

The cultural influence on the internal capital market of multinationals*

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Abstract

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Keywords: Cultural distance, multinationals, internal capital market, fund transfer, investment
JEL Classification: Z10, F23, D24, F21, F30

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Abstract

This paper studies how could the national culture distance between a foreign subsidiary and its parent affect the fund transfers in the firms' internal capital market. Following Rajan, Servaes, and Zingales (2000JF), we use the industry and firm adjusted investment to capture the internal fund transfer between a foreign subsidiary and its parent. We find a significant and negative relation between national cultural distance and the internal capital market funding activities. Subsidiaries in countries with larger cultural distances from the home country invest less and are less likely to receive fund from the parent firm. The results from Heckman's selection model and Tobit regression model further support our argument. Additional analysis shows that the subsidiaries' investment opportunity could moderate the impact of cultural distance.

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1 Introduction

As the globalization becomes irreversible, more and more firms establish foreign subsidiaries to take advantage of global diversification. Different from the single domestic firms, these foreign subsidiaries in the multinational firms encounter both the external capital market and the internal capital market within the parent group. Since more and more firms operate internationally, it is important to understand how the internal capital is allocated in these multinationals' internal capital market. Previous literature has documented how the formal institutional characteristics, such as legal environment and tax policies, will affect firm's internal capital market (Goetz, Laeven, and Levine 2013; Kolasinski 2009; Harford, Wang, and Zhang 2017). However, how the informal institutional environment could affect the fund transfer in the internal capital market is less known. In this paper, we focus on the effect of cultural distance between the country where a foreign subsidiary operates and the home country and investigate how this culture difference affects the subsidiaries' investment policy.

We propose and test two competing hypotheses: agency cost hypothesis and efficient market hypothesis. The foreign subsidiaries of multinationals face a more complicated operating environment than that of single domestic firms (Desai, Foley, and Hines 2004; Kolasinski 2009). The complicated external environment will lead to the need for more investigations to understand the local market and thus increase the cost of monitoring over foreign subsidiaries. Besides, a larger cultural distance reduces the effectiveness of communication, increases information asymmetry, and gives rise to a sense of unfamiliarity about foreign culture, thereby demotivating cross-border financial activities (Aabo, Pantzalis, and Park 2015; Huang 2015; Shroff, Verdi, and Yu 2014). Siegel, Licht, and Schwartz (2011; 2013) find that cultural distance decreases the amount of foreign investments and capital flows at the country level. In the context of multinationals, they can have a huge number of foreign subsidiaries and must monitor their diversified subsidiaries more extensively and intensively when the subsidiaries

operate in “unfamiliar” countries. Large cultural distances between the parent and subsidiaries aggregate agency problems (Roth and O’Donnell 1996), which inevitably affects investment and financing activities such as fund transfers. In summary, greater culture distance between a foreign subsidiary and its parent increases the agency problem between the two parties and decreases the effectiveness of information transferring. Thus, the agency cost hypothesis states that larger culture distance impedes internal fund transferred to foreign subsidiaries and decreases the foreign subsidiaries’ investment.

On the other hand, the efficient market hypothesis suggests the internal fund should be allocated to the firms’ best use (Li and Li, 1996; Stein, 1997). Khanna and Tice (2001) document that the existence of internal capital market allows cross-border fund transfer within a multinational, and therefore, it can support the investments and operations of both parent and subsidiaries flexibly at low costs. Desai, Foley, and Hines (2004) point out that multinationals may use the internal capital market as a substitution for external finance if borrowing costs or tax rates are too high in the local market. In the spirit of the efficient market hypothesis, the parent firm should see through the real situation in different subsidiaries and allocate the internal fund to the subsidiaries with the highest investment opportunities. The different cultures should have no impact on the fund allocation in the firm’s internal capital market and should not impact the subsidiaries’ investment decision. Thus, the efficient market hypothesis implies the culture distances between parent firm and its foreign subsidiaries should not affect the fund transfer in the internal capital market and should not affect the subsidiaries’ investment.

In this paper, we empirically explore whether the cultural distance affects fund transfers in the internal capital market of multinationals. As a crucial informal institution, cultural distance closely relates to decision-making regarding financing and fund transfer. However, different theories could predict different results. Thus, it is necessary to conduct an empirical

investigation of the cultural role in the multinationals' internal capital market.

