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# The effect of cultural distance between an analyst and a CEO on analysts' earnings forecast performance☆

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ABSTRACT

We examine how cultural distance between an analyst and a CEO is associated with earnings forecast performance. Using a sample of 283,062 analyst-firm-year earnings forecasts over the period 1992–2016, we find that greater cultural distance is associated with greater forecast error. This finding is robust to the use of alternative culture frameworks. We further document that our result is mainly driven by a culture effect rather than bilateral trust or a shared common language.



## 1. Introduction

Culture affects economic exchange. Based on the premise that cultural proximity enhances familiarity, bilateral trust, and reduces information asymmetry, several studies document increased financial flow between countries that are culturally close. For instance, Ahern et al. (2015) document a positive relation between cultural proximity and cross-border acquisitions, while Beugelsdijk and Frijns (2010) and Anderson et al. (2011) document a negative relation between cultural distance and cross-border mutual fund allocations.[1]

Considerably less research has considered how cultural differences affect interactions among financial agents. Frijns et al. (2016) show that higher cultural differences among board members are associated with lower firm valuations. Closer to our study, Du et al. (2017), find that Chinese analysts make more accurate forecasts on Chinese firms than non-Chinese analysts. Brochet et al. (2019) focus on CEO cultural-induced optimism, which results in a more optimistic tone in earnings conference calls. While this optimistic tone, in general, leads to positive responses from analysts, analysts that share the CEO's ethnic background adjust their forecasts for this optimism, suggesting that cultural similarity could result in better forecast accuracy.

We expand the recent literature by focusing on whether cultural distance between a CEO and an analyst affects the analyst's forecast accuracy. To measure the cultural distance between a CEO and an analyst, we follow recent literature and focus on cultural heritage (see also Liu, 2016; Pan et al., 2017, 2020; Giannetti and Zhao, 2019). We investigate the relationship between CEO-analyst cultural distance and analyst forecast error using a sample of 283,062 analyst-firm-year earnings forecasts over the period 1992–2016, controlling for common determinants of forecast error. We find that a larger cultural distance (using Hofstede's (2001) culture framework) is associated with a higher forecast error relative to other analysts covering the same firm-year. An interquartile range increase in cultural distance (+8) corresponds to an increase in relative forecast error of about 1%, comparable to an additional two years of firm-specific experience or eight years of general experience. The documented relationship is primarily driven by differences in the culture dimension of individualism, which has been documented to be one of the most salient culture dimensions and is shown to affect many economic outcomes (Kirkman et al., 2006). Our result is robust to the alternative culture frameworks of Schwartz (2006) and GLOBE (House et al., 2004). To gain a better insight into what drives the cultural distance effect, we consider two alternative channels besides the culture channel, i.e., the bilateral trust channel (cultural closeness could increase bilateral trust and as such lead to more information sharing), and the common language

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[1] See Karolyi (2016) for an overview on culture and finance studies.

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**Table 1**
Descriptive Statistics. Panel A presents the number and percentage of one-year ahead EPS forecasts, the number and percentage of analysts, and the number and percentage of CEOs per country of ancestry. Panel B presents the individualism score per country for different culture frameworks, along with scores for the instrumental variables. Panel C presents summary statistics of our main dependent and independent variables. Definitions of the variables are provided in Appendix.

