	0.154	629	0.108	0.045
Using adjust forecast error					
Bottom quartile forecast performance	47	0.149	738	0.108	0.041

Panel F: Gender differences in analyst turnover-to-performance sensitivity focusing on analysts based in Communist countries

	Female		Male		Difference between female and male analysts in
	(1)	(2)	(3)	(4)	(5)
Using adjusted forecast error2yr	Obs.	Mean	Obs.	Mean	Mean
Bottom quartile forecast performance	313	1066	0.112	0.144	-0.033
Using adjust forecast error					
Bottom quartile forecast performance	394	1,337	0.099	0.141	-0.042**

Internet Appendix

Table IA1
Correlation matrix

This table presents the correlations matrix for our sample over the period 2003–2019. Panel A provides the correlation matrix of country-level variables. The sample consists of 630 country-year observations. Panel B provides the correlation matrix of analyst-level variables. The sample consists of 610,847 firm-analyst-year observations. Definitions of the variables are provided in Appendix B. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: The correlation matrix of country-level variables

		1	2	3	4	5	6	7	8	9	10	11
1	Female ratio	1.000										
2	High IDV	-0.236***	1.000									
3	GGGI	-0.219***	0.261***	1.000								
4	Ln(GDP per capita)	-0.374***	0.364***	0.479***	1.000							
5	Market cap/GDP	0.102**	-0.051	-0.032	0.177***	1.000						
6	Sales growth	-0.072*	0.028	-0.081**	-0.183***	0.077*	1.000					
7	Total assets	-0.047	0.026	0.238***	0.399***	0.011	-0.321***	1.000				
8	Ln(Total assets)	-0.095**	0.036	0.234***	0.495***	0.055	-0.324***	0.892***	1.000			
9	Tobin's Q	-0.179***	0.129***	0.243***	0.010	0.071*	0.373***	-0.154***	-0.077*	1.000		
10	Net income	0.338***	-0.396***	-0.475***	-0.583***	0.068*	0.095**	-0.117***	-0.218***	-0.078**	1.000	
11	Institutional ownership	-0.297***	0.231***	0.326***	0.329***	0.009	0.007	0.216***	0.288***	0.303***	-0.448***	1.000

Panel B: The correlation matrix of analyst-level variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Average forecast error	1.000																
2	First forecast error	0.950***	1.000															
3	Last forecast error	0.894***	0.794***	1.000														
4	Same day forecast error	0.935***	0.995***	0.758***	1.000													
5	Female	0.001	-0.001	0.005***	0.000	1.000												
6	High IDV	-0.076***	-0.064***	-0.087***	-0.058***	-0.087***	1.000											
7	GGGI	-0.065***	-0.061***	-0.062***	-0.062***	-0.083***	0.507***	1.000										
8	Ln(GDP per capita)	-0.027***	-0.016***	-0.045***	-0.017***	-0.093***	0.528***	0.498***	1.000									
9	Foreign analyst	0.014***	0.008***	0.023***	0.012***	0.043***	0.026***	0.141***	0.099***	1.000								
10	Forecast horizon	0.047***	0.027***	0.079***	0.031***	0.004***	0.002	-0.003***	-0.030***	-0.001	1.000							
11	Forecast frequency	0.002*	0.019***	-0.019***	0.037***	-0.039***	0.237***	0.202***	0.189***	-0.001	-0.054***	1.000						
12	# firms followed	-0.026***	-0.021***	-0.033***	-0.015***	-0.097***	0.108***	-0.038***	0.112***	-0.115***	0.024***	0.047***	1.000					
13	# industries followed	0.003***	0.002*	0.006***	0.003	-0.006***	-0.145***	-0.067***	-0.062***	-0.100***	0.045***	-0.109***	0.403***	1.000				
14	Firm experience	-0.046***	-0.042***	-0.051***	-0.043***	-0.041***	0.062***	0.100***	0.116***	-0.071***	-0.050***	0.209***	0.130***	0.026***	1.000			
15	General experience	-0.045***	-0.041***	-0.051***	-0.039***	-0.069***	0.125***	0.168***	0.179***	-0.056***	-0.025***	0.121***	0.269***	0.108***	0.608***	1.000		
16	Brokerage size	-0.013***	-0.013***	-0.014***	-0.026***	0.051***	0.042***	-0.013***	0.067***	0.204***	-0.046***	0.102***	0.013***	-0.117***	0.030***	0.025***	1.000	
17	Ln(Brokerage size)	-0.021***	-0.020***	-0.024***	-0.030***	0.035***	0.055***	-0.003***	0.080***	0.203***	-0.040***	0.116***	0.013***	-0.152***	0.050***	0.047***	0.891***	1.000

