CULTURAL PROXIMITY AND THE PROCESSING OF FINANCIAL INFORMATION[*]

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Abstract

This paper examines how a shared cultural background between analysts and firms under coverage affects information asymmetry in financial markets. To disentangle cultural proximity from geographic proximity, we extract a sample of firms publicly traded in the U.S. but headquartered in regions sharing Chinese culture ("Chinese firms"), and identify a group of U.S. analysts of Chinese ethnic origin. We find that analysts of Chinese ethnicity issue more accurate forecasts about earnings of Chinese firms. The rise in forecast precision is more pronounced among first-generation Chinese immigrants. Market reaction is stronger if analysts of Chinese ethnicity revise their forecasts upwards or issue favorable recommendations about a Chinese firm. Our results indicate that cultural proximity mitigates information asymmetry that adversely affects foreign firms, especially those from emerging markets.

Keywords: Culture, Information Asymmetry, Forecast Accuracy, Financial Analysts

JEL: G14; G24; F65

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1. INTRODUCTION

An emerging literature has documented the significant impact of culture on various economic exchanges and financial outcomes. Cultural distance between countries affects cross-border mergers (Ahern, Daminelli, and Fracassi 2012), credit allocations (Fisman, Paravisni, and Vig 2012; Giannetti and Yafeh 2011), stock market participation (Guiso, Sapienza, and Zingales 2008), and trade and investment flows (Guiso, Sapienza, and Zingales 2009). However, there is little direct evidence in finance on channels through which culture affects interactions between economic agents.

In this paper we explore to what extent culture affects information production and dissemination by financial market participants. To emphasize the cultural traits inherited at the individual level, we use ethnicity, which can be treated largely as invariant over an individual's life (Guiso, Sapienza, and Zingales 2006), as a proxy for culture. Specifically, we examine the effects of financial analysts' ethnicity on forecast accuracy regarding the earnings prospects of firms that share the same cultural background.

Whether and how cultural proximity affects analysts' information generation and dissemination can be ambiguous *ex ante*. On the one hand, when foreign firms attempt to access U.S. financial markets, highly skilled immigrants or descendants of recent immigrants, such as those employed as financial analysts, likely have several attributes that help alleviate information asymmetry experienced by firms from their home country. Native language skills may allow immigrants to access firm-specific information quickly. Even if all the foreign firms listed in the U.S. are required to publicly disclose information in English, immigrants with the same cultural origin can better interpret the information by "reading between the lines". Well-educated immigrants may possess specialized knowledge and channels to access information about how business is conducted in their home countries. They also have a solid understanding on institutional characteristics and norms in the U.S. financial markets, and are capable of communicating efficiently to investors.

On the other hand, cultural proximity may degrade forecast accuracy, even if forecasts are issued by the immigrants who are perceived as insiders or experts about firms from their home countries. Kahneman and Lovallo (1993) show that an insider focuses more on knowledge about specific cases and is more likely to fall prey to "representativeness heuristic" (Kahneman, Slovic, and Tversky 1982), while an outsider is more inclined to take a statistical and comparative view. As a result, an insider tends to produce overly optimistic forecasts. Tetlock (2005) demonstrated that experts performed no better than non-experts when predicting political and economic trends, and in particular, are more likely to be over-confident with their predictions. So it is possible that cultural proximity leads to more optimistic and overconfident predictions, rather than more accurate ones.

To explore the effect of cultural proximity on financial information precision, we design our research around a sample of U.S. analysts that are Chinese immigrants or descendants of recent immigrants, and a sample of foreign firms that are headquartered in regions sharing a Chinese culture but publicly traded in the U.S.—whose culture differs distinctly from that of their home countries. We collect information on 9,537 U.S.-based analysts that provided coverage from 1990 to 2010 on 8,370 firms publicly traded in the U.S. Among these firms, 8,164 are headquartered in the U.S. and 206 are headquartered in the "pan-Chinese region", which includes mainland China, Hong Kong, Taiwan, and Singapore. We manually identify 330 U.S.-based analysts as ethnic Chinese, among which 47 analysts are first-generation Chinese immigrants.

We find that analysts of Chinese ethnicity issue more precise earnings forecasts for firms from the pan-Chinese region than analysts of other ethnicities, after controlling for firm fixed effects, quarter fixed effects, and analyst professional experience. Furthermore, the effect of cultural proximity is more prominent when cultural bonds are stronger: analysts of first-generation Chinese immigrants, who have longer and more extensive exposure to Chinese culture, issue more accurate forecasts for firms from the pan-Chinese region than analysts of later-generations.

The "within-group" tests further confirm our findings. Among all analysts covering firms from the pan-Chinese region, U.S. analysts of Chinese ethnic origin issue significantly more accurate forecasts

than analysts of other ethnic origins, even after we control for firm fixed effects and quarter fixed effects. Conversely, among all firms covered by analysts of Chinese ethnic origin, earnings forecasts are more precise for firms from the pan-Chinese region than for firms headquartered in the U.S., even after we control for analyst fixed effects in addition to quarter fixed effects.

We show that market reaction is stronger if an analyst of Chinese ethnicity revises a forecast upward regarding the earnings prospect of a firm from the pan-Chinese region. Similarly, market reaction is stronger if an analyst of Chinese ethnicity issues a favorable recommendation or upgrade for such a firm. These results suggest that investors recognize the advantage that analysts have to produce information on firms that share the same cultural heritage.

Interestingly, when we distinguish analysts of Chinese ethnic origin between those covering firms headquartered in mainland China and Taiwan—where Chinese is the only official language, and those covering firms headquartered in Hong Kong and Singapore—where English is also the official language, especially for business, there is no difference in forecast accuracy between these two types of firms. This indicates that cultural proximity goes beyond language commonality.

The potential endogenous matching between analyst and firm is less likely to be a concern in our setting. In various specifications we control for, respectively, forecast quarter fixed effects, firm fixed effects, analyst fixed effects, and firm-quarter-analyst fixed effects. When we restrict the control sample to U.S. firms that are more homogeneous in terms of size and industrial characteristics relative to firms from the pan-Chinese region, we find similar results. Furthermore, U.S.-based brokerage firms which cover more foreign firms from the pan-Chinese region do not necessarily employ more analysts with Chinese ethnic background. Given the scarcity of highly skilled immigrants capable of generating information and communicating it across different cultures, not all brokerage firms that would like to hire analysts with such characteristics are able to do so. Conversely, as discussed in Section 2, firms from the pan-Chinese region procure public listing in the U.S. in order to raise capital. The timing and location of their listings are not driven by the desire to secure coverage from analysts of the same cultural origin.

Specifically, our tests aim to capture that brokerage firms assign analysts of Chinese ethnic origin over those of other ethnic origins to cover Chinese firms due to their "revealed preference", in which brokerage firms recognize and value the advantage of cultural proximity. To further support our empirical evidence, we provide a number of tests to rule out selections driven by other attributes of analysts instead of cultural proximity. First, we show that analysts of Chinese ethnic origin do not outperform analysts of other ethnicities in general, and that analysts of non-Chinese ethnicity who cover both Chinese firms and U.S. firms outperform those that exclusively cover U.S. firms. These results indicate that our findings are not driven by any supposed superior forecasting ability of U.S. analysts of a specific ethnicity, and that analysts of non-Chinese ethnicity selected to cover Chinese firms are not of inferior ability.

Second, we find that analysts of Chinese ethnic origin do not issue more optimistic earnings forecasts or more favorable recommendations regarding Chinese firms than analysts of other ethnic origins. This suggests that our results are not driven by the spurious correlation between analyst optimism and the concurrent high growth experienced by Chinese firms.

Third, we find that our results are stronger after the implementation of Regulation Fair Disclosure (Reg FD), which prohibits selective disclosure of information by publicly traded companies to certain financial market participants. Since Reg FD applies to all analysts in the U.S., this suggests that our main results are not driven by the potential superior access to management of Chinese firms by analysts of Chinese ethnic origin.

Lastly, researchers have shown that analysts issue biased and overoptimistic reports in an attempt to secure current and future investment banking business for the brokerage firms with which they are affiliated (e.g., Lin and McNichols 1998; Michaely and Womack 1999). Since our tests for analyst optimism suggest that Chinese analysts are not generally more optimistic about Chinese firms than non-Chinese analysts, conflicted analyst research is unlikely the motive for brokerage firms to assign analyst coverage in our setting. Furthermore, we provide evidence that brokerage firms do not disproportionally employ Chinese analysts when they take Chinese firms public in the U.S.

Our paper is related to an emerging literature exploring the effect of culture on economic outcomes (see, e.g., Guiso, Sapienza, and Zingales 2006, for a survey). Most of these papers are based on country-level surveys that target all the citizens. By contrast, we study the effect of culture at the firm/individual level and focus exclusively on key participants in the financial markets. In this respect, our paper is related to Giannetti and Yafeh (2011) and Fisman, Paravisini, and Vig (2012), who find that the cultural proximity between lenders and borrowers improves credit allocation and loan pricing; to Fisman, Hamao, and Wang (2013), who find that cultural aversion affects stock returns; and to Guiso, Sapienza, and Zingales (2008), who find individuals' trust affects households' stock market participation. Instead, we explore a specific channel—financial information production and dissemination—through which culture may affect economic exchanges.

Our paper is also related to the literature documenting information advantage arising from geographic proximity. For instance, Coval and Moskowitz (2001) show that mutual fund managers achieve higher return on local stocks. Malloy (2005) and Bae, Stulz, and Tan (2008) document the information advantage of local analysts. Bulter (2008) and Agarwal and Hauswald (2010) find such an advantage for commercial and investment bankers. Kedia and Rajgopal (2011) show that regulator monitoring is more effective when it is local. By focusing on firms that are traded in the U.S. and covered by analysts located in the U.S., geographic distance between analysts and such firms is mostly similar regardless of analysts' ethnic background. By contrast, cultural distance is significant between China, an archetypical Eastern culture, and the U.S., a modern Western one. Our research setting thus allows us to focus on an information advantage arising from cultural proximity rather than from geographic proximity.

In what follows, we label a U.S. analyst of Chinese ethnic origin as a "Chinese analyst", and a U.S. analyst of another ethnic origin as a "non-Chinese analyst". We label a firm as "Chinese firm" if it is publicly traded in the U.S. but is headquartered in the pan-Chinese region.

The rest of the paper is organized as follows. Section 2 discusses our research setting. Section 3 introduces our data sources and sample construction. Sections 4 and 5 present the empirical results.

Section 6 provides extensions and discussions of robustness tests. Section 7 concludes the paper. Variable definitions and constructions are in the Appendix.

2. RESEARCH DESIGN

2.1 China and U.S. as a Research Setting

China as a research setting offers several unique advantages. First, there are significantly distinct and well-recognized differences between China and the Western world in key aspects of culture, such as language, preferences, beliefs, virtue, and religion. Since the culture of the headquarters' country affects organizational culture (Bloom, Sadun, and van Reenen 2012), these cultural dissimilarities are ideal for our purpose (as in an economic experiment) when examining the impact of culture on information production and communication surrounding Chinese firms listed in the U.S. Second, as discussed in Section 2.2 below, the nature of the Chinese culture allows us to identify the ethnic origin of an individual by surname with significantly less ambiguity relatively to other cultural groups. Third, the influence of Chinese culture spreads historically (and thus exogenously in our current time) beyond China. As discussed later in Section 6.1, this provides a setting that allows us to explore to what extent cultural proximity affects information precision beyond language commonality.