Panel A: Sample Description

| Country of ancestry | # of Forecasts | % of Forecasts | No. of Analysts | % of Analysts | # of CEOs | % of CEOs |
|---|---|---|---|---|---|---|
| Australia | 97 | 0.03 | 2 | 0.02 | 1 | 0.02 |
| Austria | 4,522 | 1.6 | 122 | 1.47 | 85 | 1.56 |
| Belgium | 130 | 0.05 | 12 | 0.14 | 11 | 0.2 |
| Brazil | 57 | 0.02 | 2 | 0.02 | – | - |
| Canada | 23,101 | 8.16 | 707 | 8.54 | 684 | 12.53 |
| China | 7,556 | 2.67 | 342 | 4.13 | 63 | 1.15 |
| Czechoslovakia | 2,990 | 1.06 | 84 | 1.01 | 43 | 0.79 |
| Denmark | 917 | 0.32 | 36 | 0.43 | 32 | 0.59 |
| Estonia | 7 | 0 | 1 | 0.01 | – | - |
| Finland | 801 | 0.28 | 20 | 0.24 | 3 | 0.05 |
| France | 839 | 0.3 | 36 | 0.43 | 18 | 0.33 |
| Germany | 45,256 | 15.99 | 1,256 | 15.17 | 790 | 14.47 |
| Greece | 2,138 | 0.76 | 57 | 0.69 | 38 | 0.7 |
| Hungary | 2,233 | 0.79 | 59 | 0.71 | 31 | 0.57 |
| India | 6,335 | 2.24 | 240 | 2.9 | 53 | 0.97 |
| Iran | 40 | 0.01 | 3 | 0.04 | 2 | 0.04 |
| Ireland | 48,378 | 17.09 | 1,359 | 16.41 | 751 | 13.76 |
| Italy | 20,139 | 7.11 | 574 | 6.93 | 389 | 7.13 |
| Jamaica | 4 | 0 | 1 | 0.01 | – | - |
| Japan | 522 | 0.18 | 30 | 0.36 | 10 | 0.18 |
| Jewish | 24,957 | 8.82 | 630 | 7.61 | 331 | 6.06 |
| Korea | 1,443 | 0.51 | 63 | 0.76 | 9 | 0.16 |
| Lithuania | 862 | 0.3 | 24 | 0.29 | 10 | 0.18 |
| Luxembourg | 107 | 0.04 | 3 | 0.04 | – | - |
| Malta | 201 | 0.07 | 3 | 0.04 | 2 | 0.04 |
| Mexico | 3,404 | 1.2 | 108 | 1.3 | 47 | 0.86 |
| Muslim | 16 | 0.01 | 3 | 0.04 | 28 | 0.53 |
| Netherlands | 1,995 | 0.7 | 48 | 0.58 | 52 | 0.95 |
| Nicaragua | 123 | 0.04 | 2 | 0.02 | – | - |
| Norway | 2,169 | 0.77 | 85 | 1.03 | 70 | 1.28 |
| Panama | 2 | 0 | 1 | 0.01 | – | - |
| Philippines | 1,204 | 0.43 | 41 | 0.5 | 8 | 0.15 |
| Poland | 5,791 | 2.05 | 189 | 2.28 | 82 | 1.5 |
| Portugal | 782 | 0.28 | 30 | 0.36 | 15 | 0.27 |
| Romania | 194 | 0.07 | 10 | 0.12 | 5 | 0.09 |
| Spain | 639 | 0.23 | 12 | 0.14 | 7 | 0.13 |
| Sweden | 5,768 | 2.04 | 154 | 1.86 | 145 | 2.66 |
| Switzerland | 1,889 | 0.67 | 37 | 0.45 | 26 | 0.48 |
| Thailand | 5 | 0 | 1 | 0.01 | – | - |
| Turkey | 702 | 0.25 | 19 | 0.23 | 7 | 0.13 |
| Russia | 16,351 | 5.78 | 451 | 5.45 | 315 | 5.77 |
| United Kingdom | 47,236 | 16.69 | 1,382 | 16.69 | 1,262 | 23.12 |
| Vietnam | 225 | 0.08 | 19 | 0.23 | 3 | 0.05 |
| Yugoslavia | 935 | 0.33 | 22 | 0.27 | 27 | 0.49 |

