Board of Directors' Cultural Proximity and Investment Efficiency of Multinational Corporations

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ABSTRACT: This paper investigates how cultural proximity, defined as a shared cultural background between the board of directors and the regions in which the firm's foreign subsidiaries operate, affects the investment efficiency of multinational corporations (MNCs). I argue that ethnicity can be viewed as a proxy for board members' cultural backgrounds and that cultural proximity creates an alignment between the board's comparative advantage and the MNC's great need for mitigating cross-border information frictions and monitoring foreign subsidiaries. Consistent with my prediction, I find that U.S. MNCs with cultural proximity make more efficient investment decisions at both the firm- and the subsidiary-level. This study suggests that cultural proximity, instead of the board diversity per se, is an effective internal control mechanism.

Keywords: Culture, Information asymmetry, Investment efficiency, Multinational corporations

I. INTRODUCTION

This paper investigates how cultural proximity affects the investment efficiency of multinational corporations (MNCs) at both the firm- and the subsidiary-level. Cultural proximity is defined as a shared cultural background between the board of directors and the regions in which the firm's foreign subsidiaries operate. MNCs play a leading role in today's global economy (e.g., UNCTAD 2012). They are inherently complex due to their extreme diversity in various dimensions, such as geographic distances, differences in culture, language, and operational styles between parents and subsidiaries. These cross-border factors lead to more severe information frictions within MNCs than in domestic firms. Cross-border frictions, in turn, increase information asymmetry between parents and subsidiaries and thus increase the cost of monitoring (e.g., Roth and O'Donnell 1996; Bushman, Chen, Engel, and Smith 2004).

The board of directors serves as a key internal control mechanism that firms use to mitigate information asymmetry and reduce the cost of monitoring. With a dual role of monitoring and advising the firm's management, the corporate board has long been a subject of research in a variety of disciplines (e.g., Mace 1971; Johnson, Schnatterly, and Hill 2012). In the past two decades, one important trend in the U.S. corporate boardroom is that director profiles have shifted toward the inclusion of minorities, often identified by gender, race and/or ethnicity, from the traditional white male directors (Directorship's Annual Survey 1999). Although such diversity in the boardroom is still at a relatively low level, researchers and regulators have shown great interest in understanding its impact on firm outcomes (Walt and Ingley 2003; Malberti and Sironi 2007). However, extant studies exclusively treat board members' ethnicity as an observable demographic characteristic and hypothesize that ethnicity directly and explicitly affects firm performance, but they find little consensus as to whether such diversity has any

impact on outcomes (e.g., Oxelheim and Randoy 2003; Carter, D'Souza, Simkins, and Simpson 2010).

In contrast to prior studies, I argue that ethnicity can be viewed as a proxy for board members' cultural backgrounds and that the control mechanism being used to mitigate information asymmetry is not board diversity per se, but the alignment between what the board can provide and what the company needs. The intuition is that if an individual director from a certain ethnic group is more familiar with the dominant culture of that ethnicity, he or she may also have better knowledge about operational regions sharing the same culture, including a shared language or dialect, familiarity with foreign institutional characteristics and political or social norms, and awareness of opportunities and risks in the local business environment (Ryan 2010). In addition, sharing the same cultural may make it easier for the director to establish social connections with local personnel. When an MNC has subsidiaries operating in areas to which one or more board members have a cultural tie, this cultural proximity aligns the comparative advantage of those board members with the company's need for better monitoring those subsidiaries. Such an alignment can help decrease information asymmetry within MNCs and enhance the board's monitoring ability, improving the firms' decision-making efficiency.

In this study, I focus on MNCs' investment efficiency because a firm's investment decision is one of the most important managerial decisions and one of the most fundamental drivers of firm value (Hubbard 1998). Studying firms' investment decisions also provides us a unique setting to investigate whether cultural proximity would adversely affect the board's monitoring and advising ability. If a board member sharing a cultural tie with the firm's subsidiaries is also socially connected with local personnel, the social ties may foster nepotism, moral hazard, and even collusion problems. A board member with cultural proximity may also

be subject to overconfidence and the familiarity bias, defined as people's tendency to develop a preference for certain things merely because they are familiar with them (e.g., Zajonc 1968; Zajonc 1980). He or she may intentionally or unintentionally allow non-optimal investment decisions and therefore decrease the firm's investment efficiency.

I hypothesize that the board of directors' cultural proximity is positively associated with MNCs' investment efficiency. If board diversity per se leads to higher efficiency, two boards with directors from the same cultural background, ceteris paribus, should benefit the MNCs similarly, regardless of whether a cultural tie with subsidiaries exists. However, I predict that the board of directors' cultural proximity, not diversity, results in higher investment efficiency at the firm-level. To further ensure that the improved efficiency comes from subsidiaries sharing cultural ties with one or more board members, I also predict that the board of directors' cultural proximity is associated with higher investment efficiency at the subsidiary-level.

Two key constructs in this study are cultural proximity and investment efficiency. I use directors' ethnicity, identified based on their surnames from the BoardEx database, as the proxy for their cultural backgrounds. Only four cultural groups: Chinese, Indian, Japanese, and Korean, are considered because they allow us to identify the ethnic origin of an individual director by surname with significantly less ambiguity relative to other western cultural groups (Du, Yu, and Yu 2013). Information on subsidiaries comes from ORBIS, which contains detailed information on the ownership structure of public and private companies from over 220 countries and 1,000 registrants. Taking advantage of the long cultural distance between western and eastern cultures, I focus on only U.S. MNCs and their subsidiaries in seven Asian countries and regions: Mainland China, Hong Kong, India, Japan, Korea, Malaysia and Singapore, which are classified

into the four cultural groups. Cultural proximity exists if one or more board members fall into one cultural group to which one or more subsidiaries also belong.

At the firm-level, I follow Biddle, Hilary, and Verdi (2009) and Chen, Hope, Li, and Wang (2011) and define investment efficiency as the deviation from the expected level of investment directly modeled based on a firm's investment opportunities. Using a large sample of 11,205 firm-year observations with 1,684 unique U.S. MNCs among which 132 are with cultural proximity from 2005 to 2012, I find that cultural proximity is associated with higher investment efficiency. To preclude the possibility that a board member with a certain cultural background is more likely to influence the firm's decision of locating its subsidiaries in regions sharing the same culture, I retain a subsample of 1,868 observations that only consists of firms that have subsidiaries operating in the seven areas of interest. These firms either create cultural proximity by bringing one or more directors with a tie onto the board or continue operating without such cultural proximity after the establishment of these subsidiaries. The result again supports the prediction that cultural proximity increases MNCs' firm-level investment efficiency.

At the subsidiary-level, because the data on capital expenditures and/or acquisitions are not available for my sample of largely private subsidiaries, I follow Shroff, Verdi, and Yu (2014) and use the sensitivity of a subsidiary's investment to its growth opportunities as its investment efficiency indication. Using a sample of 6,205 parent-subsidiary-year observations, I find a positive association between board of directors' cultural proximity and the U.S. MNCs' subsidiary-level investment efficiency, suggesting that the higher investment efficiency at the firm-level is a result of culture proximity rather than ethnic diversity of the board per se.