Table IA2
Cross-country gender differences in turnover-to-performance sensitivity

This table examines cross-country gender differences in analysts' demotion using OLS regressions at the analyst-year level. *Demotion* is an indicator variable that takes the value one if an analyst covers fewer prestigious stocks in a year compared to the year before, and zero otherwise. Prestigious stocks are those stocks in the top tenth percentile by market capitalization in a country-year among all firms covered by both Worldscope and I/B/E/S. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. We use two relative performance measures of an analyst in year *t* to mitigate the measurement error. The first one is the average of her performance in years *t* and *t-1 – Adjusted forecast error2yr.* The second one is adjusted forecast error in year t - *adjust forecast error*. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the analyst level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	High IDV	Low IDV	High IDV	Low IDV
	Demotion	Demotion	Demotion	Demotion
	(1)	(2)	(3)	(4)
Female	0.005	-0.014**	0.005	-0.014**
	(0.006)	(0.006)	(0.006)	(0.006)
Female × Adjusted forecast error2yr	-0.003	0.049		
	(0.038)	(0.044)		
Female × Adjusted forecast error			0.294**	0.139
			(0.121)	(0.118)
Adjusted forecast error2yr	0.146	0.083		
	(0.117)	(0.111)		
Adjusted forecast error			-0.021	0.050
			(0.043)	(0.051)
GGGI	-0.283***	-0.222***	-0.279***	-0.214***
	(0.093)	(0.051)	(0.093)	(0.051)
Ln(GDP per capita)	-0.046***	-0.000	-0.045***	-0.000
	(0.017)	(0.002)	(0.017)	(0.002)
Foreign analyst	0.031***	0.034***	0.031***	0.034***
	(0.004)	(0.006)	(0.004)	(0.006)
Forecast horizon	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Forecast frequency	0.003***	0.000	0.003***	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# firms followed	0.007***	0.007***	0.007***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)
# industries followed	-0.008***	-0.009***	-0.008***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)
Firm experience	0.008***	0.010***	0.008***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
General experience	0.005***	0.004***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	0.011***	0.001	0.011***	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Obs.	43,335	26,765	43,443	26,912
adj-R2	0.036	0.030	0.037	0.030

Table IA3
Cross-country gender differences in performance under competition: controlling other Hofstede's national cultural values

This table examines cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. *Female* is an indicator variable that takes the value of one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. *High MAS* is an indicator variable that takes the value of one if a country is in the top quartile of masculinity in a year, and zero otherwise. *High PDI* is an indicator variable that takes the value of one if a country is in the top quartile of power distance in a year, and zero otherwise. *High UAI* is an indicator variable that takes the value of one if a country is in the top quartile of uncertainty avoidance in a year, and zero otherwise. Panel A presents the regression results using the global sample. Panel B presents the results removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in performance under competition using the global sample