Panel B: Hofstede's Cultural Scores per Country

| Country | Individualism (Hofstede) | Power distance (Hofstede) | Masculinity (Hofstede) | Uncertainty avoidance (Hofstede) |
|---|---|---|---|---|
| Australia | 90 | 38 | 61 | 51 |
| Austria | 55 | 11 | 79 | 70 |
| Belgium | 75 | 65 | 54 | 94 |
| Brazil | 38 | 69 | 49 | 76 |
| Canada | 80 | 39 | 52 | 48 |
| China | 20 | 80 | 66 | 30 |
| Czechoslovakia | 58 | 57 | 57 | 74 |
| Denmark | 74 | 18 | 16 | 23 |
| Estonia | 60 | 40 | 30 | 60 |
| Finland | 63 | 33 | 26 | 59 |
| France | 71 | 68 | 43 | 86 |
| Germany | 67 | 35 | 66 | 65 |
| Greece | 35 | 60 | 57 | 112 |
| Hungary | 80 | 46 | 88 | 82 |
| India | 48 | 77 | 56 | 40 |
| Iran | 41 | 58 | 43 | 59 |
| Ireland | 70 | 28 | 68 | 35 |
| Italy | 76 | 50 | 70 | 75 |
| Jamaica | 39 | 45 | 68 | 13 |
| Japan | 46 | 54 | 95 | 92 |
| Jewish | 54 | 13 | 47 | 81 |

(*continued on next page*)

channel (cultural closeness could proxy for a CEO and analyst sharing a common language). While we find some evidence for a common language effect, this is dominated by the culture channel.

**Table 1** (*continued*).

| Panel B: Hofstede's Cultural Scores per Country | | | | |
|---|---|---|---|---|
| Country | Individualism (Hofstede) | Power distance (Hofstede) | Masculinity (Hofstede) | Uncertainty avoidance (Hofstede) |
| Korea | 18 | 60 | 39 | 85 |
| Lithuania | 60 | 42 | 19 | 65 |
| Luxembourg | 60 | 40 | 50 | 70 |
| Malta | 59 | 56 | 47 | 96 |
| Mexico | 30 | 81 | 69 | 82 |
| Muslim | 38 | 80 | 53 | 68 |
| Netherlands | 80 | 38 | 14 | 53 |
| Nicaragua | 15 | 35 | 21 | 86 |
| Norway | 69 | 31 | 8 | 50 |
| Panama | 11 | 95 | 44 | 86 |
| Philippines | 32 | 94 | 64 | 44 |
| Poland | 60 | 68 | 64 | 93 |
| Portugal | 27 | 63 | 31 | 104 |
| Romania | 30 | 90 | 42 | 90 |
| Spain | 51 | 57 | 42 | 86 |
| Sweden | 71 | 31 | 5 | 29 |
| Switzerland | 68 | 34 | 70 | 58 |
| Thailand | 20 | 64 | 34 | 64 |
| Turkey | 37 | 66 | 45 | 85 |
| Russia | 39 | 93 | 36 | 95 |
| United Kingdom | 89 | 35 | 66 | 35 |
| Vietnam | 20 | 70 | 40 | 30 |
| Yugoslavia | 25 | 86 | 43 | 92 |

| Panel C: Summary Statistics | | | | | | |
|---|---|---|---|---|---|---|
| Variables | #Obs | Mean | S.D. | 0.25 | Mdn | 0.75 |
| *AFE* | 283,062 | 13.41 | 26.99 | 1.50 | 4.50 | 12.67 |
| *PMAFE* | 283,062 | −1.84 | 87.69 | −57.63 | −18.14 | 21.28 |
| *Days Since Last Forecast* | 283,062 | 127.72 | 72.42 | 90.00 | 102.00 | 153.00 |
| *Firm Experience* | 283,062 | 3.35 | 3.86 | 1.00 | 2.00 | 5.00 |
| *General Experience* | 283,062 | 9.63 | 7.11 | 4.00 | 8.00 | 14.00 |
| *Top 10 Brokerage House* | 283,062 | 0.61 | 0.49 | 0.00 | 1.00 | 1.00 |
| *Portfolio Size* | 283,062 | 16.74 | 9.07 | 11.00 | 16.00 | 21.00 |
| *Portfolio Complexity* | 283,062 | 1.59 | 0.95 | 1.00 | 1.00 | 2.00 |
| *Cultural Distance* | 283,062 | 8.70 | 5.39 | 5.09 | 8.12 | 13.07 |
| *Distance - IDV* | 283,062 | 0.77 | 0.65 | 0.25 | 0.64 | 1.10 |
| *Distance - UAI* | 283,062 | 0.78 | 0.63 | 0.14 | 0.46 | 1.02 |
| *Distance - MAS* | 283,062 | 0.67 | 0.75 | 0.09 | 0.51 | 0.92 |
| *Distance - PDI* | 283,062 | 0.78 | 0.63 | 0.20 | 0.66 | 1.28 |

## 2. Empirical analysis

### 2.1. Data

Analyst forecasts for U.S. firms are from I/B/E/S. Firm characteristics and stock returns are from COMPUSTAT and CRSP. CEO information is from ExecuComp.