This paper makes several contributions. First, MNCs have been underexplored by prior research due to data limitations. This study contributes to the literature on corporate governance

by focusing on indirect cultural control systems within MNCs and suggesting a new mechanism at the parent-level, cultural proximity. Management research categorizes internal control mechanisms into two main systems: bureaucratic control and cultural control (Child 1972; Child 1973; Edstrom and Galbraith 1977). Cultural control systems can be classified as the direct "personal" type of control and the indirect "control by socialization" (Balgia and Jaeger 1984). Prior studies on MNCs mainly focus on direct cultural control mechanisms at the subsidiary-level, such as sharing ownership with local partners and using parent country expatriates in subsidiaries (e.g. Desai, Foley, and Hines Jr. 2004; Colakoglu and Caligiuri 2008). Because these mechanisms all require a deep involvement in subsidiaries' operating activities, they are effective but also costly. Indirect cultural control mechanisms can be of greater value to MNCs because these mechanisms reduce the cost of monitoring by having impact on a larger number of operating units. Second, this paper is related to a growing body of literature on board composition, specifically board diversity. The results provide a potential explanation for the inconclusive research investigating the influence of board members' demographic characteristics on firm outcomes (e.g., Oxelheim and Randoy 2003; Staples 2008; Carter et al. 2010). My study suggests that diversity per se does not enhance a firm's performance. The purpose of composing a diverse board is to increase the likelihood of benefiting from the alignment between what the firms' need and what the board can provide. Third, this paper is one of the few studies that exploit a novel dataset of the ownership structure of MNCs (Shroff et al. 2014). This study provides preliminary evidence on the role of cultural proximity in facilitating MNCs' investment decisions not only at the firm-level but also at the subsidiary-level.

The rest of the paper is organized as follows: Section 2 presents the background and develops my hypotheses. Section 3 describes the sample and discusses the empirical

methodology. In Section 4, I present the empirical findings. Section 5 includes the discussion of limitations, suggestions for future research, and concluding remarks.

II. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1. Information asymmetry within MNCs

Various cross-border factors, such as geographic distances, differences in culture, language, and operational styles between parents and subsidiaries, create severe information frictions within MNCs. These information frictions increase information asymmetry between parents and subsidiaries (e.g., Bushman et al. 2004). As a result, it is more difficult for MNCs to efficiently allocate resource, incentivize subsidiary managers, and monitor the dispersed activities (e.g., Hope and Thomas 2008; Dellestrand and Kappen 2012).

Management research suggests that internal control mechanisms can be used to mitigate information frictions and reduce the cost of monitoring. Child (1972) and Child (1973) claim that, when choosing internal control mechanisms to monitor output or behavior, organizations can use either personal control systems or bureaucratic control systems. In the MNC context, bureaucratic control utilizes an extensive set of rules, regulations, and procedures to constrain subsidiary management's role and authority. Personal control, on the other hand, involves placing a number of trustworthy personnel from headquarters in key positions in the subsidiary to directly supervise subsidiary operations. However, Edstrom and Galbraith (1977) assert that a third type exists: indirect control by socialization, which includes frequent information exchange between headquarters and subsidiaries, a de-emphasis of formalization, and an improvement in information technology systems within MNCs (Bloom, Sadun, and Reenen 2012). Balgia and Jaeger (1984) categorize both the direct "personal" type of control and the indirect "control by

socialization" as "cultural control". The majority of management studies focus on direct cultural control mechanisms at the subsidiary-level, such as sharing ownership with local partners and using parent country expatriates in subsidiaries (e.g. Desai et al. 2004; Colakoglu and Caligiuri 2008). Due to their deep involvement in subsidiaries' operating activities, these mechanisms are effective but also costly. Bloom et al. (2012) suggest that indirect cultural control mechanisms are of great value to MNCs because they affect a large number of operating units at reduced cost. In this study, I investigate an indirect cultural control mechanism at the parent-level, specifically the board of directors' cultural proximity.

2.2. Board of directors and cultural proximity

The board of directors serves as an important internal governance mechanism in a firm's decision- making process. It performs the dual role of monitoring and advising the firms' management (e.g., Mace 1971; Jensen 1993). The monitoring role involves overseeing management with a goal of minimizing potential agency problems, while the advising role involves assisting management in strategy formulation and execution, as well as providing counsel in other areas of top-level decision making. In MNCs, the board faces greater challenge in performing these two functions, and board composition is a critical element in its ability to affect firms' decision-making process and operational outcomes (Zald 1969).

My study is closely related to the growing literature on board diversity (e.g., Carpenter, Geletkanycz, and Sanders 2004; Carter et al. 2010). The traditional argument for selecting a diverse board is based on the research dependence theory, which suggests that individual board members bring resource to the organization as a result of their backgrounds (Zald 1969; Pfeffer and Salancik 1978). Understanding differences in backgrounds helps individuals learn new

perspectives, so a diverse board will more effectively draw upon talent, intellectual capital, and motivate more employees (Worthy and Neuschel 1984).

Erhardt et al. (2003) classify board diversity into two categories: the observable (demographic) and the non-observable (cognitive). Examples of observable diversity are age, gender, educational level, race, and ethnicity (e.g., Milliken and Martins 1996; Timmerman 2000; Carpenter et al. 2004). Non-observable diversity can be categorized into two groups: human capital and social capital (Johnson et al. 2012). Individual directors' human capital characteristics are experiences and knowledge, such as experience as a CEO, financial expertise, and familiarity with a specific event or industry (e.g., Wang and Dewhirst 1992; Chhaochharia and Grinstein 2007; Kroll, Walters, and Wright 2008). Social capital characteristics are social relationships, such as ties to other firms and personal relationships with firm managers (e.g., Ruigrok, Peck, and Keller 2006; Rhee and Lee 2008).

Not all board member characteristics can, or should be, easily classified into only one category. Extant studies exclusively consider board members' ethnicity as an observable demographic characteristic that directly and explicitly affects firm-level outcomes. However, they find no consistent relationship between ethnic diversity and firm performance. For example, Oxelheim and Randoy (2003) find a positive association between foreign-born directors and higher firm value, using a sample of Scandinavian firms. Staples (2008) suggests that having a multinational and ethnically diverse board increases the chance of cross-national acquisitions. On the other hand, Carter et al. (2010) find no evidence that ethnic diversity affects U.S. firms' financial performance.

In contrast to prior studies, I argue that the classification of board members' ethnicity is ambiguous because it can also be viewed as a proxy for their cultural backgrounds (e.g., Fisman,

Paravisini, and Vig 2012; Du et al. 2013). Sapienza, Zingales, and Guiso (2006) define culture as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." One of the most common mechanisms of the transmission of cultural traits is socialization within families as well as ethnic or religious groups (e.g., Hayes and Pittelkow 1993; Bisin and Verdier 2000). If an individual director from a certain ethnic group is more familiar with the dominant culture of that ethnicity, he or she may also have better knowledge about operational regions sharing the same culture, which can, but does not have to, include a shared language or dialect, familiarity with foreign institutional characteristics and political or social norms, and awareness of opportunities and risks in the local business environment (Ryan 2010). The board can use such external information available in subsidiaries' operating environments to better monitor and evaluate the subsidiaries' managerial decisions (Shroff et al. 2014). In addition, sharing the same cultural background may make it easier for the board member to establish connections with local personnel. These knowledge and social ties are human and social capital attributes of directors' ethnicity.