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.061*	0.047	0.069*	0.125**
	(0.033)	(0.040)	(0.037)	(0.057)
Female × High IDV	-0.071**	-0.086**	-0.049	-0.129**
	(0.034)	(0.041)	(0.039)	(0.058)
Female × High MAS	-0.068*	-0.069	-0.026	-0.093
	(0.036)	(0.043)	(0.036)	(0.063)
Female × High PDI	-0.056	0.002	-0.076	-0.037
	(0.044)	(0.055)	(0.050)	(0.075)
Female × High UAI	0.094**	0.062	0.067	0.212*
	(0.044)	(0.057)	(0.052)	(0.114)
High IDV	-0.051*	-0.028	-0.039	-0.053*
	(0.026)	(0.029)	(0.029)	(0.032)
High MAS	0.006	0.007	0.016	-0.008
	(0.023)	(0.028)	(0.026)	(0.028)
High PDI	0.095**	-0.013	0.068	-0.035
	(0.045)	(0.053)	(0.046)	(0.091)
High UAI	0.149***	0.165***	0.124***	0.136***
	(0.035)	(0.044)	(0.041)	(0.046)
GGGI	1.377***	1.493***	1.978***	1.517***
	(0.377)	(0.442)	(0.415)	(0.509)
Ln(GDP per capita)	-0.003	-0.018	-0.003	-0.086***
	(0.021)	(0.026)	(0.022)	(0.033)
Foreign analyst	0.060***	0.013	0.079***	0.029
	(0.020)	(0.023)	(0.020)	(0.023)
Forecast horizon	0.156***	0.081***	0.215***	0.011***
	(0.003)	(0.003)	(0.003)	(0.003)
Forecast frequency	-0.001	0.016***	-0.028***	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)
# firms followed	0.000	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.003	-0.005**	0.001	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Firm experience	-0.003**	-0.004**	-0.003*	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)

General experience	-0.003***	-0.001	-0.005***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.006**	-0.001	-0.011***	-0.010***
	(0.003)	(0.004)	(0.003)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	0.55	6.46	1.52	0.08
P-value	0.46	0.01	0.22	0.78
Obs.	610,847	610,847	610,847	318,622
adj-R^2	0.910	0.915	0.782	0.943

Panel B: Cross-country gender differences in performance under competition excluding analysts based in the U.S.

	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Female	0.056*	0.028	0.068*	0.104*
	(0.034)	(0.041)	(0.039)	(0.060)
Female × High IDV	-0.087**	-0.122**	-0.072	-0.137**
	(0.040)	(0.048)	(0.046)	(0.065)
Female × High MAS	-0.055	-0.041	-0.013	-0.077
	(0.036)	(0.044)	(0.040)	(0.068)
Female × High PDI	-0.053	0.010	-0.081	-0.023
	(0.044)	(0.056)	(0.051)	(0.077)
Female × High UAI	0.091**	0.071	0.068	0.210*
	(0.045)	(0.058)	(0.054)	(0.119)
High IDV	-0.013	-0.008	0.035	-0.028
	(0.033)	(0.036)	(0.036)	(0.039)
High MAS	-0.009	-0.005	-0.001	0.026
	(0.029)	(0.034)	(0.031)	(0.041)
High PDI	0.116**	-0.017	0.073	-0.069
	(0.046)	(0.053)	(0.047)	(0.098)
High UAI	0.125***	0.149***	0.086**	0.157***
	(0.038)	(0.048)	(0.043)	(0.056)
GGGI	1.118***	1.477***	1.310***	1.817***
	(0.401)	(0.465)	(0.442)	(0.584)
Ln(GDP per capita)	0.002	-0.018	0.007	-0.079**
	(0.023)	(0.028)	(0.024)	(0.037)
Foreign analyst	0.079***	0.018	0.095***	0.043
	(0.028)	(0.032)	(0.027)	(0.036)
Forecast horizon	0.159***	0.096***	0.210***	0.014***
	(0.004)	(0.004)	(0.005)	(0.005)
Forecast frequency	0.002	0.022***	-0.035***	-0.001
	(0.003)	(0.004)	(0.004)	(0.005)
# firms followed	-0.001	0.001	-0.002*	-0.000
	(0.001)	(0.001)	(0.001)	(0.002)
# industries followed	-0.004	-0.007*	0.004	-0.007*
	(0.003)	(0.004)	(0.004)	(0.004)
Firm experience	-0.005*	-0.004	-0.006**	-0.001
	(0.002)	(0.003)	(0.003)	(0.003)
General experience	-0.002	-0.001	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Ln(Brokerage size)	-0.016***	0.000	-0.038***	-0.023***
	(0.005)	(0.006)	(0.006)	(0.007)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes

Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	0.97	7.12	0.01	0.70
P-value	0.32	0.01	0.91	0.40
Obs.	347,089	347,089	347,089	139,469
adj-R^2	0.897	0.902	0.772	0.934

Table IA4
Cross-country gender differences in performance under competition: using updated individualism

This table examines cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. *Female* is an indicator variable that takes the value of one if an analyst is a female, and zero otherwise. To create an updated version of Hofstede's individualism score, we follow Schwartz (1992,1994), Triandis (1995), and Beugelsdijk et al. (2015) using survey data from the World Values Survey (WVS) and its equivalent, the European Values Study (EVS), which employs a similar set of survey questions but mostly for European countries, over the period 1981–2002. *High IDV_WVS* is an indicator variable that takes the value of one if a country is in the top quartile of updated individualism scores in a year, and zero otherwise. Panel A presents the regression results using the global sample. Panel B presents the results removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in performance under competition using the global sample

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.069***	0.061*	0.074**	0.112**
	(0.026)	(0.032)	(0.031)	(0.054)
Female × High IDV_WVS	-0.088***	-0.088**	-0.064*	-0.117**
	(0.029)	(0.036)	(0.035)	(0.057)
High IDV_WVS	-0.097**	-0.173***	0.004	-0.147***
	(0.045)	(0.055)	(0.056)	(0.053)
GGGI	1.607**	1.770**	2.698***	1.349
	(0.680)	(0.794)	(0.735)	(0.923)
Ln(GDP per capita)	-0.007	-0.003	-0.045*	-0.075*
	(0.026)	(0.032)	(0.027)	(0.038)
Foreign analyst	0.018	0.006	0.028	0.026
	(0.022)	(0.027)	(0.027)	(0.028)
Forecast horizon	0.165***	0.079***	0.233***	0.008***
	(0.003)	(0.003)	(0.004)	(0.003)
Forecast frequency	-0.001	0.021***	-0.028***	0.002
	(0.002)	(0.003)	(0.003)	(0.002)
# firms followed	-0.000	-0.000	0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.001	-0.002	-0.001	0.002
	(0.002)	(0.002)	(0.003)	(0.003)
Firm experience	-0.004***	-0.004***	-0.003	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.001	0.002	-0.006***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.002	0.000	-0.007*	-0.006*
	(0.003)	(0.004)	(0.004)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV_WVS = 0				
F value	2.37	2.83	0.37	0.07
P-value	0.12	0.09	0.54	0.79
Obs.	482,975	482,975	482,975	272,989
adj-R^2	0.931	0.931	0.801	0.949

Panel B: Cross-country gender differences in performance under competition excluding U.S. analysts