### 2.2. Identifying analyst and CEO cultural distance

To determine analyst-CEO cultural distance, we build on recent literature that uses surnames to identify an individual's cultural heritage (e.g., Liu, 2016; Pan et al., 2017, 2020; Giannetti and Zhao, 2019).[2] This literature builds on the notion that culture is persistent over time and is transmitted from generation to generation. As Guiso et al. (2006) argue, culture reflects those "customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" (p.23). Beugelsdijk et al. (2015) document that while culture changes over time, relative differences between cultures remain stable. We build on extant literature, which has documented that cultural heritage shapes current cultural values and actions (e.g., Liu, 2016; Pan et al., 2017, 2020; Giannetti and Zhao, 2019).

We collect U.S. analyst and CEO surnames from the I/B/E/S detailed recommendation file and ExecuComp, respectively. We map surnames to countries of ancestry, using three surname libraries. Our main surname library uses historical census records (years included are between 1850 and 1940) of foreign-born U.S. residents obtained from IPUMS.[3] These records provide 6,182,373 unique surnames of 68,134,313 individuals from 199 countries. We complement this with a reference library of 20,693 common Asian American surnames and countries of ancestry developed by Lauderdale and Kestenbaum (2000) and the Oxford Dictionary of American Family Names containing 70,000 common American family names and countries/regions of ancestry. We match 88.35% of surnames with a country of ancestry and assign Hofstede culture scores corresponding to that country.[4] We measure cultural distance between an analyst and a CEO using Kogut and Singh's (Kogut and Singh) Euclidean distance measure.[5] Specifically, we

[2] As surnames are inherited over generations, they convey information about an individual's ancestry background (see Mateos, 2007).

[3] Minnesota Population Centre and Ancestry.com. IPUMS restricted Complete Count Data: Version 1.0 [Machine-readable database]. Minneapolis: University of Minnesota (2013).

[4] Source: https://www.hofstede-insights.com/product/compare-countries/. We use the country of ancestry based on the argument that culture is transmitted and shapes the beliefs and values of individuals over generations (Fernandez and Fogli, 2009; Guiso et al., 2006; Robalino and Robson, 2013).

[5] The Euclidian version of this metric adjusts for the range within each dimension, preventing that one dimension drives the variation in the cultural differences metric.

**Table 2**
Relative forecast error and CEO-Analyst cultural distance. This table reports the regression results of an analyst's relative forecast error on the cultural distance between the CEO and the analyst plus control variables. *RFE* is the percentage difference between the analyst's absolute forecast error and the average absolute forecast error of other analysts covering the same stock in the same year. *Cultural Distance* is the squared root of the sum of the squared distances between a CEO and analyst across the four Hofstede's cultural dimensions and scaled by the standard deviation of each cultural dimension. Distance – XX measures the absolute distance between a CEO and an analyst for Hofstede's cultural dimension XX (IDV, PDI, UAI, and MAS), scaled by the standard deviation of XX. Regressions include firm-year fixed effects. Standard errors are reported in parentheses. They are robust to heteroscedasticity and clustered by analyst-firm. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Appendix provides variable definitions.