Merely composing an ethnically diverse board is not sufficient to alleviate information asymmetry. When an MNC has subsidiaries operating in areas to which one or more board members have a cultural tie, the knowledge and connections in these areas become crucial. Such a tie aligns the comparative advantage of those board members with the MNC's need for better monitoring and evaluating those subsidiaries. Thus, a necessary condition for a diverse board to be effective in performing its monitoring and advising role is to create the alignment between what the board of directors can provide and what the company needs. In other words, the indirect cultural control mechanism being used to mitigate information asymmetry within MNCs is not

board diversity per se, but the board of directors' cultural proximity. Thus, I assert that the enhanced ability of the board leads to an increase in the firm's investment efficiency.

I focus on MNCs' investment efficiency because a firm's investment decision is one of the most important managerial decisions and one of the most fundamental drivers of firm value (Hubbard 1998). Studying firms' investment decisions also provides us a unique setting to investigate whether cultural proximity would negatively affect the board's monitoring and advising ability. First, because a board member with cultural proximity can easily make connections with subsidiaries' local personnel, such social ties may cause nepotism, moral hazard, and even collusion problems. Extant studies document that social ties between executives or CEO/CFO and the board of directors have a negative impact on firms' financial reporting quality and mergers and acquisitions. (Krishnan, Raman, Yang, and Yu 2011; Fracassi and Tate 2012). Research in auditing also finds that social ties between auditors and client executives or audit committee members impair audit quality (e.g., Guan, Su, Wu, and Yang 2014; He, Pittman, Rui, and Wu 2014). Second, prior research suggests that insiders or experts are subject to a more severe overconfidence bias (Kahneman and Lovallo 1993). For example, Tetlock (2005) investigates individuals' predictions of political and economic trends and shows that experts tend to be overconfident with their predictions than non-experts. A board member with cultural proximity may perceive himself or herself as an insider or expert. He or she is then more likely to overestimate the returns to the potential investment projects or misperceive negative NPV projects as value creating. Third, board members with the same cultural background can have different degrees of understanding and familiarity with the culture and the regions sharing the same culture. Even not being an insider or expert, a board member with a cultural tie may still be subject to the familiarity bias. The familiarity bias, also called "the mere-exposure effect" from

social psychology, describes people's tendency to develop a preference for certain things merely because they are familiar with them (e.g., Zajonc 1968; Zajonc 1980). Thus, a board with cultural proximity may have impaired monitoring and advising ability, which adversely affects the firm's investment efficiency.

If board diversity per se leads to higher efficiency, two boards with directors from the same cultural background, ceteris paribus, should benefit the MNCs similarly, regardless of whether a cultural tie with subsidiaries exists. However, if it is cultural proximity that makes a difference, I make the following firm-level hypothesis:

Hypothesis 1: *The board of directors' cultural proximity is positively associated with MNCs' investment efficiency at the firm-level.*

To further ensure that the improved efficiency comes from subsidiaries sharing cultural ties with one or more board members, I also make the subsidiary-level prediction:

Hypothesis 2: *The board of directors' cultural proximity is positively associated MNCs' investment efficiency at the subsidiary-level.*

III. SAMPLE SELECTION AND RESEARCH DESIGN

3.1 Data

Cultural proximity

There are a number of challenges in empirically identifying the cultural proximity within MNCs. Following Du et al. (2013) I use individual directors' ethnicity as the proxy for culture and identify individual directors' ethnic origins based on their surnames. I consider only four cultural groups: Chinese, Indian, Japanese, and Korean, because the unique nature of these

cultures allows us to identify the ethnic origin of an individual director by surname with significantly less ambiguity relative to other western cultural groups. One limitation of this approach is that surnames may be changed upon marriage, but given the low level of representation of women on boards, this issue is less of a concern.

I focus on only U.S. MNCs and their subsidiaries in seven Asian countries and regions: Mainland China, Hong Kong, India, Japan, Korea, Malaysia, and Singapore, which are classified into the four cultural groups. Extant research in cultural sociology, history, and linguistics provide support for categorizing Mainland China, Hong Kong, Malaysia, and Singapore into one cultural group. In Hong Kong, 93.6% of the residents are reported as ethnically Chinese as of 2011 (Population Census 2011). Chinese and English are both official languages in Hong Kong. Since the 1997 handover, there is an increasing impact of Mainland China on Hong Kong, both economically and politically (Cullinane, Wang, and Cullinane 2007). In Malaysia as of 2010, seven million Malaysian self-identify as "Chinese", about one-third of the population (Department of Statistics Malaysia 2010). Malaysian Chinese are dominant in both the business and commerce sectors, controlling about 70% of the country's market capitalization (Lee and Tham 2007). In Singapore, over 77% of Singaporeans are of Chinese descent or consider themselves as ethnic Chinese (Lee 2002). They are the largest ethnic group in Singapore and are well represented in all levels of Singaporean society. Mandarin is one of the four official languages recognized by the Singapore Government. Thus, although with limitations, it is reasonable to classify these three countries and regions all into the Chinese cultural group.

Basing my study on these area and their cultures has merit for several reasons. First, based on the Hofsted Cultural Distance Model, archetypical eastern cultures in Asian countries are of a long distance from western culture (e.g., Singh, Zhao, and Hu 2005; Shi and Wang

2011). A long cultural distance between the parent and its subsidiaries increases information asymmetry within MNCs, and may lead to a stronger demand for cultural proximity. Second, the selected countries and regions are all located close to each other but geographically far away from the U.S. This setting can help disentangle cultural proximity from geographic proximity.

Sample

The two main databases used in this study are ORBIS published by *Bureau van Dijk* (BvD) and BoardEx. ORBIS covers 130 million public and private companies from over 220 countries and 1,000 registries. I obtain ownership and financial information for U.S. MNCs and their subsidiaries from 2004 to 2013. Data on independent directors of U.S. MNCs is collected from BoardEx, which covers biographical information on board members and executives associated with over 800,000 organizations around the world. Information on individual directors' surnames is available from 1999 to 2012.

I first follow Shroff et al. (2014) and construct the business group of U.S. MNCs by linking subsidiaries to parents using the ownership database in ORBIS. The ultimate owners are defined as firms in which no single corporate shareholder owns more than 25% of the firms' shares. I select non-financial holding subsidiaries located in Mainland China, Hong Kong, India, Japan, Korea, or Singapore and restrict their ultimate owners to be in the U.S. only. I exclude subsidiaries indirectly owned via ownership of other subsidiaries, so subsidiaries in my sample are all directly owned by their parent companies in the U.S. These restrictions return a sample of 11,380 parent-subsidiary-year observations from ORBIS.