China also provides a unique environment to address the potential selection issues associated with analyst coverage. China is the largest emerging market and has experienced spectacular economic growth since the late 1970s, when it initiated an overhaul of its economic system. The long-lasting high growth and sharp rise in entrepreneurial activities have created a large demand for capital in a capital market where the supply of funds has been confined by the under-development of domestic stock market, the regulated and constrained going-public activities, the lack of active participation by foreign investors due to the government's capital and currency controls, and an ineffectively run banking system (Chang et al., 2012). Many Chinese firms are forced to seek financing outside mainland China, from foreign markets that often do not share the same cultural and institutional environment. Consequently, the purpose, timing,

and location of international listing by Chinese firms are driven by the desire of these firms to raise capital, instead of their need to secure coverage by analysts of the same cultural origin.

Furthermore, the cultural distance between China and Western countries limits the supply of highly skilled knowledge workers who are capable of both understanding and effectively communicating between the two distinctly different cultural environments. Since individuals with such ability are scarce, not all brokerage firms with a similarly high demand for analysts of Chinese ethnicity are able to attract them in order to cover Chinese firms.

The United States, as part of the research setting, also offers unique advantages. It is the largest immigrant country in the world, with immigrants coming from various countries and cultures, including a significant portion of Chinese immigrants. These Chinese immigrants may later become financial analysts hired by brokerage firms operating in the U.S., and provide coverage on Chinese firms listed in the U.S. With non-Chinese analysts coming from various ethnic origins, the comparison of forecast precision between Chinese and non-Chinese analysts is not driven by the cultural difference between China and a specific ethnic group. More importantly, the United States is the largest and most free capital market. With few exceptions, any foreign firms, regardless of their country of origin, can raise capital from this market as long as they meet the listing requirements. Unlike some well-developed financial markets such Japan and United Kingdom, the listing standards and policies in the U.S. do not discriminate significantly between domestic firms and foreign firms.

To disentangle information precision arising from cultural proximity instead of geographic proximity, we focus exclusively on analysts affiliated with brokerage firms operating in the U.S., who provide research coverage on companies traded in the U.S. and who communicate with the U.S. clients of their brokerage firms. Since these analysts are physically located in the U.S., the geographic distance between analysts and any given firm is relatively similar regardless of analysts' ethnic background.[2]

[2] In practice, investment banking and analyst coverage are highly segmented. U.S.-based analysts cover firms traded in the U.S., whereas analysts residing in foreign countries tend to cover local firms. The time zone difference also makes it unlikely for analysts based in the pan-Chinese region to consistently cover firms traded in the U.S.

Our tests involving first-generation Chinese immigrants further help to preclude the impact arising from an analyst's geographic exposure to local firms in the home country. This is because when most of the first-generation Chinese immigrants in our sample left China to pursue their academic education (and later on, analyst career) in the U.S., many Chinese firms that are currently traded in the U.S. did not exist, or were in early development. Any difference in forecast accuracy thus likely arises from cultural difference, instead of arising from geographic distance.

2.2 Measuring Cultural Proximity

Guiso, Sapienza, and Zingales (2006) define culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." They highlight key cultural aspects such as "religion and ethnic background that largely can be treated as invariant over an individual's lifetime." In this paper, our proxy for culture is ethnicity. Individuals belonging to an ethnic group are often identified through a common trait, which can, but does not have to, include an idea of common heritage, a common culture, and a shared language or dialect. The group's ethos or ideology may also stress common ancestry and religion, as opposed to an ethnic minority group which refers to race.

We identify the Chinese ethnic origin of a U.S. analyst based on surname.[3] The unique nature of Chinese culture allows such an identification process to be much easier and less noisy compared with other ethnic origins. First, the distribution of Chinese surnames is highly skewed. The 100 most common surnames, which together account for less than 5% of Chinese family names, are shared by over 85% of the population. Second, a great majority of commonly occurring Chinese surnames contain one character and pronounce with one syllable. While about twenty double-character surnames also exist, they are far less common and are easy to recognize for their Chinese origin. Lastly, surnames are usually not changed upon marriage in modern times. Even in places with a Western influence such as Hong Kong, women

[3] See also Fisman, Paravisini, and Vig (2012) and Iyer and Puri (2012) for discussions on using surnames to identify ethnic groups in India.

may adopt their spouse's surname but continue to reserve her own. The surname change due to marriage is especially rare among women pursuing a professional career, such as financial analysts.

2.3 Proxy for Information Precision

We adopt Hong and Kubik's (2003) proxy to capture the extent of information precision associated with earnings forecast by individual analysts. Specifically, for each analyst, we compute forecast errors, defined as the absolute value of the difference between the actual earnings and the forecasted one, which is based on the latest forecast issued prior to a firm's quarterly earnings announcement. For each firm in a given quarter, we then rank analysts based on their forecast errors. In any given quarter, we exclude the cases where a firm is covered by only one analyst. In case more than one analyst achieves the same forecast accuracy for a given firm in a given quarter, we assign the midpoint of their ranks to these analysts.

By construction, the absolute rank of an analyst depends on the number of analysts covering the same firm in a given quarter. The ranks of analysts covering different firms at different times are thus not directly comparable. To ensure the comparability of ranks, we follow Hong and Kubik (2003) and convert ranks to forecast precision scores. Explicitly, analyst j's forecast precision score regarding firm i in quarter q is computed as follows:

$$Score_{i,j,q} = 100 - \left(\frac{Rank - 1}{\#\ of\ analysts_{i,q} - 1}\right) \times 100$$

The higher the score, the more precise the analyst's forecast.

A crucial feature of the Hong-Kubik measure is that the rank of analysts is computed for each firm-quarter pair, and therefore, is adjusted for firm-quarter effects. Intuitively, it reduces the concerns that earnings forecasts can be more difficult for certain firms and/or during certain periods, as accuracy ranking is computed for each analyst and compared with other analysts providing forecasts for the same

firm at the same time.[4] For instance, a Chinese analyst may cover 10 firms, and his/her forecast accuracy is ranked for each of the 10 firms, each being identified with a score.

3. DATA SOURCES AND SAMPLE CONSTRUCTION

3.1 Identifying the Chinese Ethnicity of U.S. Analysts

We compile a sample of firms under analyst coverage between 1990 and 2010 from the Institutional Brokers' Estimate System (I/B/E/S) database. Analyst coverage is based on the availability of quarterly earnings per share (EPS) estimates, which is the most common estimate provided by analysts. We restrict the quarterly earnings forecasts to those issued by sell-side analysts affiliated with a U.S brokerage firm or with the U.S. branch of a foreign brokerage firm, and restrict our sample to firms headquartered either in the U.S. or in the pan-Chinese region, and traded on stock exchanges in the U.S.[5]

Since our research setting involves individuals' ethnic background, we next exclude earnings forecasts issued by analyst groups, whose performance cannot be evaluated individually. By construction, the Hong-Kubik (2003) score compares relative forecast accuracy among analysts covering the same firm at the same time; we thus require at least two analysts issuing forecasts for a given firm in a given quarter. This filtering process yields a total of 8,370 firms traded at U.S. stock exchanges, with 1,367,086 quarterly forecasts issued by 9,537 unique sell-side analysts that are affiliated with 581 unique brokerage firms.

Among the 8,370 firms, 8,164 are headquartered in the U.S., and 206 are headquartered in the pan-Chinese region. We collect headquarter information from Compustat and manually verify through internet searches, including using Google maps, that the 206 firms are indeed headquartered in the pan-Chinese region, regardless in which countries they are registered. Among these firms, 163 are from

[4] Using the Hong-Kubik (2003) score also helps reduce the dependence on various control variables in the regression to account for firm-level and time-varying factors that could affect forecast precision other than culture.

[5] That is, our sample includes firms that are traded on NYSE, NASDAQ, AMEX, or OTC Bulletin Board. For the final sample of Chinese firms, 48% are traded on NASDAQ, 24% are traded on NYSE, 3% are traded on AMEX, and 25% are traded on OTC. Results are similar if we restrict to firms traded only on NYSE, NASDAQ or AMEX, and are thus not reported.

mainland China, 19 from Hong Kong, 12 from Singapore, and 12 from Taiwan. The 206 Chinese firms are covered by analysts from 188 unique brokerage firms.

For each individual analyst, I/B/E/S provides information on surname, the initial of the first name, and the affiliated brokerage firm(s). The 9,537 analysts are associated with 6,324 unique surnames. We first screen each analyst for potential Chinese ethnic origin by manually searching for his/her surname from the following websites: www.houseofnames.com, www.behindthename.com, www.ancestry.com, and www.wikipedia.org.[6] This process yields 77 unique surnames as possibly of Chinese ethnic origin. Second, we screen each last name based on its pronunciation. A surname is defined as of Chinese origin if it contains one syllable.[7] This approach generates 253 unique surnames for potential Chinese origin.

We then manually check for consistency for surnames identified by the above two classification approaches. In case there is a discrepancy between the two, we check the geographical distribution of people with such a surname by searching www.lastnames.myheritage.cn, the Chinese branch of www.myheritage.com, a renowned genealogy website. With currently 864 million users worldwide, the website allows users to discover their heritage and build family trees. Specifically, we classify a surname of Chinese origin if a significant number of people with such a surname reside in mainland China, Hong Kong, Taiwan, or Singapore. We exclude surnames that are ambiguous in terms of Chinese origin if this heritage site cannot help remove the ambiguity.

Out of the 9,537 U.S.-based analysts, we identify 330 analysts with 126 unique Chinese surnames. These analysts are affiliated with 149 brokerage firms. In Appendix A, we provide a list of Chinese surnames and describe the distribution of analysts with Chinese surnames.

[6] For example, see http://en.wikipedia.org/wiki/List_of_common_Chinese_surnames.

[7] Potential misclassification arises from the first approach when a commonly used Chinese surname is classified by these websites as of a non-Chinese origin. The first approach also can potentially exclude certain Chinese surnames. The second approach allows a common surname among multiple ethnicities. While a common surname does carry common cultural heritage, to ensure the conservativeness of our analysis we exclude these that are associated with multiple ethnical groups or whose ethnicity cannot be identified (for example, surnames such as Lee and Park).

3.2 First-Generation Chinese Analysts

We postulate that an advantage to process financial information of foreign firms is inherent to the analyst's cultural exposure to his or her home country. Put differently, such advantage diminishes in the absence of extensive exposure to the home country culture. In the context of our research design, we further identify first-generation Chinese immigrants. Analysts of first-generation Chinese immigrants have the longest and most extensive exposure to the Chinese culture. By contrast, second- or later-generation ethnic Chinese in the U.S. are far less exposed to the information and cultural environment back in the home country, despite many being able to speak Chinese fluently.

We use the location of an analyst's college education to identify whether or not he or she is a first-generation Chinese. We manually search for the bios of analysts identified as Chinese ethnic origin in Capital IQ, LinkedIn.com and Zoominfo.com, using the surname, the initial of the first name, and the brokerage firm which the analyst is currently, or has been, affiliated with. Out of the 330 analysts of Chinese origin, 135 disclosed their college education in their bios, of which, 47 obtained their undergraduate degrees from schools in mainland China, Hong Kong, Taiwan, or Singapore. We classify these 47 analysts as being first-generation Chinese.