| RFE (%) | Cultural distance | By cultural dimension | Individualism | Power distance | Masculinity | Uncertainty avoidance |
|---|---|---|---|---|---|---|
| *Cultural distance* | 0.094** | | | | | |
| | (0.041) | | | | | |
| *Distance - IDV* | | 0.868** | 0.800** | | | |
| | | (0.432) | (0.333) | | | |
| *Distance - PDI* | | −0.036 | | 0.462 | | |
| | | (0.402) | | (0.318) | | |
| *Distance - UAI* | | 0.202 | | | 0.303 | |
| | | (0.349) | | | (0.334) | |
| *Distance - MAS* | | −0.178 | | | | 0.223 |
| | | (0.370) | | | | (0.316) |
| *Days Before Announcements* | 0.570*** | 0.570*** | 0.570*** | 0.570*** | 0.570*** | 0.570*** |
| | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| *Firm Experience* | −0.584*** | −0.583*** | −0.583*** | −0.585*** | −0.585*** | −0.585*** |
| | (0.060) | (0.060) | (0.060) | (0.060) | (0.060) | (0.060) |
| *General Experience* | −0.137*** | −0.137*** | −0.137*** | −0.137*** | −0.137*** | −0.137*** |
| | (0.032) | (0.032) | (0.032) | (0.032) | (0.032) | (0.032) |
| *Top Brokerage House* | −2.786*** | −2.778*** | −2.777*** | −2.774*** | −2.768*** | −2.771*** |
| | (0.399) | (0.399) | (0.399) | (0.399) | (0.399) | (0.399) |
| *Portfolio Size* | 0.055* | 0.055* | 0.055* | 0.054* | 0.055* | 0.055* |
| | (0.033) | (0.033) | (0.033) | (0.033) | (0.033) | (0.033) |
| *Portfolio Complexity* | 2.579*** | 2.581*** | 2.580*** | 2.578*** | 2.578*** | 2.580*** |
| | (0.205) | (0.205) | (0.205) | (0.205) | (0.205) | (0.205) |
| Observations | 283,062 | 283,062 | 283,062 | 283,062 | 283,062 | 283,062 |
| Firm-Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Analyst-Firm Cluster | Yes | Yes | Yes | Yes | Yes | Yes |
| Within R-squared | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |

$$Cultural\ Distance_{A-CEO} = \sqrt{\frac{(IDV_A - IDV_{CEO})^2}{VAR(IDV)} + \frac{(PDI_A - PDI_{CEO})^2}{VAR(PDI)} + \frac{(MAS_A - MAS_{CEO})^2}{VAR(MAS)} + \frac{(UAI_A - UAI_{CEO})^2}{VAR(UAI)}}, \quad (1)$$

**Box I.**

measure cultural distance between an analyst and a CEO based on Hofstede's 4 main culture dimensions, i.e.[6] see Box I: where $IDV_A$ and $IDV_{CEO}$ are the individualism scores of the analyst and the CEO, respectively. PDI, MAS, and UAI are defined likewise and capture power distance, masculinity and uncertainty avoidance, respectively. We scale each squared deviation by the variance of the cultural dimension to obtain the Euclidean cultural distance.[7] We also compute a distance measure for each Hofstede culture dimension separately as the absolute value of the distance in a culture dimension between a CEO and an analyst scaled by the standard deviation of the scores for this culture dimension in our sample countries.

### 2.3. Sample

We focus on forecasts issued between 360 to 30 days before the earnings announcement date (Clement, 1999). Firms need to be covered by at least two analysts and we exclude utility and financial firms. Our final sample contains 283,062 unique analyst-firm-year forecasts (5,453 unique CEOs and 8,279 unique analysts covering 3,050 unique firms) over the period 1992–2016.

### 2.4. Methodology

We aim to explain the relative forecast error (*RFE*) of an analyst relative to other analysts covering the same firm-year with relative greater cultural distance to the CEO. We thus consider the RFE for analyst *i*, firm *j* and year *y*, as our main dependent variable (Clement, 1999), i.e.:

$$RFE_{ijy} = \frac{(AFE_{ijy} - \overline{AFE}_{jy})}{\overline{AFE}_{jy}} \quad (2)$$

where $AFE_{ijy}$ is the absolute difference between analyst *i*'s earnings forecast of the end-of-fiscal-year earnings of firm *j*. Since *RFE* measures an analyst's forecast error relative to all analysts covering the same firm-year and thus controls for differences across companies, time, and industries, it makes forecast errors

[6] The culture dimensions are *individualism* (which captures the relationship between the individual and the collectivity in a society); *power distance* (which captures the degree to which people in a society accept hierarchical status differences); *masculinity* (which captures the degree to which a society promotes masculine traits, such as assertiveness and competitiveness versus feminine traits, such a caring and minding quality of life); and *uncertainty avoidance* (which captures the degree to how societies deal with uncertain and ambiguous situations). Hofstede later included two additional dimensions (*long-term orientation* and *indulgence versus restraint*) and we confirm that our results are robust to the inclusion of these additional dimensions.