The Committee details file in BoardEx contains information on individual directors' full names, board roles, and board positions by company and year. I include only U.S. firms with more than three board members. I then restrict directors to be independent outside directors that

stay on the board of a given company for at least two years (Matos, Ferreira, Matos, and Mergulhao 2008). Using Perl, I compare each director's surname with four master lists containing common Chinese, Indian, Japanese, and Korean surnames, respectively. If one or more directors' surnames on the board match with one of the lists in a given year, I identify "board culture(s)" as having cultural diversity with the matched ethnicity. It is possible that one board is matched to more than one ethnicity. Through this process, I construct the BoardEx sample to be at the firm-year instead of the firm-year-director level, with 54,872 observations,

The ORBIS sample and BoardEx sample do not share a common identifier, so I match companies ISINs from BoardEx with Tickers from ORBIS by using the CRSP/COMPUSTAT Merged database. Each firm(parent)-year observation from the BoardEx sample can be matched to multiple parent-subsidiary-year observations from the ORBIS sample, so I obtain a sample of 52,149 parent-subsidiary-year observations after the BoardEx/ORBIS merge (Table 1 Panel A). I identify cultural proximity by comparing each subsidiary's country of location with the "board culture(s)" constructed in the BoardEx sample. For example, if a subsidiary locates in Mainland China, Hong Kong, Malaysia, or Singapore, and the board has a member with a Chinese surname, then the cultural proximity indicator for Chinese culture is set to 1. The cultural proximity indicators for Indian, Japanese, and Korean cultures are created in the same manner. Because one single board can have multiple "board cultures", it is also possible to have cultural proximities for more than one culture.

To test Hypothesis 1 at the firm-level, I aggregate the four cultural proximity indicators at the subsidiary-level to one firm-level indicator. If one or more subsidiary-level indicators equal to 1, the firm-level cultural proximity indicator is set to be 1. After this aggregation process, I retain 43,601 firm(parent)-year observations. In the unmatched control group (cultural proximity

indicator = 0), there are both U.S. MNCs that do not have cultural proximity and purely domestic U.S. firms that do not have operations overseas. To compare U.S. MNCs with cultural proximity versus those with no cultural proximity, I merge the sample with COMPUSTAT based on GVKEYs and exclude observations that have no foreign pretax income, resulting in a significant decrease in the sample size. After also excluding parents that are financial holding companies and observations missing data necessary for computing the accounting and financial market variables, My final sample to test Hypothesis 1 consists of 11,205 firm-year observations. There are 1,684 unique U.S. MNCs in the sample, among which 132 have cultural proximity with their subsidiaries. There is a potential endogeneity problem that a board member with a certain cultural background is more likely to influence the firm's decision of locating its subsidiaries in regions sharing the same culture. To mitigate this concern, I retain a subsample of 1,868 observations that only consists of firms that have subsidiaries operating in the seven areas of interest. These firms either create cultural proximity by bringing one or more directors with a tie onto the board or continue operating without such cultural proximity after the establishment of these subsidiaries. Details related to the impact of each of the sample inclusion criteria on the final determination of both the full sample and the subsample are summarized in Table 1 (Panel B).

To test Hypothesis 2 at the subsidiary-level, I identify parent firms for subsidiaries in ORBIS based on Tickers and retain 9,542 parent-subsidiary-year observations. For observations that have at least one subsidiary-level cultural proximity indicator equaling 1, I identify which subsidiary or subsidiaries are the beneficiaries of the indentified cultural proximity. For example, if a board is identified as having a Chinese "board culture," subsidiaries located in Mainland China, Hong Kong, Malaysia, or Singapore would benefit. I require each subsidiary to have at least three successive years of total assets and acquire several accounting and financial market measures at the firm-level or at the country-industry-year level from COMPUSTAT, I/B/E/S,

Datastream and/or Worldbank. My final sample to test Hypothesis 2 consists of 6,205 parent-subsidiary-year observations. Table 1 (Panel C) presents the detailed sample selection procedure.

3.2 Research design

To test Hypothesis 1, I investigate how board proximity in the current year affects next year's investment efficiency at the firm-level. Following Biddle et al. (2009) and Chen et al. (2011), I define investment efficiency as the deviation from the expected level of investment directly modeled based on a firm's investment opportunities. I proceed by first estimating a firm-specific model of investment as a function of growth opportunities (as measured by revenue growth). Because the relation between investment and revenue growth could differ between revenue decreases and revenue increases (McNichols and Stubben 2008), I allow for differential predictability for revenue increases and revenue decreases by employing a piecewise liner regression model, as described below:

$$Investment_{i,t+1}=\beta_0+\beta_1 NEG_{i,t}+\beta_2 RevGrowth_{i,t}+\beta_3 NEG*RevGrowth_{i,t}+\varepsilon_{i,t+1} \quad (1)$$

$Investment_{i,t+1}$ is the total investment, defined as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment, multiplied by 100 and scaled by lagged total assets for firm *i* in year *t+1*. $RevGrowth_{i,t}$ is the annual percentage change in revenue firm *i* from year *t-1* to *t*. The indicator variable $NEG_{i,t}$ takes the value of 1 for negative revenue growth, and 0 otherwise. Eq. (1) is estimated for each industry-year based on the Fama and French 48-industry classification. Both underinvestment (negative deviations from expected investment) and overinvestment

(positive deviations from expected investment) are considered inefficient investment. I multiple the absolute values of residuals from Eq. (1), the deviations from the predicted investment levels, by -1 to create the investment efficiency measure, $InvEff_{i,t+1}$. A higher value of $InvEff_{i,t+1}$ suggests a more efficient investment.

I then test whether board proximity is positively associated with investment efficiency by estimating the following model:

$$InvEff_{i,t+1}=\beta_0+\beta_1 SubIn_{i,t}+\beta_2 BodIn_{i,t}+\beta_3 CulProx_{i,t}+\beta_n Controls_{i,t}+\Sigma SubCountries + \Sigma Industries+\Sigma Years+\varepsilon_{i,t+1} \quad (2)$$

where:

SubIn = an indicator variable that takes the value of one if the firm has at least one subsidiary in the areas of interest, and zero otherwise;

BodIn = an indicator variable that takes the value of one if the firm has at least one board member with the cultural background of interest, and zero otherwise;

CulProx = an indicator variable that takes the value of one if the board of directors has cultural proximity as described above, and zero otherwise.

Motivated by prior research, I include a set of control variables, including firm size (*LogAsset*), market-to-book ratio (*MB*), bankruptcy cost (*Tangibility*), analysts following (*Analysts*), institutional ownership (*Institutions*), financial reporting quality (*AQ*), market leverage (*K-structure*), average industry leverage (*Ind. K-struc.*), financial slack (*Slack* and *CFOsale*), dividend payout ratio (*Dividend*), the length of the operating cycle (*OperCycle*), past performance (*Loss*), the cash ratio (*Cash*), firm (*Age*), and investment, cash flow and sales volatility. The Appendix details the definitions of all variables. I control for industry based on

Fama-French 48 industry classification and year fixed effects. To address correlated omitted variable problems at the subsidiary country-level subsidiary, I also include subsidiaries' country-specific effects.

I test hypothesis 1 by examining if the coefficient on *CulProx* is greater than zero (i.e., H1: $\beta_3>0$). When the subsample is used to test Hypothesis 1, *SubIn* all equal to 1, and BodIn and CulProx take the same value. The prediction stays the same.