We are unable to obtain analysts' pre-college education information such as high school. However, using college education to identify first-generation individuals is suitable for our sample period. To pursue a career that demands highly skilled labor such as a financial analyst, a first-generation immigrant normally has to first complete either an undergraduate or a graduate academic degree in the U.S. Historically, due to visa restrictions, first-generation immigrants from the pan-Chinese regions, especially from mainland China, mostly pursue graduate degrees in the U.S. after completing their undergraduate studies in their home countries. While there has been a sharp rise in enrollment in U.S. undergraduate programs from Chinese students relative to other countries in recent years, immigrant-

Chinese analysts that provided coverage during our sample period (1990-2010) received their education before this rise.[8]

3.3 Descriptive Statistics

Table 1 presents the descriptive statistics of analysts and sample firms. In Panel A we compare analyst characteristics. The 330 analysts of Chinese ethnic origin issued 29,379 forecasts during the sample period, compared to the 1,337,707 forecasts issued by 9,207 analysts without Chinese ethnic background. An average Chinese analyst covers 10 firms during the sample period, significantly lower than the 14 firms that an average non-Chinese analyst covers (T = 8.95). Non-Chinese analysts make significantly more forecasts than Chinese analysts. They are also more experienced (82 months in the profession versus 61 months). Nevertheless, there is no significant difference in their forecast accuracy in terms of the Hong-Kubik (2003) score.

Panel B reports the descriptive statistics at firm level. An average Chinese firm is covered by 9 analysts during the sample period, significantly less than the 16 analysts that cover an average U.S. firm. A Chinese firm on average receives 18 earnings forecasts per year, compared to the 25 forecasts per year received by an average U.S. firm. This is likely due to the fact that most of our sample Chinese firms were listed on U.S. stock exchanges in the later years of our sample period. Analysts covering Chinese firms are less experienced, as they have been in the profession for 60 months—significantly lower than the average of 82 months associated with analysts covering U.S. firms. Since by construction the Hong-Kubik (2003) score adjusts for firm and quarter differences, the forecast accuracy is similar between Chinese firms and U.S. firms. Not surprisingly, Chinese firms are on average smaller in terms of assets and market capitalization than U.S. firms. They also have lower leverage.

Panel C reports the descriptive statistics for forecast characteristics. There is evidence that Chinese analysts are not hired to cover exclusively Chinese firms listed in the U.S.: analysts of Chinese

[8] See more details at Institute of International Education, 2012, International Student Enrollment Trends, 1949/50-2011/12, Open Doors Report on International Educational Exchange.

ethnic origin issue 25,387 forecasts for U.S. firms, more than 6 times the number of forecasts (3,992) for Chinese firms. While the Hong-Kubik (2003) score is the same between analysts covering Chinese firms and U.S. firms, it is significantly higher (51.58) when analysts of Chinese origin cover Chinese firms relative to covering U.S. firms (50.08). This gap widens in the case of first-generation Chinese analysts. By contrast, forecast accuracy of analysts lacking a Chinese ethnic background is lower for Chinese firms than for U.S. firms.

Panel D reports the distribution of analysts by the brokerage firms which they are affiliated with. The unit of analysis is analyst-brokerage observations, as an analyst can be affiliated with different brokerage firms through the course of his/her career. We tabulate the statistics for the top 24 brokerage firms operating in the U.S. that employ Chinese analysts during the sample period, and aggregate that for the remaining 125 firms. The first two columns report the distribution of Chinese analysts by brokerage firms. The largest number of analysts of Chinese origin comes from Citi (26 analysts), accounting for 5.21% of Chinese analysts in our sample. It is followed by Goldman Sachs and UBS, each of which employs 21 and 19 analysts, and accounts for 4.21% and 3.81% of the sample of Chinese analysts, respectively.

The last two columns of Panel D report the distribution of Chinese analysts as the part of the brokerage firms' workforce. For example, there are 836 analysts affiliated with Citi during our sample period. While Citi hires the largest number of Chinese analysts in our sample, these 26 Chinese analysts account for only 3.11% of its workforce.

Panel E reports the distribution of Chinese firms covered by the 188 brokerage firms during the sample period. We tabulate the statistics for the top 25 brokerage firms operating in the U.S. that provide analyst coverage for Chinese firms, and aggregate that for the remaining 163 brokers. Again, comparing to Panel D, there is evidence that brokerage firms do not purposely employ Chinese analysts to exclusively cover Chinese firms, especially among the large brokerage firms. Goldman Sachs ranks second as the employer for Chinese analysts (Panel D), but does not make to the top 25 in terms of providing analyst coverage for Chinese firms (Panel E). While Oppenheimer covers 71 Chinese firms,

accounting for 4.72% of the sample of Chinese firms, it employs only 12 Chinese analysts, less than the 26 Chinese analysts employed by Citi, which provides analyst coverage for 24 Chinese firms—far less than the number of Chinese firms covered by Oppenheimer. The 12 analysts of Chinese origin account for 6.06% of the analyst labor workforce at Oppenheimer. Furthermore, for the remaining 163 brokerage firms, 80 of them that do not employ Chinese analysts still provide coverage for 192 Chinese firms.

The results in Panels D and E suggest that endogenous matching between Chinese analysts and Chinese firms traded in the U.S. is less a concern in our setting. Brokerage firms, especially large ones, do not hire Chinese analysts to exclusively cover Chinese firms. Even if a similar brokerage firm wishes to hire such analysts, it might be not be able to do so due to the limited supply.

4. THE EFFECT OF CULTURAL PROXIMITY ON FORECAST ACCURACY

In this section, we examine the impact of cultural background on information precision in the context of forecast accuracy. The unit of analysis is analyst-firm-quarter observation. To take into account any fluctuations of forecast accuracy overtime such as seasonality, recessions, or expansions, which may affect analyst forecast precision, we include forecast quarter fixed effects. In certain specifications we include, additionally, firm fixed effects, which control for any observed or unobserved time-invariant firm characteristics that may affect analyst forecast precision.

4.1 Baseline Regression

Table 2 Panel A reports the regression results based on the entire sample. Robust standard errors are clustered at firm-quarter level. In column 1, we regress the Hong-Kubik (2003) score on "Chinese Analyst", a dummy variable that takes value of one if the forecast for a given firm in a given quarter is issued by an analyst of Chinese ethnic origin, and zero if it is issued by an analyst of other ethnic origins. We find that after controlling for quarter fixed effects, the coefficient associated with the dummy for Chinese analyst is statistically insignificant, indicating that U.S.-based analysts of Chinese ethnic origin do not outperform those of other ethnic origins in forecast accuracy. This suggests that our subsequent

results are not driven by any inherent superior ability of Chinese analysts to provide better earnings forecasts in general.

In column 2, we regress "Score" on "Chinese Firm", a dummy that takes a value of one if a quarterly forecast is issued by an analyst for a firm headquartered in the pan-Chinese region, and zero for a firm headquartered in the U.S. Column 2 reveals that after controlling for quarter fixed effects, the coefficient for "Chinese Firm" is insignificant. This is consistent with the Hong-Kubik forecast accuracy score already accounting for firm level differences.

In column 3, we regress "Score" against the dummy for Chinese analyst, the dummy for Chinese firm, and the interaction term between the two. In column 4, we control, additionally, the professional experience of the analyst who issues the forecast. We measure an analyst's professional experience as the natural logarithm of the number of months between his/her current forecast and first forecast in the I/B/E/S database. While the coefficient for "Chinese Analyst" remains insignificant, the coefficient for "Chinese Firm" is negative but becomes highly significant. This suggests that the accuracy of a non-Chinese analyst is significantly lower when forecasting earnings of a Chinese firm than a U.S. firm.

Two possible explanations then arise. One is that, consistent with our argument, firms from the pan-Chinese region suffer significantly higher information asymmetry; it is more difficult for a non-Chinese analyst to forecast their earnings. The alternative is that brokerage firms select non-Chinese analysts of inferior forecast ability compared to their peers to cover Chinese firms. To rule out this alternative, we compare the forecasts on U.S. firms by non-Chinese analysts that have covered Chinese firms with those by non-Chinese analysts that have never covered Chinese firms. As described later in Section 6.3 and Table 10, non-Chinese analysts that also provide coverage for Chinese firms outperform those that have never covered Chinese firms. This indicates that the greater information asymmetry faced by foreign firms, especially those from emerging markets, is likely to be associated with lower forecast accuracy.

More importantly, the interaction term between the dummy for Chinese analyst and dummy for Chinese firm is positive and highly significant. While firms from the pan-Chinese region suffer from

significantly higher information asymmetry than firms of U.S. origin, the effect is reversed if the forecast is issued by an analyst sharing the same Chinese ethnic origin. In fact, a forecast of a Chinese firm's earnings is more accurate if it is issued by a Chinese analyst than by a non-Chinese analyst.

Lastly, we repeat the analysis in columns 4 but replace the dummy for Chinese firm with firm fixed effects. Column 5 reveals that the interaction term between the dummy for Chinese firm and the dummy for Chinese analyst remains positive and significant at the 1% level. After controlling for quarter fixed effects, firm fixed effects, and the professional experience of individual analyst, analysts of Chinese ethnic origin issue more precise earnings forecasts on firms of Chinese origin. The coefficient of 2.921 for the interaction term (column 5) translates to 2.91 percentile higher in ranking if a Chinese analyst, instead of a non-Chinese analyst, covers a Chinese firm.

The Hong-Kubik (2003) score already absorbs largely the variations in analyst forecast accuracy across firms over time. Consequently, it is challenging to directly assess the economic significance of the culture effect from the above tests.[9] To illustrate the economic significance, Leone and Wu (2007) document the average Hong-Kubik (2003) score of all-star analysts being higher in the magnitude of 2 percentile than that of non-star analysts. By contrast, among Chinese firms, being an analyst who shares the same cultural background can improve the score by 2.921 percentile.

4.2 Within-Group Tests

Our analyses so far include forecast quarter fixed effects and firm fixed effects to control for observed and unobserved time-varying and firm-specific factors that can potentially explain analyst forecast precision. Since the number of Chinese firms and analysts of Chinese ethnic origin are relatively small compared to those of U.S. firms and analysts of other ethnic origins (2.5% of all the sample firms and 3.5% of all the sample analysts, respectively), to further account for the time-varying differences

[9] Since the Hong-Kubik (2003) score is defined at the firm-quarter level, it is equivalent to comparing accuracy of forecasts made for each firm-quarter. With this type of regression taking into account firm-quarter effects, the resulting R-squares are generally small.

across firms and across analysts, we explore our findings within the sub-sample of Chinese firms and the sub-sample of Chinese analysts.

In Table 2 Panel B we report two sub-sample regression results. In columns 1 through 3, we conduct "within-Chinese firm" tests by comparing between the accuracy of forecasts issued by Chinese analysts and non-Chinese analysts regarding the earnings prospect of the *same* Chinese firm. In addition to quarter fixed effects, we include firm fixed effects to control for unobserved firm characteristics that can affect the difference in forecast accuracy between China analysts and non-Chinese analysts. Standard errors are clustered at firm level.

Columns 1 through 3 reveal that the dummy for Chinese analyst is significantly and positively linked to forecast accuracy, even after controlling for analyst's professional experience, quarter fixed effects, and firm fixed effects. This suggests that among all the U.S. analysts that cover Chinese firms traded in the U.S., analysts of Chinese ethnic origin issue more precise earnings forecasts than analysts of other ethnic origins.