[7] We compute the cultural distance similarly for the Schwartz and GLOBE culture frameworks.

**Table 3**
Alternative Culture Frameworks. This table reports the regression results of an analyst's relative forecast error on the cultural distance between the CEO and the analyst plus control variables, where cultural distance is based on alternative culture frameworks. *RFE* is the percentage difference between the analyst's absolute forecast error and the average absolute forecast error of other analysts covering the same stock in the same year. *Cultural Distance* is the squared root of the sum of the squared distances between a CEO and analyst either using the three unique culture dimensions of Schwartz (2006) or the nine culture values dimensions of GLOBE. Regressions include firm-year fixed effects. Standard errors are reported in parentheses. They are robust to heteroscedasticity and clustered by analyst-firm. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Appendix provides variable definitions.

| RFE (%) | Hofstede | Schwartz | GLOBE |
|---|---|---|---|
| *Cultural Distance* | 0.094** | 1.372*** | 0.476** |
| | (0.041) | (0.379) | (0.198) |
| *Days Before Announcements* | 0.570*** | 0.570*** | 0.570*** |
| | (0.004) | (0.004) | (0.004) |
| *Firm Experience* | −0.584*** | −0.586*** | −0.593*** |
| | (0.060) | (0.061) | (0.061) |
| *General Experience* | −0.137*** | −0.132*** | −0.125*** |
| | (0.032) | (0.032) | (0.033) |
| *Top Brokerage House* | −2.786*** | −2.897*** | −2.879*** |
| | (0.399) | (0.401) | (0.404) |
| *Portfolio Size* | 0.055* | 0.057* | 0.064* |
| | (0.033) | (0.033) | (0.033) |
| *Portfolio Complexity* | 2.579*** | 2.575*** | 2.520*** |
| | (0.205) | (0.206) | (0.208) |
| Observations | 283,062 | 280,788 | 274,466 |
| Firm-Year Fixed Effects | Yes | Yes | Yes |
| Analyst-Firm Cluster | Yes | Yes | Yes |
| Within R-squared | 0.182 | 0.183 | 0.183 |

comparable across analysts for the same firm-fiscal year. Our baseline model is:

$$RFE_{ijyt} = \beta_0 + \beta_1 Cultural\ Distance_{ijyt} + \beta X_{yt} + \beta Y_{yit} + Firm\ Year\ FE_{it} + \epsilon_{yit}, \quad (3)$$

where *Cultural Distance* measures the cultural distance between an analyst $i$ and a CEO. We expect $\beta_1$ to be positive. $X$ and $Y$ contain time-varying analyst and analyst-firm characteristics previously identified as affecting forecast performance (see Appendix for detailed variable definitions: analyst general forecast experience - *General Experience*; resources available to an analyst -*Top 10 Brokerage*; analyst portfolio size and complexity - *Portfolio Size* and *Portfolio Complexity*; days between an analyst's forecast and its earnings announcement - *Days Before Announcement*; firm-specific forecast experience - *Firm Experience*; and the number of forecasts issued by an analyst in a given firm-year - *Forecast Frequency*).[8] We further control for firm-year fixed effects that capture (un)observable factors affecting forecast error and that do not vary within a group of analysts issuing earnings forecasts for the same firm-fiscal year. These firm-year fixed effects control for time-varying factors that literature has identified as potential determinants of forecast error (e.g., Bradley et al., 2017; Harford et al., 2018),[9] and for self-selection bias as analysts may self-select into specific companies. Importantly, Merkley et al. (2019) show that analyst cultural diversity affects the quality of the consensus earnings forecast. Adding firm-year fixed effects to our baseline regression allows us to control for the effect of cultural diversity as it varies much more across than within firm-years.