To test Hypothesis 2, I investigate how board proximity in the current year affects next year's investment efficiency at the subsidiary-level. Ideally, I would proxy for investment using capital expenditures and use the same model as the firm-level analysis. However, these data are not available for my sample of largely private subsidiaries. I follow Shroff et al. (2014) and use the sensitivity of a subsidiary's investment to its growth opportunities as its investment efficiency indication. The intuition is that investment is more responsive to investment opportunities when the adjustment costs are low (Hubbard 1998). I examine whether the sensitivity of a subsidiary's investment to its growth opportunities is positively affected by the board's cultural proximity by estimating the following model:

$$Inv_{i,t+1}=\beta PE_{s,j,t}*CulProx_{s,j,t}+\sum\beta_s PE_{s,j,t}*Country_s+\sum\beta_k Mechanisms_k$$
$$+\sum\beta_k PE_{s,j,t}*Mechanisms_k+\beta_n Controls_{i,t}+\sum Industries_j+\sum Years+\varepsilon_{i,t+1} \quad (3)$$

where:

i = subsidiaries;

s = subsidiary countries;

j = subsidiary industries;

Inv = the subsidiary investment, defined as the percentage change in total assets in a year;

PE = growth opportunities, defined as the price-to-earnings (PE) ratio of the country-industry-year in which the subsidiary operates obtained from Datastream.

Following prior literature, I include a set of internal and external mechanisms associated with investment. Internal mechanisms that could affect investment and/or be used to monitor a subsidiary's decisions include parent firm's cash flow (*Parent_CFO*), because Shin and Stulz (1998) find that parent cash flows affect subsidiary investment through internal capital markets; and the availability of local bank financing, proxied by the total banking credit extended in the subsidiary's country (*Credits*), to control for additional bank monitoring. External mechanism is the quality of the information environment in which a subsidiary operates, measured by the number of analysts following (*Sub_Ext*). I allow the coefficient for $PE_{s,j,t}$ to vary by subsidiary country to control for the effect of subsidiary country-level institutional factors, such as financial development and capital market integration, on investment efficiency (Wurgler 2000; Bekaert et al. 2007). Because data limitations preclude us from directly controlling for all possible mechanisms, controlling for this interaction between PE and subsidiary country indicators allows us to indirectly control for them as long as the mechanisms are largely driven by country-level factors. The subsidiary firm size (*Sub_lnAsset*) and performance (*Sub_ROA*) are included in my model to control for subsidiary scale and profitability. I also control for subsidiary ICB industry, country, and year fixed effects.

The coefficient of interest is β, which captures the incremental sensitivity of investment to growth opportunities (Inv-PE) when cultural proximity exists. I test hypothesis 2 by examining whether subsidiaries with cultural proximity exhibit greater Inv-PE sensitivity (i.e., H2: $\beta>0$).

IV. Empirical Results

4.1 Descriptive statistics

Panel A of Table 2 presents descriptive statistics for the firm-level samples used to test Hypothesis 1. Columns 2 to 5 contain information for the full sample of 11,205 observations and Columns 6 to 8 are for the subsample of 1,868 observations. The average investment level across all firms deviates from the expected level by USD 10.54 (7.36) million for the full sample (subsample). Only 4% of the firm-year observations in the full sample are identified to have cultural proximity. Due to the sample selection, 13% of the observations in the subsample are with cultural proximity. Panel B of Table 2 presents the correlations for the dependent, explanatory and control variables. Both the full sample (lower diagonal) and the subsample (upper diagonal) correlations show that as expected, *CulProx* is positively correlated with *InvEff*.

Panel A of Table 5 presents descriptive statistics for the subsidiary-level sample of 6,205 observations used in the Hypothesis 2 testing. The average investment rate among subsidiaries is 4.08% of assets and the average PE ratio is 2.48. 19% of the parent-subsidiary-year observations are with cultural proximity. The distribution of them is presented in Table 4 which shows that subsidiaries located in Mainland China, Korea, and Malaysia make up a large proportion of the sample. Thus, Chinese culture is over-represented in my subsidiary-level sample. Panel B of Table 5 presents the correlations among my main variables for Hypothesis 2. *CulProx* is positively correlated with *InvEff*, *PE*, *Sub_Ext*, *Parent_CFO*, and *Credits*.

4.2 Main results

Table 3 reports the results for my analyses of Hypothesis 1. I find evidence that cultural proximity is positively associated with investment efficiency at the firm level. That is, the estimated coefficient on *CulProx*, 1.628 (1.107), is positive and statistically significant using the full sample (subsample), with a t-statistic equal to 2.080 (1.670). In terms of the economics significance, cultural proximity makes firms' investment 15.4% (15.0%) more efficient in the fall sample (subsample). These findings provide consistent support for Hypothesis 1. *BodIn* is negatively associated with the firm-level investment efficiency (β=-0.753， t-statistic=-2.080), supporting my assertion that board diversity per se does not enhance firm outcomes.

The estimation results for the control variables are as follows. Using the full sample, consistent with prior literature, I find that *LogAsset* (β=0.789, t-statistic=6.810), *Analysts* (β=0.214, t-statistic=8.250), *AQ* (β=8.245, t-statistic=2.610), *K-structure* (β=2.031, t-statistic=2.250), *CFOsale* (β=0.003, t-statistic=3.270), *Dividend* (β=1.294, t-statistic=4.290), *Ind. K-struc.* (β=3.040, t-statistic=2.030) and *Age* (β=0.019, t-statistic=2.250) are positively correlated with *InvEff*. These results suggest that firms that are larger and older, have more analysts following, better financial reporting quality, higher leverage, more financial slack, higher average industry leverage, and pay dividend, have higher firm-level investment efficiency. *Tangibility* (β=-5.082, t-statistic=-6.090), *Loss* (β=1.359, t-statistic=-4.600), *Cash* (β=-13.731, t-statistic=-20.030), and *std_Inv* (β=-0.026, t-statistic=-5.940) are negatively associated with *InvEff*. These results confirm the findings in prior literature and indicate that firms with higher bankruptcy cost, past losses, more cash, and more volatility in investment have lower investment efficiency at the firm-level. It is puzzling to find that *MB* (β=-0.013, t-statistic=-3.010) is negatively and significantly associated with *InvEff*, suggesting that higher investment opportunities are correlated with lower investment efficiency. Biddle and Hilary

(2006) also find a negative association which requires further investigation. Biddle et al. (2009) find mixed results for *std_CFO* in some of their analyses. I find a negative and statistically significant coefficient on this variable, -24.618 (t-statistic=-13.500). It suggests that when cash flows from operations are difficult to predict, a firm's investment inefficiency decreases. Some control variables lose their significance in the subsample test, but the signs of estimated coefficients are generally consistent with those in the full sample.