To conduct the empirical analysis of the relation between the cultural distance and internal fund transfers of multinationals, we follow the guideline of Beugelsdijk, Ambos, and Nell (2018), and employ the Euclidian version of Kogut and Singh's (1988) formula with Hofstede's (2010) cultural dimensions to calculate cultural distance between a foreign subsidiary and its parent. This measure of cultural distance is commonly used in the literature (for example, Beugelsdijk and Frijns 2010; Karolyi 2016). We use the approach of Rajan, Servaes, and Zingales (2000) to construct the measurement of the internal fund transfers. Briefly, the internal fund transfer is measured as the subsidiary firm's excess investment over the stand-alone domestic firms in the same industry. This approach allows us to evaluate fund transfers in two directions: Both from the internal capital market to subsidiaries (positive values of the measure) and out of subsidiaries into the internal capital market (negative values of the measure). To be included in our sample, we require the subsidiary to have reasonable and necessary data, such as non-missing total asset, non-missing operating country, etc. Our final sample covers 1,568 U.S. listed multinationals with 48,451 foreign subsidiaries over the period from 2007 to 2011.

Table 1 reports the country and year distribution of the foreign subsidiaries in our sample. The top three countries associated with the most subsidiaries are the United Kingdom, Japan, and Canada. Intuitively, the United Kingdom and Canada have a very similar cultural background to the U.S. culture. This gives us some initial evidence that the parent firms are more likely to operate in countries with a similar environment with the home country. However, the numbers associated with Japan suggest that further formal analyses are needed to investigate whether and how national culture could affect the multinationals policy on different subsidiaries.

Table 2 presents the distribution of our fund transfer measure in different countries. We find the average and median fund transfers are negative in almost all countries, indicating that the

foreign subsidiaries cannot get enough fund support from the parent firm and invest less compared with the stand-alone domestic peer firms. This is also our key finding in this paper and the result is consistent with the agency cost hypothesis that larger culture distance impedes internal fund being transferred to foreign subsidiaries and decreases the foreign subsidiaries' investment.

We then further conduct formal regression analysis. The findings support the initial evidence in Table 1 and the intuitive results in Table 2. In details, we find that as the level of cultural distance becomes higher, the internal fund transfers to the subsidiaries decrease significantly, after controlling for other subsidiary-, firm-, and country-level factors. This decreasing internal transfer to subsidiaries becomes more likely and more frequently as the cultural distance increases, i.e. it becomes stronger for fund transferred out of subsidiaries into the internal capital market.

The results are also economically significant. A one-standard-deviation increase in the cultural distance will decrease the subsidiaries' investment by about 5%, which is equivalent to about US\$ 12 million less investment each year at the subsidiary level. The logistic regressions reveal that a one-standard-deviation increase in the cultural distance decreases the likelihood of the fund in subsidiaries by about 5%. Further, the results from the Heckman's selection model and Tobit model show that conditional upon there are fund transfers in the internal capital market, the effect becomes even stronger.

In the seminal paper by Rajan, Servaes, and Zingales (2000), they find that the asset-weighted investment opportunities will affect the resource allocation between different segments within the same firm. We also explore how investment opportunities could affect the relation between subsidiaries' investments and their cultural distance to the home country. Following Rajan, Servaes, and Zingales (2000), we construct investment opportunities (q) and the asset-weighted

investment opportunities (λq) at the subsidiary level. We divide our whole sample into four sub-samples based on the two measures and test the relation between cultural distance and fund transfers. On average, we find the subsidiaries' investment opportunities (q) could moderate the negative impact of the culture distance on the internal fund transfer. The strong negative relation in the low- q -high- λq sub-group further supports the agency cost hypothesis. The coefficient of culture distance (coeff.=-0.494, t -statistic=-3.057) is about two times larger than the coefficients in our baseline results, indicating that the culture distance increases the information asymmetry between the large subsidiaries with low investment opportunities and their parent firm, making them even harder to obtain internal fund from the parent firm and invest less.