## 3. Results

Table 1 reports summary statistics on analysts, CEOs, culture scores for countries of ancestry, and forecast errors. Panel A shows that a large proportion of U.S. CEOs and analysts has Irish and UK ancestry. Other historical emigration areas, such as Germany, Italy, and Russia are also well-represented. We further note the relatively large proportion of analysts and CEOs with Jewish or Chinese ancestry. Panel B reports Hofstede culture scores for the countries of ancestry and shows considerable variation in scores across countries, which should result in considerable variation in cultural diversity. Panel C reports descriptive statistics on other variables in our sample. The median analyst covers 16 firms belonging to 1 industry, has a firm-specific experience of 2 years, and a general experience of 8 years. The median forecast is issued 100 days before the earnings announcement, 61% of forecasts are issued by analysts working for top brokerage houses, and the average *AFE* is about 13%. Panel C further shows that there is considerable variation in cultural diversity with a mean value of 8.70 and a standard deviation of 5.39. Average cultural distance in the individual dimensions are similar across the different dimensions.

Table 2 reports the results of Eq. (3). We find that a larger cultural distance between a CEO and an analyst is associated with a lower RFE, suggesting that lower cultural distance between CEO and analyst could reduce communication barriers and information asymmetry, and increase bilateral trust, allowing her to make

[8] See, e.g., Clement (1999), Jacob et al. (1999), et al. (2003), Clement et al. (2007), and Cohen et al. (2017).

[9] Such as size, book-to-market, stock momentum, trading volume, analyst coverage, and institutional ownership.

**Table 4**
Channels: Culture, Trust, or Common Language. This table reports the regression results of an analyst's relative forecast error on cultural distance, bilateral trust, and common language between the CEO and the analyst plus control variables. *RFE* is the percentage difference between the analyst's absolute forecast error and the average absolute forecast error of other analysts covering the same stock in the same year. *Cultural Distance* is the squared root of the sum of the squared distances between a CEO and analyst either using the four culture dimensions of Hofstede. Bilateral trust is based on Guiso et al.'s (2009) measure based on Euromonitor Survey data. Common language is obtained from Melitz and Toubal (2014) based on whether two countries share an official common language. Regressions include firm-year fixed effects. Standard errors are reported in parentheses. They are robust to heteroscedasticity and clustered by analyst-firm. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Appendix provides variable definitions.

| RFE (%) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *Cultural Distance* | 0.094** | | | 0.235* |
| | (0.041) | | | (0.126) |
| *Bilateral Trust* | | −0.113 | | 1.990 |
| | | (0.978) | | (1.295) |
| *Common Language* | | | −0.818* | −0.465 |
| | | | (0.449) | (1.055) |
| Observations | 283,062 | 123,201 | 278,270 | 123,201 |
| Controls | Yes | Yes | Yes | Yes |
| Firm-Year Fixed Effects | Yes | Yes | Yes | Yes |
| Analyst-Firm Cluster | Yes | Yes | Yes | Yes |
| Within R-squared | 0.18 | 0.23 | 0.18 | 0.23 |