Table 6 presents the results for my analysis of Hypothesis 2. The coefficient for the interaction between *PE* and *CulProx*, 0.011, is positive and statistically significant with a t-statistic equal to 2.360. In economic terms, a one standard deviation increase in growth opportunities translate to approximately 0.4% increase in investment for firms with cultural proximity. Given that the average investment in my sample equals 4.08%, this 0.4% represents a relative increase of approximately 9.8% in the subsidiary-level investment efficiency. As expected, the estimated coefficient for *PE* is positive and statistically significant (β=0.940, t-statistic=2.730). It suggests that firms' investment decisions are associated with industry-level *PE* ratios. However, one major concern of this analysis is that the adjusted R-squared is only 4.00%, which is significantly lower than that in Shroff et al. (2014). Untabulated results indicate that the variation in most of the control variables within each country is not large, possibly due to the uneven distribution of subsidiaries shown in Table 4. The low within-country standard deviation in these variables may cause the low R-squared and insignificant coefficients on interaction terms in my analysis, because my research design exploits only within-country variation in *CulProx* and a series of mechanisms to explain Inv-PE sensitivities.

V. Conclusion

This study examines whether the board of directors' cultural proximity is positively associated with the investment efficiency of MNCs. Prior research considers board members' ethnicity as an observable demographic characteristic and hypothesizes that ethnic diversity directly and explicitly affects firm performance, but they find mixed results. In this study, I assert that board members' ethnicity can be a proxy for their cultural backgrounds. A shared cultural background between one or more directors and the regions in which the firm's foreign subsidiaries operate aligns the board's comparative advantage with MNC's need for mitigating severe cross-border information frictions. Such cultural proximity, as an indirect control mechanism, can help the board better monitor and advise foreign subsidiaries, leading to an improvement in the decision-making efficiency.

Consistent with my prediction, I find evidence that the board's cultural proximity has an positively impact on U.S. MNCs' investment efficiency at both the firm- and subsidiary-level, after controlling for the potential endogeneity concern that the existence of board members with certain cultural backgrounds results in the establishment of subsidiaries in areas sharing a cultural tie.

This paper contributes to the literature on corporate governance by focusing on the indirect cultural control system within MNCs and suggesting a new mechanism at the parent-level, cultural proximity. Because MNCs face more severe cross-border frictions than domestic firms, indirect cultural control mechanisms play an important role in the entire internal control system of MNCs. The results of my study also provide a potential explanation for the inconclusive research investigating the influence of board members' demographic characteristics on firm outcomes. I document that diversity per se does not enhance a firm's performance. The

purpose of composing a diverse board is to increase the likelihood of benefiting from the alignment between what the firms' need and what the board can provide. This paper is one of the few studies that exploit a novel dataset of the ownership structure of MNCs. It provides preliminary evidence on the role of cultural proximity in facilitating MNCs' investment decisions not only at the firm-level but also at the subsidiary-level.

This study is subject to a number of limitations. First, my use of board members' surnames to identify their ethnicity may create noise in identifying cultural proximity. Although ethnicity is a reasonable proxy for culture, other omitted variables, such as directors' educational backgrounds and work experience, may also affect a board member's understanding of a certain culture. Second, the ORBIS dataset exhibits significant cross-country variation in subsidiary coverage, primarily due to cross-country differences in the reporting requirements for private firms. This caveat may affect the generalizability of my findings. Third, my subsidiary-level analysis is preliminary. The control variables in the model need further refinement. Forth, I only focus on the investment decision of MNCs. Other managerial behaviors, such as financing decisions and incentive system designs, are also worth exploring.

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Appendix
Variable definitions

Dependent variables	
Investment (Eq. 1)	= the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment, multiplied by 100 and scaled by lagged total assets
InvEff (Eq. 2)	= the absolute value of residual from Eq. (1) multiplied by -1
Inv (Eq. 3)	= the percentage change in total assets of a subsidiary in a year

Independent variables	
Eq. 1	
RevGrowth	= the annual percentage change in revenue
NEG	= an indicator variable that takes the value of 1 for negative revenue growth, and 0 otherwise
Eq. 2	
SubIn	= an indicator variable that takes the value of one if the firm has at least one subsidiary in the areas of interest, and zero otherwise
BodIn	a= n indicator variable that takes the value of one if the firm has at least one board member with the cultural background of interest, and zero otherwise
CulProx	= an indicator variable that takes the value of one if the board of directors has cultural proximity as described above, and zero otherwise
LogAsset	= the log of total assets
MB	= the ratio of the market value of total assets to book value of total assets
Tangibility	= the ratio of PPE to total assets
Slack	= the ratio of cash to PPE
Institutions	= the percentage of firm shares held by institutional investors
Analysts	= the number of analysts following the firm as provided by I/B/E/S
AQ	= the standard deviation of the firm-level residuals from the Dechow and Dichev model from years t-3 to t-1 and multiplied by negative one. The model is a regression of working capital accruals on lagged, current, and future cash flows plus the change in revenue and PPE.
K-structure	= the ratio of long-term debt to the sum of long-term debt to the market value of equity
CFOsale	= the ratio of CFO to sales
Dividend	= an indicator variable that takes the value of one if the firm paid a dividend, and zero otherwise
OperCycle	= the log of receivables to sales plus inventory to COGS multiplied by 360
Loss	= an indicator variable that takes the value of one if net income before extraordinary items is negative, and zero otherwise.
Cash	= the ratio of cash to total assets
Ind. K-struc.	= the mean K-structure for firms in the same SIC3-digit industry
Age	= the difference between the first year when the firm appears in CRSP and the current year

std_Inv	= The standard deviation of investment from years t-3 to t-1
std_CFO	= the standard deviation of the cash flow from operations deflated by average total assets from years t-3 to t-1
std_Sales	= the standard deviation of the sales deflated by average total assets from years t-3 to t-1
Eq. 3	
PE	= the price-to-earnings (PE) ratio of the country-industry-year in which the subsidiary operates as provided by Datastream
Sub_Ext	= the median number of analysts following firms in the country-industry-year
Sub_roa	= the return on assets, that is, net income by total assets, at the subsidiary level
Sub_lnAsset	= the natural log of assets at the subsidiary level
Parent_CFO	= the cash flows from operations scaled by total assets for each parent
Credits	= Domestic Banking Credit including all credit provided domestically by the banking sector as a percentage of the Gross Domestic Product (GDP) as provided by Worldbank

TABLE 1
Sample Selection

Panel A: ORBIS and BoardEx merge

ORBIS	# of parent-subsidiary-year observations (Subsidiaries: Mainland China, Hong Kong, India, Japan, Korea, or Singapore; Parents: U.S.; Year: 2004-2013)	11,380
BoardEx	# of firm(parent)-year observations (Companies: MNCs and domestic firms with board members' ethnicity identifications; Year: 1999-2012)	54,872
Merging BoardEx with the CRSP/COMPUSTAT Merged database (identifier: ISIN)	# of firm(parent)-year observations	43,698
Merging ORBIS and BoardEx (identifier: Ticker)	# of parent-subsidiary-year observations	52,149

Sample B: Sample selection for Hypothesis 1

	# of firm (parent)-year observations (Year: 2005-2012)
Aggregating the four cultural proximity indicators at the subsidiary-level to one firm-level indicator	43,601
Merging ORBIS/BoardEx with COMPUSTAT (identifier: GVKEY)	31,481
Excluding parents that are financial holding companies or firms with no foreign pre-tax income	15,352

Excluding observations missing data items from COMPUSTAT, CRSP and/or I/B/E/S necessary for computing the accounting and financial market variables	11,205
H1 full sample	11,205
Excluding firms that have no subsidiaries in areas of interest	4,365
Excluding firms that have cultural proximity by establishing subsidiaries after having board members with the cultural background of interest	1,868
H1 subsample	1,868

Panel C: Sample selection for Hypothesis 2

	# of parent-subsidiary-year observations (Year: 2005-2012)
Matching the 11,380 ORBIS subsidiary-level observations with H1 full sample (before excluding observations missing parent-level accounting and financial market measures) (identifier: Ticker)	9,542
Excluding subsidiaries missing at least three successive years of data on total assets	7,180
Excluding subsidiaries located in country-industry-years with no PEs	6,738
Excluding subsidiaries and parents missing firm-specific accounting and financial market measure	6,205
H2 sample	6, 205

This table describes the details related to the impact of each of the sample inclusion criteria on the final determination of both the Hypothesis 1 and Hypothesis 2 samples. Panel A presents the ORBIS/BoardEx merge procedure. Panel B presents the Hypothesis 1 sample selection procedure. Panel C presents the Hypothesis 2 sample selection procedure.