	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Female	0.066**	0.051	0.076**	0.098*
	(0.026)	(0.032)	(0.031)	(0.055)
Female × High IDV_WVS	-0.128***	-0.114*	-0.127**	-0.138*
	(0.045)	(0.060)	(0.060)	(0.074)
High IDV_WVS	-0.046	-0.167**	0.078	-0.249***
	(0.067)	(0.076)	(0.085)	(0.082)
GGGI	0.677	1.484	0.755	1.544
	(0.888)	(0.980)	(0.917)	(1.208)
Ln(GDP per capita)	-0.028	-0.017	-0.047	-0.042
	(0.033)	(0.039)	(0.034)	(0.053)
Foreign analyst	0.042	0.049	0.005	0.089*
	(0.042)	(0.050)	(0.055)	(0.054)
Forecast horizon	0.178***	0.101***	0.242***	0.007
	(0.005)	(0.005)	(0.006)	(0.006)
Forecast frequency	0.003	0.035***	-0.040***	0.007
	(0.004)	(0.005)	(0.005)	(0.005)
# firms followed	-0.002*	-0.003*	-0.002	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)
# industries followed	-0.002	-0.000	0.002	-0.003
	(0.004)	(0.004)	(0.005)	(0.005)
Firm experience	-0.007**	-0.005	-0.007**	0.001
	(0.003)	(0.003)	(0.003)	(0.004)
General experience	0.002	0.004*	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.003)
Ln(Brokerage size)	-0.009	0.006	-0.040***	-0.013
	(0.006)	(0.007)	(0.007)	(0.008)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV_WVS = 0				
F value	2.67	1.47	0.99	0.61
P-value	0.10	0.22	0.32	0.43
Obs.	219,217	219,217	219,217	93,836
adj-R^2	0.926	0.925	0.796	0.945

Table IA5
Cross-country gender differences in performance under competition: using Schwartz' affective autonomy

This table examines cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error, First forecast error, Last forecast error,* and *Same week forecast error*. *Female* is an indicator variable that takes the value of one if an analyst is a female, and zero otherwise. *High affective autonomy* is an indicator variable that takes the value of one if a country is in the top quartile of affective autonomy in a year, and zero otherwise. Panel A presents the regression results using the global sample. Panel B presents the results removing analysts based in the U.S. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in performance under competition using the global sample

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.019	0.009	0.036**	0.040**
	(0.013)	(0.015)	(0.015)	(0.017)
Female × High affective autonomy	-0.050	-0.091**	-0.018	-0.088**
	(0.035)	(0.040)	(0.035)	(0.041)
High affective autonomy	0.026	0.045	0.045*	0.037
	(0.024)	(0.027)	(0.026)	(0.028)
GGGI	0.625*	0.646	1.330***	0.855*
	(0.362)	(0.425)	(0.416)	(0.472)
Ln(GDP per capita)	-0.018	-0.011	-0.015	-0.065***
	(0.017)	(0.021)	(0.018)	(0.023)
Foreign analyst	0.039**	-0.007	0.060***	0.012
	(0.019)	(0.022)	(0.020)	(0.022)
Forecast horizon	0.156***	0.081***	0.216***	0.011***
	(0.003)	(0.003)	(0.003)	(0.003)
Forecast frequency	-0.002	0.016***	-0.028***	-0.001
	(0.002)	(0.003)	(0.002)	(0.002)
# firms followed	-0.000	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.002	-0.004*	0.002	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
Firm experience	-0.003**	-0.004**	-0.003*	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.003**	-0.000	-0.005***	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.009***	-0.004	-0.013***	-0.012***
	(0.003)	(0.004)	(0.003)	(0.004)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High affective autonomy = 0				
F value	0.93	5.25	0.35	1.77
P-value	0.34	0.02	0.55	0.18
Obs.	608,748	608,748	608,748	318,440
adj-R^2	0.911	0.915	0.782	0.943

Panel B: Cross-country gender differences in performance under competition excluding U.S. analysts