In columns 4 through 6, we conduct "within-Chinese analyst" tests by comparing the accuracy of forecasts regarding Chinese firms and U.S. firms that are covered by the *same* Chinese analyst. In addition to quarter fixed effects, we include, in column 6, analyst fixed effects to control for an analyst's unobserved characteristics that can affect forecast accuracy. We cluster standard errors at analyst level.

Controlling for quarter fixed effects, individual analysts' professional experience, and analyst fixed effects, the dummy for Chinese firm continues to be positively and significantly related to the forecast accuracy of Chinese analysts. Among all the firms covered by Chinese analysts, the forecasts about earnings of Chinese firms are more accurate than their forecasts about U.S. firms.

4.3 First-Generation Chinese Analysts

Table 2 provides evidence consistent with our premise that common cultural origin between a foreign firm and an analyst is associated with more precise earnings forecasts. We further explore this dimension by distinguishing whether or not an analyst is a first-generation Chinese immigrant. Since the

first-generation Chinese immigrants have the longest and most extensive exposure to the Chinese culture, they are more capable of interpreting and obtaining information that is unique to the firms from the same cultural origin. By contrast, second- or later-generation Chinese residents in the U.S. are far less exposed to the information and cultural environment in the home country.

In Table 3 Panel A we compare the coverage characteristics between analysts of first-generation Chinese and the rest of Chinese analysts. First-generation Chinese analysts cover similar number of firms and issue similar number of earnings forecasts as the rest of Chinese analysts, but they are less experienced.

In Table 3 Panel B, we repeat our analyses in Table 2 by replacing the dummy for Chinese analyst with a dummy for first-generation Chinese analyst. Robust standard errors are clustered at firm-quarter level. Column 1 of Panel B reveals that on average, first-generation Chinese analysts provide more accurate forecasts than the rest of the analysts—the coefficient associated with "First-Generation Chinese Analyst" is positive and significant at the 1% level. Columns 2 through 4 indicate that this "outperformance" is most likely driven by their significantly greater information precision when forecasting earnings for Chinese firms, as the coefficient for "First-Generation Chinese Analyst" × "Chinese Firm" is positive and significant at the 1% level, regardless whether or not we control for individual analysts' professional experience and firm fixed effects (column 4).

In columns 5 through 7 we repeat our analyses in Table 2 Panel A but include an additional interaction term "Chinese Analyst" × "Chinese Firm" × "First-Generation Chinese Analyst". The coefficient for this three-way interaction term captures the difference in forecast accuracy between first-generation Chinese analysts and the remaining Chinese analysts. We observe that the interaction term is positive and statistically significant at the 5% level for various regression specifications. While Chinese analysts provide more accurate forecasts regarding Chinese firms than non-Chinese analysts, the effect is more prominent among analysts that are first-generation Chinese immigrants. These findings indicate that the reduction in information asymmetry surrounding Chinese firm is stronger when the analyst who provides the forecast has a stronger cultural bond with these firms.

4.4 Robustness

4.4.1 Matched Sample

Our analysis so far is based on the entire sample of firms publicly traded on the U.S. exchanges with headquarters either in the U.S. or in the pan-Chinese region. To address the concern that different types of firms attract certain analysts, we control for firm-fixed effects and quarter fixed effects, and conduct within-group tests. As an alternative, we repeat our analysis in a matched sample framework.

For each Chinese firm in each year, we match by industry and size with a firm headquartered in the U.S. We classify a firm's industry based on the 4-digit SIC code, and measure firm size using total assets in each year. The match is done with replacement and generates 1,139 unique firm-year observations, out of which, 591 are for firms headquartered in the pan-Chinese region, and 548 are for firms headquartered in the U.S. We then merge them with our forecast sample. Our final matched sample contains 30,968 forecasts for the 1,139 firm-year observations. Roughly 15% of these forecasts are from analysts of Chinese origin regarding the earnings prospects of Chinese firms.

We repeat the analysis in Panel A of Table 2 using the matched sample and present the results in Table 4. In particular, we observe from columns 3 through 5 that the coefficient associated with "Chinese Analyst" becomes negative and significant at the 10% level. When forecasting earnings for U.S. firms operating in the same industry and of similar size, analysts of Chinese ethnic origin underperform analysts without Chinese origin. The coefficient for "Chinese Firm" remains negative and significant in columns 3 and 4. Forecasts issued by a non-Chinese analyst are less precise for a Chinese firm compared to a U.S. firm of similar size and operating in the same industry.

Lastly, the interaction term is positive and highly significant, regardless of whether we control the professional experience of individual analysts or whether we include additional firm fixed effects (column 5). While analysts of Chinese ethnic origin underperform their peers when forecasting earnings for U.S. firms, they significantly outperform those without a Chinese origin when forecasting earnings of Chinese firms within the same industry and with similar size.

The economic significance associated with cultural proximity, however, is larger in the matched sample setting than in the overall sample. Regarding forecast accuracy for Chinese firms, being an analyst sharing the same cultural background can improve the score by 4.753 percentile. This is larger than the 2.921 percentile improvement for the whole sample (Table 2 Panel A column 5).

4.4.2 Analyst Optimism

A growing literature has documented evidence that organizational or geographical loyalty contributes to the home bias. Morse and Shive (2011) find that investor ethnocentrism affects investors' portfolio allocation. In light of the notion that Chinese analysts are often being perceived as insiders or experts about Chinese firms, Kahneman and Lovallo (1993) argue that an insider's view tends to produce overly optimistic forecast. This is because insiders focus more on knowledge of special cases and are more likely to fall prey to "representativeness heuristic", while outsiders are more inclined to take a statistical and comparative view. It is possible that our baseline results in Table 2 are driven by analysts of Chinese ethnic origin being biased—more optimistic about earnings prospective of firms from their home country, concurrent with the higher growth experienced by these firms during the same time.

In this section we examine whether analysts of Chinese origin are more optimistic when they issue earnings forecasts and stock recommendations regarding Chinese firms. For each analyst in each quarter, we define "Forecast Optimism" as the difference between forecasted EPS and actual EPS. The higher the variable, the more optimistic the analyst is. We define "Analyst Recommendation" based on the I/B/E/S database recommendation score, equal to 5 if an analyst issues a "Strong Buy", 4 if the recommendation is "Buy", 3 for "Hold", 2 for "Underperform", and 1 for "Sell". For each firm in each year, we average the recommendations issued by a given analyst. The greater this variable, the more optimistic an analyst is about the future prospect of the firm.

Table 5 reports the results. In column 1, we regress "Forecast Optimism" against the dummy for Chinese analyst, the dummy for Chinese firm, and the interaction between the two. The unit of analysis is firm-quarter-analyst observations. We control for individual analyst's professional experience, as well as

quarter fixed effects. Column 1 reveals that the coefficient for "Chinese Analyst" dummy is negative and significant, indicating that analysts of Chinese ethnicity are generally less optimistic when forecasting earnings about U.S. firms than analysts without Chinese origin. The dummy for Chinese firm is positive and significant at the 1% level, suggesting that earnings forecasts issued by non-Chinese analysts are in general more optimistic for Chinese firms than for U.S. firms. That non-Chinese analysts hold a more optimistic view about Chinese firms is probably due to the greater growth opportunities of these firms during the sample period. Lastly, the interaction term between the two dummies is positive and significant, suggesting that Chinese analysts tend to be more optimistic when forecasting earnings of firms from pan-Chinese origin.

In column 2, we regress "Forecast Optimism" against the dummy for analyst of Chinese origin and the interaction between the dummies for Chinese analyst and Chinese firm, controlling firm fixed effects and quarter fixed effects. We find that neither the dummy for Chinese analyst nor the interaction term "Chinese Analyst" × "Chinese Firm" is statistically significant. This suggests that after controlling for any observed and unobserved time-invariant firm characteristics as well as time-varying fluctuations of analyst forecast optimism, analysts of Chinese origin are as optimistic as analysts of non-Chinese origin, and they are no longer more optimistic than non-Chinese analysts when forecasting firms of Chinese origin. In addition, the R-squared improves from column 1's 1.6% to column 2's 12.1%, indicating that the extent of forecast optimism is largely driven by the characteristics of firms themselves.

In column 3, we regress "Analyst Recommendation" against "Chinese Analyst", "Chinese Firm", and "Chinese Analyst × Chinese Firm". The unit of analysis is firm-year-analyst observations. We control for individual analysts' professional experience and year fixed effects. In column 4, we control, additionally, firm fixed effects. Columns 3 and 4 reveal that the coefficient for the dummy for Chinese analyst is insignificant. The interaction term is negative, and is significant at the 5% level in column 4. These results suggest that Chinese analysts do not issue more favorable stock recommendations relative to non-Chinese analysts, and they do not do so especially for Chinese firms.

The results from Table 5 indicate that Chinese analysts are not subject to optimism regarding Chinese firms. When Chinese analysts cover Chinese firms, familiarity does not lead to optimism and rosy recommendation. This also suggests that our results in Tables 2 through 4 are not driven by analysts' optimism for the countries of their origins.

5. VALUING CULTURAL PROXIMITY

In the previous section we document evidence that analysts of Chinese ethnicity appear to be able to extract more precise information when forecasting earnings about Chinese firms, and that the effect is stronger if such analysts are first-generation immigrants, who have the strongest and longest exposure to home country cultural environment. We interpret this result as evidence that cultural proximity allows analysts to better access and infer the financial information of firms from the same cultural origin.

Nevertheless, whether and how the capital markets take into account the effect of cultural proximity is ambiguous *ex ante*. On the one hand, Kumar, Niessen-Ruenzi, and Spalt (2012) show that investors bias against mutual fund managers with foreign sounding names: funds with those managers experience lower flows and greater flow-performance sensitivity. In the context of analysts, financial market participants in the U.S. might discount and/or under-react a Chinese analyst's opinion due to social biases from stereotype. Alternatively, investors may recognize the advantage of cultural proximity and consider analysts of Chinese ethnicity more informative about the Chinese firms under their coverage. In this case, the market should respond stronger to actions by Chinese analysts regarding Chinese firms.

5.1 Market Reaction to Forecast Revision

We first examine the impact of cultural proximity in the context of market reactions to forecast revision. To construct the sample of forecast revisions, we require our sample analysts to issue at least two forecasts for each firm-quarter-analyst observation. A revision occurs if an analyst's current EPS estimate differs from his/her previously forecasted EPS, among which, an upward revision occurs when the current EPS forecast is greater than the previous EPS forecast. Our final sample of forecast revisions

includes 2,263,949 revisions made by 8,551 unique analysts. The market reaction is captured by "CAR", the abnormal return computed as the difference between the stock return and the CRSP value-weighted market return on the day when a revision occurs.

Table 6 reports the regression results. The unit of analysis is analyst-firm-announcement day observations. In column 1, we regress "CAR" on the dummy for Chinese analyst, the dummy for Chinese firm, and "Upward Revision"—defined as a dummy variable taking a value of one if the revised EPS forecast is greater than the previous forecast by the same analyst and zero if the revised EPS forecast is less than the previous forecast (downward revision). In column 2, we include, additionally, the interaction term between the dummy for Chinese analyst and the dummy for Chinese firm, and the interaction among the Chinese analyst dummy, the Chinese firm dummy, and the upward revision dummy. The sum of the coefficients for "Chinese Analyst", "Chinese Analyst" × "Chinese Firm", and "Chinese Analyst" × "Chinese Firm" × "Upward Revision" captures the difference in market reaction between Chinese analysts and non-Chinese analysts when they revise their earnings forecasts upwards regarding Chinese firms. We observe that the announcement period abnormal return is 1.1% higher if the earnings forecast about a Chinese firm is revised upwards by a Chinese analyst than by a non-Chinese analyst, and this difference is statistically significant at the 1% level (F statistics = 46.17).