TABLE 2
Descriptive statistics and correlations at the firm-level

Panel A: Descriptive statistics

	Full Sample			Subsample		
Variable	Mean	Std Dev	N	Mean	Std Dev	N
InvEff	-10.54	13.97	11,205	-7.36	9.75	1,868
CulProx	0.04	0.19	11,205	0.13	0.33	1,868
LogAsset	5.93	2.04	11,205	7.71	1.86	1,868
MB	3.09	28.12	11,205	3.13	13.69	1,868
Tangibility	0.19	0.17	11,205	0.20	0.13	1,868
Slack	8.10	67.24	11,205	1.90	3.59	1,868
Institutions	-0.58	0.33	11,205	-0.75	0.22	1,868
Analysts	-6.34	7.03	11,205	-10.66	7.88	1,868
AQ	-0.06	0.04	11,205	-0.04	0.03	1,868
K-structure	0.12	0.17	11,205	0.15	0.16	1,868
CFOsale	-5.04	146.31	11,205	0.11	0.12	1,868
Dividend	0.33	0.47	11,205	0.55	0.50	1,868
OperCycle	180.76	1,567.06	11,205	145.09	71.63	1,868
Loss	0.32	0.47	11,205	0.18	0.38	1,868
Cash	0.25	0.23	11,205	0.18	0.16	1,868
Ind. K-struc.	0.13	0.10	11,205	0.14	0.10	1,868
Age	20.61	16.54	11,205	30.24	22.49	1,868
std_Inv	8.97	27.78	11,205	6.79	12.67	1,868
std_CFO	0.06	0.08	11,205	0.04	0.03	1,868
std_Sales	0.16	0.16	11,205	0.13	0.11	1,868

Panel B: Correlations

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	*InvEff*		**0.04**	**0.08**	**-0.03**	**0.07**	**-0.11**	0.02	**0.07**	**0.10**	**0.20**	**-0.08**	**0.15**	-0.03	0.03	**-0.18**	**0.21**	**0.12**	-0.03	**-0.11**	**-0.04**
2	*CulProx*	**0.06**		**0.09**	-0.01	-0.02	-0.01	**-0.11**	-0.03	0.03	**0.08**	0.00	-0.01	**-0.05**	0.00	**0.05**	0.05	0.02	-0.03	-0.01	-0.02
3	*LogAsset*	**0.22**	**0.19**		0.01	**0.15**	**-0.24**	**-0.30**	**-0.69**	**0.32**	**0.22**	**0.25**	**0.42**	**-0.13**	**-0.20**	**-0.33**	**0.21**	**0.51**	0.01	**-0.33**	**-0.16**
4	*MB*	**-0.04**	0.00	0.00		-0.03	0.01	-0.01	**-0.04**	0.00	0.00	**0.05**	0.02	0.02	**-0.04**	0.02	**-0.06**	0.02	**0.00**	0.02	0.00
5	*Tangibility*	**0.12**	0.01	**0.22**	-0.01		**-0.42**	**0.04**	0.03	**0.14**	**0.27**	-0.01	**0.14**	**-0.21**	0.03	**-0.33**	**0.36**	**0.16**	**-0.16**	**-0.04**	**-0.04**
6	*Slack*	**-0.09**	**-0.02**	**-0.09**	0.01	**-0.11**		-0.01	**-0.04**	**-0.16**	**-0.27**	**0.08**	**-0.26**	-0.01	0.04	**0.70**	**-0.25**	**-0.21**	-0.02	**0.17**	0.00
7	*Institutions*	**-0.10**	**-0.12**	**-0.59**	-0.01	**-0.06**	**0.06**		**0.20**	**-0.11**	**-0.15**	**-0.12**	0.00	**0.04**	0.01	**0.05**	**-0.08**	**0.06**	**-0.07**	**0.15**	**0.05**
8	*Analysts*	**-0.04**	**-0.12**	**-0.70**	**-0.03**	**-0.08**	**0.04**	**0.49**		**-0.17**	**0.08**	**-0.36**	**-0.18**	**0.08**	**0.21**	**-0.04**	**0.07**	**-0.22**	-0.01	**0.12**	**0.11**
9	*AQ*	**0.19**	**0.09**	**0.39**	**-0.02**	**0.26**	**-0.09**	**-0.29**	**-0.22**		**0.04**	**0.14**	**0.26**	**-0.11**	**-0.13**	**-0.19**	**0.13**	**0.20**	**-0.12**	**-0.28**	**-0.22**
10	*K-structure*	**0.16**	**0.08**	**0.31**	**-0.02**	**0.31**	**-0.05**	**-0.13**	**-0.04**	**0.13**		**-0.15**	0.03	**-0.16**	**0.24**	**-0.38**	**0.47**	**0.08**	**0.12**	**-0.17**	**-0.04**
11	*CFOsale*	**0.08**	0.01	**0.05**	0.01	**0.02**	**-0.07**	**-0.03**	-0.01	**0.04**	**0.02**		**0.11**	-0.03	**-0.37**	**0.10**	**-0.14**	**0.05**	**0.05**	**-0.15**	**-0.19**
12	*Dividend*	**0.19**	**0.08**	**0.38**	-0.01	**0.21**	**-0.06**	**-0.11**	**-0.17**	**0.25**	**0.10**	**0.02**		**-0.09**	**-0.27**	**-0.32**	**0.23**	**0.45**	**-0.08**	**-0.26**	**-0.14**
13	*OperCycle*	**-0.05**	-0.01	**-0.04**	-0.01	**-0.02**	0.00	**0.02**	0.01	**-0.04**	**-0.02**	**-0.49**	**-0.02**		**0.05**	**0.08**	**-0.19**	**-0.07**	**0.13**	0.01	**-0.08**
14	*Loss*	**-0.18**	**-0.05**	**-0.36**	0.01	**-0.11**	**0.07**	**0.28**	**0.25**	**-0.25**	**0.05**	**-0.05**	**-0.28**	**0.04**		**0.09**	0.02	**-0.15**	**0.12**	**0.13**	**0.07**
15	*Cash*	**-0.35**	**-0.05**	**-0.33**	**0.04**	**-0.41**	**0.22**	**0.13**	**0.06**	**-0.25**	**-0.36**	**-0.08**	**-0.29**	**0.03**	**0.28**		**-0.36**	**-0.26**	**-0.09**	**0.29**	0.03
16	*Ind. K-struc.*	**0.16**	**0.05**	**0.25**	**-0.02**	**0.38**	**-0.06**	**-0.09**	**-0.02**	**0.17**	**0.46**	**0.02**	**0.21**	**-0.02**	**-0.08**	**-0.33**		**0.21**	**-0.08**	**-0.11**	-0.02
17	*Age*	**0.17**	**0.12**	**0.39**	-0.01	**0.14**	**-0.06**	**-0.11**	**-0.16**	**0.20**	**0.13**	**0.02**	**0.42**	-0.01	**-0.21**	**-0.26**	**0.18**		**-0.12**	**-0.16**	**-0.10**
18	*std_Inv*	**-0.10**	**-0.02**	**-0.04**	0.00	**-0.06**	**0.05**	**0.04**	**0.02**	**-0.15**	**0.05**	**-0.10**	**-0.07**	**0.11**	**0.08**	**0.06**	**-0.03**	**-0.07**		0.00	**0.09**
19	*std_CFO*	**-0.29**	**-0.06**	**-0.38**	**0.02**	**-0.18**	**0.17**	**0.27**	**0.20**	**-0.38**	**-0.16**	**-0.09**	**-0.21**	**0.08**	**0.27**	**0.37**	**-0.12**	**-0.16**	**0.13**		**0.40**
20	*std_Sales*	-0.01	**-0.04**	**-0.14**	0.01	**-0.04**	-0.01	**0.10**	**0.10**	**-0.18**	**-0.04**	**0.02**	**-0.06**	**-0.02**	**-0.02**	**-0.08**	**0.02**	**-0.07**	**0.05**	**0.21**	