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.037*	0.029	0.038	0.109***
	(0.021)	(0.025)	(0.024)	(0.037)
Female × High affective autonomy	-0.069*	-0.112**	-0.009	-0.155***
	(0.039)	(0.045)	(0.041)	(0.053)
High affective autonomy	-0.035	-0.005	-0.008	0.005
	(0.039)	(0.046)	(0.040)	(0.059)
GGGI	0.540	0.802*	0.874**	1.083**
	(0.381)	(0.440)	(0.438)	(0.479)
Ln(GDP per capita)	-0.009	-0.005	-0.001	-0.047*
	(0.019)	(0.024)	(0.021)	(0.026)
Foreign analyst	0.071***	0.005	0.094***	0.033
	(0.027)	(0.030)	(0.027)	(0.033)
Forecast horizon	0.159***	0.096***	0.211***	0.015***
	(0.004)	(0.004)	(0.005)	(0.005)
Forecast frequency	0.002	0.022***	-0.035***	-0.001
	(0.003)	(0.004)	(0.004)	(0.004)
# firms followed	-0.001	0.000	-0.002	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)
# industries followed	-0.004	-0.006*	0.004	-0.006
	(0.003)	(0.004)	(0.004)	(0.004)
Firm experience	-0.005*	-0.004	-0.006**	-0.001
	(0.002)	(0.003)	(0.003)	(0.003)
General experience	-0.002	-0.000	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Ln(Brokerage size)	-0.019***	-0.004	-0.039***	-0.027***
	(0.005)	(0.006)	(0.006)	(0.007)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High affective autonomy = 0				
F value	0.95	5.03	0.79	1.57
P-value	0.33	0.03	0.37	0.21
Obs.	344,990	344,990	344,990	139,287
adj-R^2	0.898	0.902	0.772	0.934

Table IA6
Cross-country gender differences in performance under competition: robustness checks

This table examines cross-country gender differences in performance under competition using OLS regressions and the global sample of equity analysts. *Female* is an indicator variable that takes the value of one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. Panel A presents the regression results using firm-forecast-analyst-level observations. The dependent variable is *Absolute forecast error*, the absolute value of the difference between an analyst's annual EPS forecast and actual EPS normalized by the stock price at the prior fiscal year end. Column (1) presents the results with firm times year fixed effects, and column (2) presents the results with firm times year times month fixed effects. Panel B repeats the analysis in Table 5 Panel A adding brokerage fixed effects. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Panel A: Cross-country gender differences in performance under competition using forecast-level observations

	Absolute forecast error (1)	Absolute forecast error (2)
Female	0.073**	0.087*
	(0.035)	(0.050)
Female × High IDV	-0.088**	-0.099*
	(0.038)	(0.054)
High IDV	-0.062**	-0.071**
	(0.028)	(0.035)
GGGI	0.809***	0.676*
	(0.311)	(0.405)
Ln(GDP per capita)	-0.035**	-0.049**
	(0.016)	(0.023)
Foreign analyst	0.078***	0.066**
	(0.021)	(0.027)
Forecast horizon	0.007***	0.006***
	(0.000)	(0.000)
Forecast frequency	-0.003	-0.004
	(0.003)	(0.003)
# firms followed	0.001	0.000
	(0.001)	(0.001)
# industries followed	0.000	0.002
	(0.002)	(0.002)
Firm experience	-0.001	-0.000
	(0.001)	(0.002)
General experience	-0.004***	-0.004***
	(0.001)	(0.001)
Ln(Brokerage size)	-0.007**	-0.010***
	(0.003)	(0.004)
Firm × Year Fixed Effects	Yes	No
Firm × Year × Month Fixed Effects	No	Yes
Intercept	Yes	Yes
Tests if Female + Female × High IDV = 0		
F value	1.01	0.46
P-value	0.31	0.50
Obs.	2,629,947	2,629,947
adj-R^2	0.807	0.882

Panel B: Cross-country gender differences in performance under competition including brokerage fixed effects