By contrast, the sum of the coefficients for "Chinese Analyst" and "Chinese Analyst" × "Chinese Firm" measures the difference in market reaction to downward revisions regarding Chinese firms issued between Chinese analysts and non-Chinese analysts. Investors react more negatively (-0.1%) if the forecast about a Chinese firm is revised downwards by a Chinese analyst than by a non-Chinese analyst, albeit the difference is insignificant ($p = 0.28$).

In columns 3 and 4, we include firm-quarter-analyst fixed effects, which allow us to control for observed and unobserved firm-specific, time-varying, and analyst-specific characteristics that could potentially affect market reactions to forecast revisions. We also include as an additional control analyst's professional experience in column 4. The interaction term among the dummies for Chinese analyst, Chinese firm, and upward revision continues to be positive, and is statistically significant at the 5% level.

Market reaction is stronger when forecast revision is conducted by analysts of Chinese origin for Chinese firms, especially if the analyst increases his/her EPS forecast.

5.2 Market Reaction to Analyst Recommendations

Next, we examine the impact of cultural proximity in the context of market reactions to analyst recommendations and upgrades. We collect analyst recommendations from the I/B/E/S database and merge with our sample of analysts covering firms of pan-Chinese region and of U.S. origin during the 1990-2010 period. To construct the sample of recommendation revisions, we require our sample analysts to issue at least two recommendations to the same firm they cover. Our sample thus includes 337,207 recommendations issued by 8,227 unique analysts to 7,992 firms, and 219,347 recommendation revisions issued by 6,972 unique analysts to 7,483 firms. We compute "CAR", defined as the difference between the stock return and the CRSP value-weighted index return on the day when a recommendation is issued or a revision to the recommendation takes place.

Table 7 reports the regression results. In columns 1 through 4, we regress "CAR" on the announcement day of recommendation on the dummy for Chinese analyst, the dummy for Chinese firm, and "Buy"—a dummy variable taking a value of one if the recommendation is either "Strong Buy" or "Buy" and zero if it is "Hold", "Underperform", or "Sell". Column 1 reveals that recommendations issued by analysts of Chinese origin cause similar price reaction as those of non-Chinese analysts. And the market reacts similarly if the recommendation is regarding shares of a Chinese firm relative to shares of a U.S. firm. In general, a buy recommendation leads to a rise in share price, as the coefficient associated with "Buy" is positive and significant.

In column 2, we include, additionally, the interaction between the dummy for Chinese analyst and the dummy for Chinese firm, and the interaction among the dummies for Chinese analyst, for Chinese firm, and for buy recommendation. The coefficient for the interaction term "Chinese Analyst" × "Chinese Firm" × "Buy" is positive and significant at the 10% level: the shares of a Chinese firm enjoy an average 0.8% higher abnormal return on the announcement day when a Chinese analyst issues a "Buy"

recommendation. This term becomes stronger (1.2%) and significant at the 5% level in columns 3 and 4 when we control for firm fixed effects in addition to announcement year fixed effects.

Furthermore, column 3 reveals that the sum of the coefficients for "Chinese Analyst", "Chinese Analyst" × "Chinese Firm", and "Chinese Analyst" × "Chinese Firm" × "Buy" is 0.008 and is statistically significant at the 5% level (F-statistics = 4.18). This indicates that after controlling for announcement year fixed effects and firm fixed effects, the market reaction to a buy recommendation about a Chinese firm is 0.8% higher if it is issued by a Chinese analyst than by a non-Chinese analyst. By contrast, the sum of the coefficients for "Chinese Analyst" and "Chinese Analyst" × "Chinese Firm" is -0.004 and statistically insignificant (p = 0.22), suggesting that the market reacts similarly between Chinese and non-Chinese analysts when they issue recommendations such as "hold", "underperform", or "sell", regarding Chinese firms.

In columns 5 through 8, we repeat the analysis for analyst upgrade. In particular, "Upgrade" is a dummy variable equal to one if an analyst's recommendation is more favorable compared to his/her previous recommendation, and zero if it is less favorable or unchanged from the previous recommendation. Again we observe that the market reaction is significantly stronger when an upgrade is issued by a Chinese analyst regarding a Chinese firm.

To summarize, the results from Tables 6 and 7 indicate that the market recognizes the impact of culture on analysts' information advantage. Price reaction is stronger when Chinese analysts upward revise their earnings forecasts, or issues a buy recommendation or an upgrade, for Chinese firms.

6. EXTENSIONS AND OTHER ROBUSTNESS TESTS

6.1 Language Commonality versus Cultural Proximity

One main cultural trait is language, which plays an important role in extracting and disseminating information. While we recognize language as a key component of individual's ethnicity—our proxy for

culture, we argue that the scope of cultural proximity can go beyond language commonality.[10] In our research setting, firms publicly traded on the stock exchanges in the U.S. are required to disclose all financial materials in English. Analyst conference calls, investor office meetings, and broker-hosted investor conferences are conducted in English. In addition, we show that the effect of cultural proximity is stronger among the first-generation Chinese analysts, despite the fact that many later-generation Chinese immigrants speak fluent Chinese.

In this subsection we further explore the effect of language commonality on our findings by distinguishing between Chinese-speaking and English-speaking Chinese firms. In mainland China and Taiwan, Chinese is the official language, whereas in Hong Kong and Singapore, English is also the commonly spoken and official written language, especially for business. If language commonality is the *only* factor that drives our finding, the effect of Chinese analysts on forecast precision should be stronger for firms headquartered in Chinese mainland and Taiwan than for firms headquartered in Hong Kong and Singapore.

Panel A of Table 8 reports the distribution of Chinese firms in our sample. A total of 175 firms are headquartered in Chinese-speaking regions of Chinese mainland and Taiwan, whereas 31 firms are headquartered in English-speaking regions of Hong Kong and Singapore. In Panel B we provide univariate comparison of forecast accuracy between Chinese analysts covering Chinese-speaking Chinese firms and Chinese analysts covering English-speaking Chinese firms. The Hong-Kubik (2003) score is similar between the two types of firms.

Panel C reports the multivariate regression results. Specifically, we define "Chinese Firm (Chinese-Speaking)" as a dummy variable equal to one if a firm is headquartered in mainland China or Taiwan, and zero otherwise. "Chinese Firm (English-Speaking)" is defined as a dummy variable equal to one if a firm is headquartered in Hong Kong or Singapore, and zero otherwise. In column 1, the F-

[10] For example, even though all the communications are conducted via English during analysts' interactions with management of firms under coverage, analysts that share the same cultural background with the firm may be better at gathering firm-specific information from management's facial expression, body language, or vocal cues (Mayew and Venkatachalam 2012) than other analysts.

statistics testing the equality of the coefficients of the two dummies is 1.54, indicating no difference in forecast accuracy regarding these two types of firms.

In columns 2 and 3 of Panel C, we capture the forecast accuracy of Chinese analysts covering firms from mainland China and Taiwan using the sum of the coefficients for "Chinese Analyst", "Chinese Firm (Chinese-Speaking)", and "Chinese Analyst" × "Chinese Firm (Chinese-Speaking)". We capture the forecast accuracy of Chinese analysts covering firms from Hong Kong and Singapore using the sum of the coefficients for "Chinese Analyst", "Chinese Firm (English-Speaking)", and "Chinese Analyst" × "Chinese Firm (English-Speaking)". The F-statistics testing the equality of the two sums of coefficients are insignificant. This indicates that there is no difference in the accuracy of quarterly forecasts issued by Chinese analysts regarding earnings prospects between Chinese-speaking and English-speaking Chinese firms.

In column 4, we control firm fixed effects in addition to quarter fixed effects. The F-statistics testing the equality of the coefficients associated with the two interaction terms is again insignificant. The results in Table 8 thus indicate that language alone does not drive our findings, and that cultural proximity goes beyond language commonality.

6.2 Superior Access to Management

One common explanation for analysts' forecast skills is their superior access to the management of firms under their coverage. In reality, analysts both emphasize on and pledge significant resources to achieve interactions with firm managements, such as private meetings with the management, visits to firm's headquarters, brokerage-hosted conferences (e.g., Green et al. 2012; Solomon and Soltes 2013). In particular, Green et al. (2012) provide direct evidence that access to management constitutes a crucial source of analysts' information advantage.

It is possible that Chinese analysts have unique access to management and thus private information on Chinese firms, in which case our findings are likely the result of an analyst's private sources and networks for firm-specific information rather than cultural proximity. We argue that cultural

proximity contributes to the formation of an analyst's social network and communication channels for private information. Nevertheless, we examine whether an analyst's superior and private access to management is the dominating factor for our findings.

We split our sample period based on the implementation of Regulation Fair Disclosure (Reg FD), a regulation promulgated by the U.S. Securities and Exchange Commission (SEC) in August 2000 mandating that all publicly traded companies must disclose material information to all investors at the same time. The regulation sought to stamp out selective disclosure, in which some market professionals received market moving information before others (often smaller, individual investors). By fundamentally changing how companies communicate with investors, Reg FD significantly reduces an analyst's private channel to firm-specific information. In fact, in their survey of the related literature, Koch, Lefanowicz, and Robinson (2012) conclude that Reg FD has largely eliminated the benefits of private access to management.

We repeat our tests in Panel A of Table 2 for the pre-Reg FD period (before 2000), and post-Reg FD period (after 2000), respectively, and present the results in Table 9. Table 9 indicates that our main finding is driven by the post-Reg FD period, after controlling for quarter fixed effects and firm fixed effects. By contrast, Chinese analysts do *not* have a more significant information advantage in the pre-Reg FD period. The interaction term for "Chinese Analyst" × "Chinese Firm" is negative and insignificant for the pre-Reg FD period. Note that Reg FD applies to all analysts based in the U.S., and our tests account for observed and unobserved firm-specific characteristics. These results thus suggest that our findings are not driven exclusively by Chinese analysts' superior access to the management for private information of Chinese firms.

6.3 Non-Chinese Analysts

We have shown that analysts of Chinese ethnic origin outperform analysts without Chinese ethnicity in forecasting earnings of Chinese firms. One possible alternative explanation is that non-Chinese analysts selected by their brokerage firms to cover Chinese firms are of inferior ability.

To explore this alternative hypothesis, we conduct "within-firm" tests for U.S. firms. We restrict our sample of analyst forecasts to non-Chinese analysts and to U.S. firms only, and distinguish between whether or not a non-Chinese analyst has covered at least one Chinese firm. Specifically, we regress the Hong-Kubik (2003) forecast accuracy score for non-Chinese analyst against "Non-Chinese Analyst Covering Chinese Firms", a dummy variable equal to one if a non-Chinese analyst has covered Chinese firms during the sample period, and zero if he or she has only covered U.S. firms.