**Table A.1**
Variable Definitions.

| Variable | Definition | Source |
|---|---|---|
| AFE | Absolute forecast error of analyst *i* for firm *j*, calculated as the absolute value of the difference between analyst *i*'s earnings forecast for firm *j* and the actual earnings reported by firm *j*. | I/B/E/S |
| Bilateral Trust | Bilateral trust data from Guiso et al. (2009), based on Euromonitor data covering 15 EU countries | Guiso et al. (2009) |
| Common Language | Obtained from Melitz and Toubal (20124), based on whether two countries share an official common language. | Melitz and Toubal (2014) |
| Cultural Distance | Squared root of the sum of the standard-deviation-scaled squared distances across the four Hofstede's cultural dimensions between a CEO and an analyst. | Hofstede |
| Cultural Distance Schwartz | Squared root of the sum of the standard-deviation-scaled squared distances across the three unique Schwartz culture dimensions between a CEO and an analyst. | Schwartz |
| Cultural Distance GLOBE | Squared root of the sum of the standard-deviation-scaled squared distances across the nine unique GLOBE culture values dimensions between a CEO and an analyst. | House et al. (2004) |
| Days Before Announcements | The number of days between analyst *i*'s forecast for firm *j* and the firm fiscal year end. | I/B/E/S |
| Distance – XX | Absolute distance between a CEO and an analyst for the Hofstede's cultural dimension XX, scaled by the standard deviation of XX. | Hofstede |
| Firm Experience | The number of quarters since analyst *i*'s first earnings forecasts for firm *j* at year *y*. | I/B/E/S |
| General Experience | The total number of quarters that analyst *i* appeared in I/B/E/S at year *y*. | I/B/E/S |
| Hofstede - Individualism | Individualism score, whereby *Individualism* can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. Its opposite, *Collectivism*, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty. | Hofstede |
| Portfolio Complexity | The number of 2-digit SICS represented by firms followed by analyst *i* in year *y*. | I/B/E/S |
| Portfolio Size | The number of unique firms followed by analyst *i* in year *y*. | I/B/E/S |
| RFE | The difference between the absolute forecast error for analyst *i* and firm *j* in year *y* and the mean absolute forecast error for firm *j* in year *y* scaled by the mean absolute forecast error for firm *j* in quarter *y*. | I/B/E/S |
| Top 10 Brokerage House | Indicator variable that is equal to one if an analyst *i* works at a top decile brokerage house in quarter *t*. | I/B/E/S |

more accurate forecasts.[10] When considering Hofstede's individual dimensions, only differences in individualism are significant. This result may be due to the fact that individualism is considered most out of all culture dimensions (e.g., (Kirkman et al., 2006)).

Table 3 evaluates the robustness of our results with respect to alternative culture frameworks. We employ Schwartz's (2006) culture framework, which consists of seven culture scores based on three unique dimensions (embeddedness, hierarchy, and mastery).[11] Additionally, we consider the GLOBE framework (House et al., 2004) which contains nine unique culture dimensions.[12] Our results are robust to both culture frameworks.

To delve deeper into our results, we consider two alternative channels to the culture channel that could explain our results, the bilateral trust channel and the communication channel. Bilateral trust data are obtained from Guiso et al. (2009) and are available for 15 countries within the European Union. Common language (two countries sharing an official common language) data are obtained from Melitz and Toubal (2014).

We report results in Table 4. For bilateral trust, the relationship with *RFE* is insignificant, hence we find no evidence for the bilateral trust channel. For common language, we find a negative significant (at the 10% level) relationship, providing

[10] Coefficients on control variables have the expected sign and magnitude.

[11] These three unique dimensions have 4 opposites: embeddedness has autonomy as its opposite pole (split into affective autonomy and intellectual autonomy); mastery has harmony as its opposite pole; and hierarchy has egalitarianism as its opposite pole.

[12] Uncertainty Avoidance, Future Orientation, Power Distance, Institutional Collectivism, Intellectual Collectivism, Humane Orientation, Performance Orientation, Gender Egalitarianism, and Assertiveness.

some evidence for this channel (sharing a common language reduces forecast error). However, when we consider bilateral trust, common language and cultural distance jointly in a regression, only cultural distance remains significant, suggesting that the culture effect is dominant.

## 4. Conclusion

Our paper provides novel insights into the effect of cultural distance between financial agents. Based on the argument that cultural proximity enhances familiarity, bilateral trust and reduces information asymmetry, we show that analysts make poorer recommendations when the cultural distance between a CEO and the analyst is large. When we investigate alternative channels to the culture effect (bilateral trust and common language), we find that the culture effect is most significant, suggesting that analysts with similar cultural roots can better interpret a CEO's communications and soft information.

Our paper contributes to an emerging literature on the interaction between CEOs and analysts. For instance, Du et al. (2017) document that Chinese analysts make more accurate forecasts on Chinese firms than non-Chinese analysts. We expand their work by considering the cultural roots and the cultural distance between CEOs and analysts, providing more direct evidence on the link between culture and analyst forecast performance. We also expand the work of Brochet et al. (2019), who show that CEOs' cultural backgrounds affect their communication with investors. We go beyond their study on corporate communications, by showing that cultural distance affects an analyst's ability to make accurate forecasts.

## Appendix. Variable definitions

See Table A.1.

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