	Average forecast error	First forecast error	Last forecast error	Same week forecast error
	(1)	(2)	(3)	(4)
Female	0.029	0.038	0.035	0.131***
	(0.021)	(0.026)	(0.025)	(0.038)
Female × High IDV	-0.041	-0.079**	-0.014	-0.138***
	(0.026)	(0.031)	(0.030)	(0.041)
High IDV	-0.054*	0.000	-0.023	-0.047
	(0.029)	(0.034)	(0.034)	(0.037)
GGGI	0.823*	0.755	1.801***	1.107*
	(0.436)	(0.521)	(0.485)	(0.588)
Ln(GDP per capita)	-0.017	-0.012	-0.016	-0.059**
	(0.020)	(0.025)	(0.021)	(0.027)
Foreign analyst	0.063***	0.017	0.080***	0.031
	(0.022)	(0.025)	(0.022)	(0.025)
Forecast horizon	0.156***	0.081***	0.214***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)
Forecast frequency	-0.001	0.013***	-0.023***	-0.002
	(0.002)	(0.003)	(0.002)	(0.002)
# firms followed	0.001	0.002**	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.007***	-0.006**	-0.004*	-0.000
	(0.002)	(0.003)	(0.003)	(0.003)
Firm experience	-0.003**	-0.003*	-0.003*	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)
General experience	-0.001	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Ln(Brokerage size)	-0.011	-0.019	0.014	0.008
	(0.010)	(0.013)	(0.011)	(0.011)
Brokerage Fixed Effects	Yes	Yes	Yes	Yes
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	0.74	6.10	1.51	0.19
P-value	0.39	0.01	0.22	0.66
Obs.	610,847	610,847	610,847	318,622
adj-R^2	0.911	0.915	0.783	0.944

Table IA7. Cross-country gender differences in performance under competition: Using an analyst's name to determine her country of origin

This table examines cross-country gender differences in performance under competition using OLS regression with firm times year fixed effects. The sample consists of 11,444 equity analysts from 42 countries who are from the same high (low) IDV countries based on their last name and first name using the algorithm developed by Origins Info Ltd as those based on their place of work. We use four different measures of analyst forecast performance as the dependent variables: *Average forecast error*, *First forecast error*, *Last forecast error*, and *Same week forecast error*. *Female* is an indicator variable that takes the value one if an analyst is a female, and zero otherwise. *High IDV* is an indicator variable that takes the value of one if a country is in the top quartile of individualism in a year, and zero otherwise. Definitions of the variables are provided in Appendix B. Heteroscedasticity-consistent standard errors (in parentheses) are clustered at the firm times year level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	Average forecast error (1)	First forecast error (2)	Last forecast error (3)	Same week forecast error (4)
Female	0.074***	0.055*	0.097***	0.140***
	(0.023)	(0.029)	(0.028)	(0.046)
Female × High IDV	-0.085**	-0.073*	-0.065*	-0.123**
	(0.034)	(0.039)	(0.037)	(0.053)
High IDV	-0.049	-0.057	-0.037	-0.124***
	(0.036)	(0.041)	(0.039)	(0.041)
GGGI	0.491	0.370	1.256**	0.694
	(0.442)	(0.533)	(0.508)	(0.540)
Ln(GDP per capita)	-0.021	-0.024	-0.004	-0.066**
	(0.018)	(0.023)	(0.021)	(0.026)
Foreign analyst	0.067***	0.057**	0.078***	0.050*
	(0.024)	(0.028)	(0.026)	(0.027)
Forecast horizon	0.158***	0.086***	0.214***	0.016***
	(0.004)	(0.004)	(0.004)	(0.004)
Forecast frequency	-0.002	0.020***	-0.032***	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
# firms followed	-0.000	0.001	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
# industries followed	-0.002	-0.008***	0.005	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Firm experience	-0.002	-0.002	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
General experience	-0.002	0.000	-0.005***	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)
Ln(Brokerage size)	-0.009**	-0.003	-0.016***	-0.011**
	(0.004)	(0.005)	(0.005)	(0.005)
Firm × Year Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes
Tests if Female + Female × High IDV = 0				
F value	0.21	0.47	1.81	0.48
P-value	0.65	0.49	0.18	0.49
Obs.	384,739	384,739	384,739	190,805
adj-R^2	0.916	0.921	0.788	0.947