Panel A of Table 10 reveals that the coefficient for the dummy variable is positive and significant at the 1% level, after controlling for analysts' professional experience, quarter fixed effects and firm fixed effects. Among all the non-Chinese analysts that cover the *same* U.S. firm, analysts that also cover Chinese firms outperform those that exclusively cover U.S. firms. This result indicates that brokerage firms do not select non-Chinese analysts of inferior ability to cover Chinese firms.[11]

Our proxy for culture is ethnicity, a cultural trait inherited at the individual level that largely can be treated as invariant over an individual's life (Guiso, Sapienza, and Zingales 2006). This precludes any cultural spillover that may occur in the absence of prolonged and in-depth exposure. We explore this issue further by restricting our sample of forecasts to non-Chinese analysts covering Chinese firms only. We examine whether a non-Chinese analyst who has Chinese colleagues can produce more accurate forecasts on Chinese firms than one who does not. We regress the Hong-Kubik (2003) forecast accuracy score for non-Chinese analyst against "Non-Chinese Analyst from Chinese-Hiring Broker", a dummy variable equal to one if a forecast is issued by a non-Chinese analyst affiliated with a brokerage firm that employs at least three Chinese analysts during the sample period, and zero otherwise.

Panel B of Table 10 reveals that the coefficient for the dummy variable is insignificant. Among all non-Chinese analysts that cover the *same* Chinese firm, analysts that have Chinese colleagues do not

[11] On the flip side, in "within-firm" tests for Chinese firms (untabulated), we compare between Chinese analysts providing coverage for both Chinese firms and U.S. firms and those that cover only Chinese firms. When issuing earnings forecasts regarding Chinese firms, Chinese analysts that cover both types of firms outperform those that exclusively cover Chinese firms. This suggests that our findings are not driven by certain Chinese analysts being specialized in covering Chinese firms. This finding is also consistent with the results in Table 2 Panel B where we control for analyst characteristics through analyst fixed effects.

outperform those that lack Chinese colleagues. We do not find any direct evidence that the advantage of cultural proximity can be easily and quickly absorbed by simply working with Chinese analysts in the same institution. This implies that mere cultural exposure itself does not confer the superior ability to produce and disseminate financial information on firms that share the same cultural background. Our results with respect to first-generation Chinese immigrants are consistent with this aspect.

6.4 Additional Robustness

Our proxy for forecast precision is the Hong-Kubik (2003) score. One of the crucial advantages of this proxy is that the precision is based on relative ranking, and computed for each firm-quarter pair. By construction, it adjusts for firm-quarter specific characteristics. In contrast, analyses using the traditional analyst forecast errors require controls for numerous firm-specific characteristics that are potentially non-exhaustive. Even if the control variables are exhaustive, the magnitudes of forecast errors are not directly comparable for different analysts, making it difficult to interpret the economic magnitude of coefficients. Nevertheless, we check the robustness of our results using a traditional measure of forecast error, computed as the absolute difference between forecasted and actual EPS. We find similar results. More importantly, our results using the first-generation analysts are robust to this alternative specification of forecast accuracy.

Our results are also similar if we restrict our sample firms to those traded on one of the three major stock exchanges, excluding firms listed on OTC Bulletin Board. The economic significance, however, becomes larger.

We show that analysts of Chinese ethnicity chosen by their brokerage firms to cover Chinese firms can produce more accurate information. Nevertheless, selection of analyst coverage can be driven by factors other than cultural proximity. Our various robustness tests rule out selections arising from an individual's ability, analyst forecast optimism, and private sources for information. Another potential selection arises from conflicted interest in analyst research. Research has shown that analysts issue biased and overoptimistic reports in an attempt to secure current and future investment banking business for the

brokerage firms with which they are affiliated (e.g., Lin and McNichols 1998; Michaely and Womack 1999). Since our tests for analyst optimism suggest that Chinese analysts are not generally more optimistic about Chinese firms than non-Chinese analysts, our results are unlikely driven by selection from conflicted analyst research. Researchers also document that investors discount biased analyst research, and that there is no real effect at the firm level if coverage is driven by analysts' private incentives (e.g., Jacobsen, Stefanescu, and Yu 2012). In addition, in untabulated tests, we show that brokers that act as lead IPO underwriters for Chinese firms do not employ significantly more Chinese analysts than non-Chinese analysts.[12]

7. CONCLUSIONS

In this paper we examine the effect of cultural proximity on the processing of financial information. Using the last names of financial analysts to code their ethnicity, we identify a group of analysts of Chinese ethnicity, and compare their forecasts with their peers from other ethnic origins. We document that Chinese analysts make more accurate forecasts for Chinese firms, after controlling for observed and unobserved time-invariant firm characteristics, any fluctuations of forecast accuracy overtime, and analysts' professional experience. The effect of cultural proximity is stronger for analysts who are first-generation Chinese immigrants. Financial markets appear to be aware of the effect of cultural proximity on information precision: stock prices respond more strongly to Chinese analysts' forecasts and recommendations on Chinese firms.

Furthermore, various robustness tests help to rule out selections arising from other attributes of analysts instead of cultural proximity, such as an individual's ability, analyst forecast optimism, superior access to management for information, and conflicted interest in analyst research. Our findings indicate

[12] Specifically, 12% of Chinese analysts that provide coverage for Chinese firms during the sample period are affiliated with brokerage firms that have taken Chinese firms public in the U.S. In comparison, 9% of non-Chinese analysts that provide coverage for Chinese firms are affiliated with brokerage firms acting as lead IPO underwriters for the Chinese firms. The difference is statistically insignificant.

cultural proximity mitigates information asymmetry which adversely affects foreign firms, especially those from emerging markets, and highlight culture as an important component of human capital.

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Appendix A: Surnames of Chinese Ethnic Origin

This table reports the surnames of analysts classified as a Chinese ethnic origin and the distribution of U.S. analysts with such surnames. The sample period is 1990-2010.

Surname	Frequency	Surname	Frequency	Surname	Frequency	Surname	Frequency
AI	1	HO	8	LUO	1	TING	3
AU	1	HONG	4	MA	4	TONG	5
BAO	1	HOU	1	MAO	1	TSAI	2
CAI	1	HSU	2	MENG	1	TSAO	1
CHAI	1	HSUEH	1	MIN	1	WANG	12
CHAN	5	HU	2	MOK	1	WEI	3
CHANG	6	HUANG	8	MOU	1	WEN	1
CHAO	4	JI	3	NG	4	WONG	7
CHEN	11	JIANG	4	ONG	1	WOO	2
CHENG	7	JU	1	PAN	4	WU	5
CHEUNG	1	JUE	1	PANG	3	WUH	1
CHIANG	2	KANG	3	PENG	1	XU	2
CHING	1	KEUNG	1	POON	1	YANG	4
CHIU	1	KIANG	1	QIU	1	YAP	1
CHOU	1	KOH	1	QUEK	1	YE	1
CHOW	2	KUAN	1	RO	1	YEE	3
CHU	1	KWAN	1	SHAO	1	YEH	1
CHUA	1	LAI	2	SHEN	1	YEUNG	3
CHUN	2	LAM	4	SHI	2	YIN	5
CHUNG	3	LAU	8	SIT	1	YIP	1
DING	1	LEUNG	7	SIU	1	YU	2
DONG	1	LI	7	SONG	1	YUAN	1
DU	2	LIAN	1	SU	1	YUE	1
FAN	2	LIANG	2	SUE	1	YUEN	1
FENG	1	LIM	2	SUN	2	ZENG	1
FONG	2	LIN	7	TAI	2	ZHANG	6
FOO	1	LIU	12	TAM	3	ZHAO	5
FU	1	LO	1	TAN	2	ZHONG	1
FUNG	1	LOH	2	TANG	6	ZHOU	3
HA	1	LU	10	TAO	2	ZOU	1
HAO	1	LUI	1	TEO	1		
HE	1	LUK	1	TIAN	1		

Appendix B: Variable Definition and Construction

Variables	Definition
Analyst Recommendation	For each firm-year-analyst, we calculate the average recommendation scores from I/B/E/S issued by each analyst for each firm. The recommendation score is equal to 5 for "strong buy", 4 for "buy", 3 for "hold", 2 for "underperform", 1 for "sell".
Assets	Book value of total assets.
Buy	A dummy variable equal to one if an analyst's recommendation score is either "strong buy" or "buy", and zero if it is "hold", "underperform", or "sell".
CAR	Abnormal announcement day return when analyst issues or revises a recommendation. Computed as the difference between the raw return and the corresponding market return on the announcement day, where market return is the value-weighted CRSP index return.
Chinese Analyst	A dummy variable equal to one if the surname of a U.S.-based analyst is of Chinese ethnic origin, and zero otherwise.
Chinese Firm	A dummy variable equal to one if a firm that is publicly traded on the stock exchange in the U.S. is headquartered in mainland China, Hong Kong, Singapore, or Taiwan, and zero if it is headquartered in the U.S.
Chinese-Hiring Broker	A dummy variable equal to one if a U.S.-based brokerage firm has employed at least three Chinese analysts during the sample period, and zero otherwise.
Experience	The number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database.
First-Generation Chinese Analyst	A dummy variable equal to one if a U.S.-based analyst is identified as first-generation Chinese immigrant, and zero otherwise.
Forecast Optimism	The difference between the estimated EPS from analysts and the actual EPS.
Leverage	Total liabilities divided by total assets.
Log Experience	The natural logarithm of an analyst's experience.
Log Broker Size	The natural logarithm of the number of analysts employed by a brokerage firm in a given year.
Non-Chinese Analyst	A dummy variable equal to one if the surname of a U.S.-based analyst is not of Chinese ethnic origin, and zero otherwise.
Non-Chinese Analyst Covering Chinese Firms	A dummy variable equal to one if a non-Chinese analyst has covered at least one Chinese firm during the sample period, and is zero if a non-Chinese analyst has only covered U.S. firms during the sample period.
Score	Based on Hong and Kubik (2003), the Score gives the ranking of an analyst based on the forecast accuracy.
Upgrade	A dummy variable equal to one if an analyst's recommendation is more favorable compared to his/her previous recommendation, and is zero if the recommendation is unchanged or less favorable than the previous one.
Upward Revision	A dummy variable equal to one if an analyst's revised EPS forecast is greater than his/her previous forecast.

Table 1: Descriptive Statistics

The sample period is 1990-2010. The "Hong-Kubik (2003) Forecast Score" is computed for each firm in each quarter following Hong and Kubik (2003). A "Chinese Analyst" is a U.S.-based analyst with Chinese ethnic origin. A "Chinese Firm" is a firm publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region. The pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Experience" is the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. "Assets" and "Market Value of Equity" are in millions of dollars. Leverage is calculated as total liabilities divided by total assets. The unit of analysis is analyst-firm-forecast quarter observations in Panels A and C, is firm-year observations in Panel B, and is analyst-brokerage firm observations in Panels D and E. T-statistics testing the difference in means between Chinese analysts and non-Chinese analysts, and between Chinese firms and U.S. firms, respectively, are based on uneven variance. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Analyst Characteristics

	Total	Mean	Chinese Analyst	Non-Chinese Analyst	T-statistics
# of Analysts	9,537		330	9,207	
# of Forecasts	1,367,086		29,379	1,337,707	
# of Firms Covered (Per Analyst)		14.28	9.58	14.45	8.95***
# of Chinese Firms Covered (Per Analyst)		0.19	1.92	0.13	-7.66***
# of Forecasts					
Per Analyst		143.35	89.03	145.29	7.27***
Per Analyst Per Year		26.06	21.78	26.17	8.33***
Experience (in months)		81.62	60.70	82.08	65.09***
Hong-Kubik (2003) Forecast Score		50	50.28	49.99	-1.54

Panel B: Firm Characteristics

	Total	Mean	Chinese Firm	U.S. Firm	T-statistics
# of Firms	8,370		206	8,164	
# of Analysts Per Firm		16	9	16	10.30***
# of Forecasts					
Per Firm		163.33	63.25	165.86	12.49***
Per Firm Per Year		25.01	18.02	25.10	10.62***
Experience (in months)		81.62	60.15	81.83	47.58***
Hong-Kubik (2003) Forecast Score		50.00	50.00	50.00	0.00
Total Assets		6,236.87	1,385.01	6,294.98	20.39***
Market Value of Equity		4,128.70	800.36	4,153.30	24.33***
Leverage		0.54	0.33	0.54	26.38***

Table 1 continued.