This table presents descriptive statistics and correlations at the firm-level. All variables are defined in the Appendix. Panel A provides descriptive statistics for the dependent, explanatory and control variables. Panel B presents the correlation matrix for the dependent, explanatory and control variables. The full sample (subsample) correlations are provided in the lower (upper) diagonal of the panel.

TABLE 3
Association between cultural proximity and investment efficiency at the firm-level

	Full Sample		Subsample	
Variable	Coefficient	*t-stat*	Coefficient	*t-stat*
Intercept	-10.790***	-12.880	-6.320***	-3.140
SubIn	-0.054	-0.140		
BodIn	-0.753**	-2.080		
CulProx	1.628**	2.080	1.107*	1.670
LogAsset	0.789***	6.810	-0.016	-0.070
MB	-0.013***	-3.010	-0.013	-0.790
Tangibility	-5.082***	-6.090	-2.421	-1.200
Slack	0.000	-0.250	0.093	1.040
Institutions	0.688	1.460	2.289**	2.110
Analysts	0.214***	8.250	0.072	1.600
AQ	8.245***	2.610	17.072*	1.910
K-structure	2.031**	2.250	7.263***	4.120
CFOsale	0.003***	3.270	-2.543	-1.230
Dividend	1.294***	4.290	1.792***	3.300
OperCycle	0.000	-0.150	0.002	0.670
Loss	-1.359***	-4.600	0.419	0.620
Cash	-13.731***	-20.030	-4.138*	-1.920
Ind. K-struc.	3.040**	2.030	9.183***	3.180
Age	0.019**	2.250	0.016	1.290
std_Inv	-0.026***	-5.940	-0.022	-1.210
std_CFO	-24.618***	-13.500	-12.913*	-1.690
std_Sales	0.959	1.190	0.342	0.150
Year	YES		YES	
Industry	YES		YES	
SubCountry	YES		YES	
N	11,205		1,868	
Adj R-Sq	0.185		0.084	

This table reports the regression estimation of the association between cultural proximity and investment efficiency at the firm-level. All variables are defined in the Appendix. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on a two-tailed t-test.

TABLE 4
Distribution of geographic locations at the subsidiary-level

	Total		With cultural proximity	
Subsidiary location	# of obs	% of obs	# of obs	% of obs
Mainland China	2,475	39.89%	398	33.14%
Hong Kong	19	0.31%	10	0.83%
India	660	10.64%	107	8.91%
Japan	299	4.82%	63	5.25%
Korea	1,170	18.86%	240	19.98%
Malaysia	1,045	16.84%	201	16.74%
Singapore	537	8.65%	182	15.15%
Total	6,205	100%	1,201	100%

This table presents the distribution of parent-subsidiary-year observations by country and region.

TABLE 5
Descriptive statistics and correlations at the subsidiary-level

Panel A: Descriptive statistics

Variable	Mean	Std Dev	P25	P50	P75	N
Inv	4.08	88.96	-0.03	0.10	0.28	6,205
CulProx	0.19	0.28	0	0	0	6,205
PE	37.30	107.15	13.00	18.00	28.00	6,205
Sub_lnAsset	10.02	2.17	9.12	10.20	11.10	6,205
Sub_roa	8.87	14.26	1.50	6.70	15.00	6,205
Parent_CFO	0.08	0.08	0.03	0.07	0.13	6,205
Credits	131.75	50.80	115.00	128.00	145.00	6,205
Sub_Ext	2.50	0.62	2.00	2.00	3.00	6,205

Panel B: Correlations

		1	2	3	4	5	6	7	8
1	*Inv*	1.00							
2	*CulProx*	**-0.01**	1.00						
3	*PE*	-0.01	**-0.03**	1.00					
4	*Sub_roa*	0.00	0.01	**-0.04**	1.00				
5	*Sub_lnAsset*	**0.03**	0.02	**0.07**	**-0.07**	1.00			
6	*Sub_Ext*	**-0.03**	**0.02**	**-0.14**	**-0.11**	**0.08**	1.00		
7	*Parent_CFO*	-0.01	**-0.02**	0.00	**0.06**	**0.05**	**-0.05**	1.00	
8	*Credits*	**-0.01**	**-0.05**	0.00	**-0.11**	**0.02**	**0.24**	**-0.04**	1.00

This table presents descriptive statistics and correlations at the subsidiary-level. All variables are defined in the Appendix. Panel A provides descriptive statistics for the dependent, explanatory and control variables. Panel B presents the correlation matrix for the dependent, explanatory and control variables.

TABLE 6
Association between cultural proximity and investment efficiency at the subsidiary-level

Variable	Coefficient	*t-stat*
PE_CulProx	0.011**	2.360
PE	0.940**	2.730
CulProx	-5.407*	-1.910
Sub_lnAsset	1.450	1.500
Sub_roa	-0.035	-0.510
Parent_CFO	-17.650	-1.690
Credits	0.033	0.310
Sub_Ext	-6.997	-1.260
*PE*Parent_CFO*	-0.039	-1.360
*PE*Credits*	0.000	-0.740
*PE*Sub_Ext*	0.000	-1.080
Year	YES	
SubIndustry	YES	
SubCountry	YES	
N	6,205	
Adj R-Sq	0.040	

This table reports the regression estimation of the association between cultural proximity and investment efficiency at the subsidiary-level. All variables are defined in the Appendix. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on a two-tailed t-test.