Panel C: Forecast Characteristics

	Total	Mean	Chinese Firm	U.S. Firm	T-statistics
# of Forecasts Issued	1,367,086		13,030	1,354,056	
By Chinese Analysts	29,379		3,992	25,387	
By First-Generation Chinese	3,337		1,343	1,994	
By Non-Chinese Analysts	1,337,707		9,038	1,328,669	
Hong-Kubik (2003) Forecast Score		50.00	50.00	50.00	0.00
Chinese Analysts		50.28	51.58	50.08	-2.61***
First-Generation Chinese		51.44	53.27	50.21	-2.63***
Non-Chinese Analysts		49.99	49.30	50.00	1.99**

Panel D: Distribution of Chinese Analysts by Brokerage Firms

Brokerage Firm	# of Chinese Analysts	%	# of Analysts Employed	%
Citi	26	5.21	836	3.11
Goldman Sachs & Co.	21	4.21	618	3.40
UBS (US)	19	3.81	632	3.01
Deutsche Bank	18	3.61	552	3.26
JP Morgan	17	3.41	602	2.82
CIBC World Markets Corp.	16	3.21	330	4.85
Credit Suisse (North America)	15	3.01	685	2.19
RBC Capital Markets	14	2.81	253	5.53
Bank of America Securities LLC.	12	2.40	383	3.13
Bear, Stearns & Co.	12	2.40	480	2.50
Merrill Lynch	12	2.40	1,397	0.86
Brean Murray, Carret & Co.	12	2.40	97	12.37
Oppenheimer & Co.	12	2.40	198	6.06
Morgan Stanley	11	2.20	811	1.36
Roth Capital Partners LLC.	10	2.00	128	7.81
Wedbush Securities Inc.	9	1.80	113	7.96
Lehman Brothers	8	1.60	636	1.26
Macquarie Research	8	1.60	95	8.42
Collins Stewart LLC.	7	1.40	96	7.29
Susquehanna Financial Group	7	1.40	77	9.09
Thinkequity LLC	7	1.40	107	6.54
Pacific Growth Equities	6	1.20	66	9.09
Piper Jaffray	6	1.20	224	2.68
Sidoti & Company LLC.	6	1.20	141	4.26
Others	208	41.68	8,166	2.55
Total	499	100	17,723	

Table 1 continued.

Panel E: Distribution of Chinese Firms under Coverage by Brokerage Firms

Brokerage Firm	# of Chinese Firms Covered	% of Chinese Firms Covered	# of Chinese Analysts	% of Analysts Employed as Chinese Analyst
Oppenheimer & Co.	71	4.72	12	6.06
Roth Capital Partners LLC.	69	4.58	10	7.81
Rodman & Renshaw LLC.	52	3.46	5	3.52
Piper Jaffray	51	3.39	6	2.68
Deutsche Bank	50	3.32	18	3.98
Brean Murray, Carret & Co.	45	2.99	12	12.37
Susquehanna Financial Group	39	2.59	7	9.09
Global Hunter Securities, LLC	34	2.26	1	6.67
CIBC World Markets Corp.	32	2.13	16	6.58
JP Morgan	31	2.06	17	2.82
UBS (US)	29	1.93	18	2.85
Thinkequity LLC.	28	1.86	7	6.54
Bear, Stearns & Co.	27	1.79	12	2.50
Merriman Curhan Ford & Co.	27	1.79	2	4.88
Merrill Lynch	26	1.73	12	0.86
Credit Suisse	26	1.73	15	2.19
Morgan Stanley	25	1.66	11	1.36
Virtua Research	25	1.66	2	2.47
Citi	24	1.59	26	3.11
Forun Technologies, Inc.	24	1.59	1	50.00
Thomas Weisel Partners	24	1.59	3	2.33
Maxim Group	23	1.53	4	16.00
Needham & Company	23	1.53	5	3.47
Robertson Stephens	23	1.53	5	2.11
Southwest Securities, Inc.	23	1.53	0	0.00
Others				
Do not Employ Chinese Analysts	192	12.76	0	
Employ Chinese Analysts	1,313	87.24	453	
Total	1,505	100	453	

Table 2: Cultural Proximity and Forecast Accuracy

This table relates analyst forecast accuracy to analyst's Chinese ethnic background. The sample period is 1990-2010. The dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region, and zero if it is publicly traded in one of the U.S. stock exchanges and is headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. In Panel A, robust standard errors clustered at firm-quarter level are reported in parentheses. In Panel B, robust standard errors are clustered at firm level for columns 1 through 3, and at analyst level for columns 4 through 6. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Overall Sample Tests

	(1)	(2)	(3)	(4)	(5)
Chinese Analyst	0.288		0.079	0.086	0.091
	(0.181)		(0.196)	(0.197)	(0.213)
Chinese Firm		0.000	-0.692***	-0.689***	
		(0.000)	(0.187)	(0.187)	
Chinese Analyst × Chinese Firm			2.193***	2.195***	2.921***
			(0.639)	(0.639)	(0.832)
Log Experience				0.014	0.015
				(0.025)	(0.027)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	No	Yes
# of obs.	1,367,086	1,367,086	1,367,086	1,367,005	1,367,005
R-squared	0.000	0.000	0.000	0.000	0.000

Panel B: Within-Group Tests

	Within-Chinese Firm Test			Within-Chinese Analyst Test		
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Analyst	2.437***	2.373***	2.951***			
	(0.654)	(0.679)	(0.838)			
Chinese Firm				1.968***	2.034***	2.814**
				(0.662)	(0.667)	(1.309)
Log Experience		-0.111	-0.153		0.123	0.787*
		(0.273)	(0.313)		(0.202)	(0.435)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes			
Analyst Fixed Effects				No	No	Yes
# of obs.	13,030	13,030	13,030	29,379	29,373	29,373
R-squared	0.001	0.001	0.001	0.004	0.004	0.042

Table 3: First-Generation Chinese Analysts

This table relates analyst forecast accuracy to analyst's Chinese ethnic background. The sample period is 1990-2010. In Panel A, "Experience" is the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. T-statistics testing the difference in means between first-generation and later-generation Chinese analysts are based on uneven variance. In Panel B, the dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region, and zero if it is publicly traded in one of the U.S. stock exchanges and is headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of "Experience". "First-Generation Chinese Analyst" is a dummy variable equal to one if the analyst is a first-generation Chinese, where we classify a first-generation Chinese based on his/her college education from schools in the pan-Chinese region. Robust standard errors clustered at firm-quarter level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Descriptive Statistics

	First-Generation Chinese Analysts	Rest of Chinese Analysts	T-statistics
# of Firms Covered (Per Analyst)	10	10	-0.01
# of Forecasts			
Per Analyst	71.00	92.02	1.40
Per Analyst Per Year	20.47	21.96	1.08
Hong-Kubik (2003) Forecast Score			
All Sample Firms	51.44	50.13	-2.21**
Chinese Firms	53.26	50.72	-2.24**
Experience (in months)	37.55	63.67	38.37***

Table 3 continued.

Panel B: Multivariate Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
First-Generation Chinese Analyst	1.450***	0.216	0.224	0.242			
	(0.536)	(0.681)	(0.682)	(0.752)			
First-Generation Chinese Analyst × Chinese Firm		3.432***	3.437***	4.455***			
		(1.172)	(1.172)	(1.440)			
Chinese Analyst					0.079	0.086	0.091
					(0.196)	(0.197)	(0.213)
Chinese Analyst × Chinese Firm					1.334*	1.333*	1.956**
					(0.762)	(0.762)	(0.902)
Chinese Analyst × Chinese Firm × First-Generation Chinese Analyst					2.555**	2.565**	3.399**
					(1.152)	(1.153)	(1.340)
Chinese Firm		-0.374***	-0.370***		-0.692***	-0.689***	
		(0.099)	(0.100)		(0.187)	(0.187)	
Log Experience			0.014	0.015		0.015	0.016
			(0.025)	(0.027)		(0.025)	(0.027)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	Yes	No	No	Yes
# of obs.	1,367,086	1,367,086	1,367,005	1,367,005	1,367,086	1,367,005	1,367,005
R-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4: Cultural Proximity and Forecast Accuracy—Matched Sample Analysis

This table relates analyst forecast accuracy to analyst's Chinese ethnic background in a matched sample setting. The sample period is 1990-2010. The dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region, and zero if it is publicly traded in one of the U.S. stock exchanges and is headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. For each firm of with Chinese origin in each year, we match by industry and size, where industry classification is based on 4-digit SIC codes, and size is measured by total assets. Match is done with replacement. Robust standard errors clustered at firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Chinese Analyst	0.807*		-2.009*	-1.984*	-2.177*
	(0.488)		(1.050)	(1.049)	(1.161)
Chinese Firm		-0.000	-0.768***	-0.799***	
		(0.000)	(0.220)	(0.220)	
Chinese Analyst × Chinese Firm			4.088***	3.957***	4.753***
			(1.236)	(1.245)	(1.450)
Log Experience				-0.182	-0.213
				(0.176)	(0.197)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	No	Yes
# of obs.	30,968	30,968	30,968	30,968	30,968
R-squared	0.000	0.000	0.000	0.000	0.001

Table 5: Analyst Optimism

This table relates forecast optimism and issuance of "buy" recommendation to analyst's Chinese ethnic background. The sample period is 1990-2010. In columns 1 and 2, the dependent variable is "Forecast Optimism", computed as the difference between forecasted and actual EPS. In columns 3 and 4, the dependent variable is "Analyst Recommendation", computed as the average score of recommendations issued by an analyst in a given year for a given firm. The recommendation score equals 5 for "Strong Buy", 4 for "Buy", 3 for "Hold", 2 for "Underperform", and 1 for "Sell". "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges and is headquartered in the pan-Chinese region, and is zero if it is both publicly traded and headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. For columns 1 and 2, robust standard errors clustered at firm-quarter level are reported in parentheses. For columns 3 and 4, robust standard errors are clustered at firm-year level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Forecast Optimism		Analyst Recommendation	
	(1)	(2)	(3)	(4)
Chinese Analyst	-0.005***	-0.001	0.021	0.012
	(0.001)	(0.001)	(0.013)	(0.013)
Chinese Firm	0.011***		0.067**	
	(0.004)		(0.031)	
Chinese Analyst × Chinese Firm	0.010**	0.003	-0.036	-0.074**
	(0.004)	(0.003)	(0.040)	(0.037)
Log Experience	-0.001***	0.000*	-0.018***	-0.012***
	(0.000)	(0.000)	(0.001)	(0.001)
Quarter Fixed Effects	Yes	Yes		
Year Fixed Effects			Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes
# of obs.	1,367,005	1,367,005	255,294	255,294
R-squared	0.016	0.121	0.041	0.130

Table 6: Market Reaction to Forecast Revisions

This table relates market reaction to forecast revisions to analyst's Chinese ethnic background. The sample period is 1990-2010. The dependent variable is "CAR", computed as the difference between the stock return and the CRSP value-weighted index return on the day when an analyst revises his/her earnings forecast. "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region and zero if it is both publicly traded and headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Upward Revision" is a dummy variable equal to one if the analyst revises his/her earnings forecast upwards, and zero if he or she revises downwards. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. Robust standard errors clustered at firm-quarter-analyst level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Chinese Analyst	-0.002***	-0.002***		
	(0.000)	(0.000)		
Chinese Firm	-0.002***	-0.003***		
	(0.001)	(0.001)		
Chinese Analyst × Chinese Firm		0.001		
		(0.001)		
Upward Revision	0.022***	0.022***	0.019***	0.019***
	(0.000)	(0.000)	(0.000)	(0.000)
Chinese Analyst × Chinese Firm × Upward Revision		0.012***	0.009**	0.009**
		(0.002)	(0.003)	(0.003)
Log Experience				-0.003***
				(0.001)
Announcement Year Fixed Effects	Yes	Yes	No	No
Firm-Quarter-Analyst Fixed Effects	No	No	Yes	Yes
# of obs.	2,263,949	2,263,949	2,263,949	2,263,920
R-squared	0.029	0.029	0.444	0.444

Table 7: Market Reactions to "Buy" Recommendation and Upgrade

This table relates market reaction to analyst recommendation to analyst's Chinese ethnic background. The sample period is 1990-2010. The dependent variable is "CAR", computed as the difference between stock return and the CRSP value weighted index return on the day when a recommendation is issued or revised. "Buy" is a dummy variable equal to one if a recommendation is "Strong Buy" or "Buy" and zero if it is "Hold", "Underperform", or "Sell". "Upgrade" is a dummy variable equal to one if a recommendation is more favorable compared to the analyst's previous recommendation and zero if it is less favorable or unchanged. "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered in the pan-Chinese region and zero if it is both publicly traded and headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. Robust standard errors clustered at firm-year level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Analyst Recommendation				Recommendation Revision			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chinese Analyst	-0.001	-0.001	0.000	-0.000	-0.001	-0.002	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Chinese Firm	-0.002	-0.002			-0.002	-0.003		
	(0.002)	(0.002)			(0.002)	(0.003)		
Chinese Analyst × Chinese Firm		-0.003	-0.004	-0.004		-0.002	0.000	0.000
		(0.003)	(0.004)	(0.004)		(0.004)	(0.005)	(0.005)
Buy	0.030***	0.030***	0.032***	0.032***				
	(0.000)	(0.000)	(0.000)	(0.000)				
Chinese Analyst × Chinese Firm × Buy		0.008*	0.012**	0.012**				
		(0.004)	(0.005)	(0.005)				
Upgrade					0.045***	0.045***	0.045***	0.045***
					(0.001)	(0.001)	(0.001)	(0.001)
Chinese Analyst × Chinese Firm × Upgrade						0.016***	0.014**	0.014**
						(0.006)	(0.006)	(0.006)
Log Experience				-0.001***				0.000
				(0.000)				(0.000)
Announcement Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes	Yes	No	No	Yes	Yes
# of obs.	337,207	337,207	337,207	337,124	219,347	219,347	219,347	219,302
R-squared	0.042	0.042	0.093	0.093	0.070	0.070	0.150	0.150

Table 8: Within-Pan-Chinese Region Test

The sample period is 1990-2010. The sample contains firms publicly traded in one of the U.S. stock exchanges that are headquartered in the pan-Chinese region or in the U.S. The pan-Chinese region includes mainland China, Taiwan, Hong Kong, and Singapore. Panel A reports the distribution of sample firms by regions. Panel B compares the mean Hong-Kubik (2003) forecast score between Chinese analysts covering firms headquartered in mainland China or Taiwan, where Chinese is the only official language, and Chinese analysts covering firms headquartered in Hong Kong or Singapore, where English is one of the official languages. Panel C reports the multivariate regression. The dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese ethnic origin and zero otherwise. "Chinese Firms (Chinese-Speaking)" is a dummy equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered either in mainland China or Taiwan, and zero otherwise. "Chinese Firms (English-Speaking)" is a dummy equal to one if the firm is publicly traded in one of the U.S. stock exchanges, and is headquartered either in Hong Kong or Singapore, and zero otherwise. Panel C also reports F-statistics. In column 1, the F-statistics is for testing the equality between the coefficients for "Chinese Firm (Chinese-Speaking)" and "Chinese Firm (English-Speaking)". In columns 2 and 3, the F-statistics are for testing the equality between the sum of the coefficients associated with "Chinese Firm (English-Speaking)" and "Chinese Analyst" × "Chinese Firm (English-Speaking) and the sum of the coefficients associated with "Chinese Firm (Chinese-Speaking)" and "Chinese Analyst" × "Chinese Firm (Chinese-Speaking)". In column 4, the F-statistics is for testing the equality between the coefficients for the interaction terms "Chinese Analyst" × "Chinese Firm (Chinese-Speaking)" and "Chinese Analyst" × "Chinese Firm (English-Speaking)". Robust standard errors clustered at firm-quarter level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Distribution of Sample Firms

	# of Firms	%
Chinese Firms (Chinese-Speaking)		
Mainland China	163	1.95
Taiwan	12	0.14
Chinese Firms (English-Speaking)		
Hong Kong	19	0.23
Singapore	12	0.14
U.S. Firms	8,164	97.54
Total	8,370	100

Panel B: Univariate Comparison

	Chinese Firms (Chinese-Speaking)	Chinese Firms (English-Speaking)	T-statistics
Hong-Kubik (2003) Forecast Score	51.71	50.34	-0.80

Table 8 continued.

Panel C: Multivariate Regressions

	(1)	(2)	(3)	(4)
Chinese Analyst		0.079	0.086	0.091
		(0.196)	(0.197)	(0.213)
Chinese Firm (Chinese-Speaking)	0.000*	-0.991***	-0.988***	
	(0.000)	(0.257)	(0.257)	
Chinese Firm (English-Speaking)	-0.000	-0.046	-0.044	
	(0.000)	(0.202)	(0.202)	
Chinese Analyst × Chinese Firm (Chinese-Speaking)		2.629***	2.631***	3.283***
		(0.723)	(0.723)	(0.891)
Chinese Analyst × Chinese Firm (English-Speaking)		0.308	0.309	0.424
		(1.656)	(1.656)	(2.189)
Log Experience			0.014	0.015
			(0.025)	(0.027)
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	Yes
F-statistics	1.54	0.83	0.84	1.49
# of obs.	1,367,086	1,367,086	1,367,005	1,367,005
R-squared	0.000	0.000	0.000	0.000

Table 9: The Effect of Regulation Fair Disclosure

This table examines the effect of Regulation Fair Disclosure (RegFD), implemented in year 2000. The dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). The "Pre RegFD" period is between 1990 and 2000. The "Post RegFD" period is between 2001 and 2010. We repeat the multivariate regression analysis of Table 2 Panel A for each of the two subsample periods. "Chinese Analyst" is a dummy variable equal to one if the analyst is of Chinese origin and zero otherwise. "Chinese Firm" is a dummy variable equal to one if the firm is publicly traded in one of the U.S. stock exchanges and is headquartered in the pan-Chinese region and zero if it is both publicly traded and headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. Columns 1 through 5 present the results for forecasts issued during the Pre-RegFD period. Columns 6 through 10 present the results for forecasts issued during the Post-RegFD period. Robust standard errors clustered at firm-quarter level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Pre RegFD					Post RegFD				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Chinese Analyst	1.820***		1.828***	1.867***	2.052***	-0.015		-0.331	-0.345	-0.372
	(0.464)		(0.464)	(0.465)	(0.515)	(0.196)		(0.217)	(0.217)	(0.237)
Chinese Firm		0.000	0.034	0.030			0.000	-0.784***	-0.798***	
		(0.000)	(0.111)	(0.110)			(0.000)	(0.208)	(0.208)	
Chinese Analyst × Chinese Firm			-2.826	-2.852	-3.047			2.691***	2.674***	3.383***
			(7.378)	(7.356)	(7.599)			(0.666)	(0.666)	(0.845)
Log Experience				0.134***	0.150***				-0.053*	-0.057*
				(0.043)	(0.0484)				(0.031)	(0.034)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	No	Yes	No	No	No	No	Yes
# of obs.	496,449	496,449	496,449	496,420	496,420	870,637	870,637	870,637	870,585	870,585
R-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 10: Non-Chinese Analysts

This table analyzes forecast accuracy of U.S. analysts that are not ethnic Chinese. The sample period is 1990-2010. The dependent variable is "Score", computed for each firm in each quarter following Hong and Kubik (2003). A "Non-Chinese Analyst" is a U.S. analyst that is not ethnic Chinese. A firm is a "Chinese Firm" if it is publicly traded in one of the U.S. stock exchanges and headquartered in the pan-Chinese region, and is zero if it is both publicly traded and headquartered in the U.S. Pan-Chinese region includes mainland China, Hong Kong, Taiwan, and Singapore. In Panel A, the sample contains quarterly forecasts issued by non-Chinese analysts with respect to earnings of U.S. firms. "Non-Chinese Analyst Covering Chinese Firms" is a dummy equal to one if a non-Chinese analyst has covered Chinese firm during the sample period in addition to U.S. firms, and zero if he or she never covered Chinese firm. In Panel B, the sample includes quarterly forecasts issued by non-Chinese analysts with respect to earnings of Chinese firms. "Non-Chinese Analyst from Chinese-Hiring Broker" is a dummy equal to one if a quarterly forecast is issued by a non-Chinese analyst affiliated with a brokerage firm that employs at least three Chinese analysts during the sample period, and zero if it is issued by a non-Chinese analyst with which the brokerage firm he or she is affiliated does not employ at least three Chinese analysts over the sample period. "Log Experience" is the natural logarithm of the number of months between an analyst's current earnings forecast and his/her first forecast in the I/B/E/S database. "Log Broker Size" is the natural logarithm of the number of analysts employed by the broker in the calendar year when forecasts are issued. Robust standard errors clustered at firm-quarter level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Forecast Ability of Non-Chinese Analyst (Within-U.S. Firm Test)

	(1)	(2)	(3)
Non-Chinese Analyst Covering Chinese Firms	0.515***	0.515***	0.654***
	(0.085)	(0.085)	(0.113)
Log Experience		0.014	0.011
		(0.026)	(0.028)
Quarter Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes
# of obs.	1,328,669	1,328,594	1,328,594
R-squared	0.000	0.000	0.000

Panel B: Cultural Spillover (Within-Chinese Firm Test)

	(1)	(2)	(3)	(4)
Non-Chinese Analyst from Chinese-Hiring Broker	-0.542	-0.254	-0.633	-0.143
	(0.807)	(0.905)	(0.940)	(1.050)
Log Experience	-0.143	-0.279	-0.144	-0.281
	(0.337)	(0.371)	(0.337)	(0.371)
Log Broker Size			0.022	-0.162
			(0.401)	(0.461)
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes
# of obs.	8,976	8,976	8,976	8,976
R-squared	0.001	0.015	0.001	0.015