What's more interesting, we find a significant positive relation between culture distance and the internal fund transfer to the subsidiaries when the subsidiaries have high investment opportunities but the smaller scale (smaller asset-weighted investment opportunities). This result is consistent with the efficient market hypothesis that the fund should be allocated to where it could be used best. But the relation only holds when the subsidiaries are small, indicating that the parent firms are relatively conservative on foreign investments. These results provide further evidence that fund transfers into high-investment-opportunities, but culturally distant subsidiaries serve as a diversification function for multinationals.

To summary, on average, our findings are consistent with the prior research that suggests the cultural distance will negatively affect the likelihood of finance activities (Siegel, Licht, and Schwartz 2011; Siegel, Licht, and Schwartz 2013; Ahern, Daminelli, and Fracassi 2015). But under some conditions (smaller size, higher investment opportunity), the culture distance could also increase the subsidiaries' ability to obtain fund from parent firm and thus invest more compared with the stand-alone domestic peers. Both the agency cost effect and diversification

effect could exist in the multinationals' internal capital market.

By investigating the association between cultural distance and internal fund transfers of multinationals, this research contributes to the literature in three ways. First and foremost, our research is related to the literature on the internal capital market of multinationals (Desai, Foley, and Hines 2004; Kolasinski 2009; Harford, Wang, and Zhang 2017). Similar to Harford, Wang, and Zhang (2017) and Kolasinski (2009), we argue that cultural distance is closely related to frictions, such as information asymmetry and agency problem, in the internal capital market of multinationals to influence internal fund transfer multinationals. Further, instead of looking at the financial position or capital structure of subsidiaries, such as Desai, Foley, and Hines (2004) and Kolasinski (2009) who study multinationals' internal capital markets by focusing on subsidiary debts, our research studies capital activities by looking at the internal capital transfers and subsidiary's investment. Especially, by employing cultural distance, we link the above studies and explain what factors can affect internal fund transfer and its efficiency. In doing so, we shed light on this literature from a novel angle and indicate some new aspects to examine the internal fund transfers of multinationals.

Furthermore, our paper contributes to the research about the internal capital market in general. By providing evidence in multinationals, our results suggest that cultural distance is a strong determinant of both the likelihood and the level of financial activities in the internal capital market. Prior literature argues that diversification either leads to a higher level of financial flexibility (Khanna and Tice 2001; Stein 1997) or causes a reduction of firm value due to the inefficiency of the internal capital market (Scharfstein and Stein 2000; Rajan, Servaes, and Zingales 2000). The multinationals have a higher level of diversification in foreign markets and hence enlarge both effects. We document that cultural distance is associated with international operations, influencing both the likelihood and the level of financial activities.

This provides an important view of understanding the country-level factors affecting the efficiency of the internal capital market.

Finally, our paper also contributes to the literature on how culture affects financial activities. Earlier research on the effect of country factors on financial activities mainly focus on formal institutions such as legal regimes (La Porta et al. 1998) and creditor rights (Nini, Smith, and Sufi 2009; Stulz and Williamson 2003), recent scholars have increasingly shown the importance role of culture in influencing financial outcomes (Guiso, Sapienza, and Zingales 2006), mergers (Ahern, Daminelli, and Fracassi 2015) and foreign investments (Siegel, Licht, and Schwartz 2013). Specifically, culture influences preferences and beliefs which contribute to different behaviors and expectations in financial-economic activities (Guiso, Sapienza, and Zingales 2006). To date, little research has involved in whether culture influences decision making in the internal capital market. Because internal fund transfers in multinationals are recorded by the accounting principle of the home country, they are subject to lower influences of different accounting rules in different countries as in a cross-country study. Therefore, multinationals provide a valuable platform to study the effect of cultural differences, and capital transfers in the internal capital market of multinationals provide interesting insights into cultural studies.

The rest of the paper is organized as follows. Section 2 reviews prior literature and develops hypotheses development. Section 3 discusses the data and methodology. Section 4 presents results and analysis. Section 5 concludes and suggests future research opportunities.

2 Literature review and hypotheses development

2.1 The internal capital market of multinationals

A fundamental question in the theory of the firm is how the decision is made within the firm, where a hierarchy exist. As firms grow larger, the internal structure becomes more and more

complex. A great proportion of firms begin to operate in different segments, and even in different countries, leading the establishment of the internal capital market. The internal capital market allows the parent company to transfer funds to promising projects and away from the worsening segments or subsidiaries (Stein 1997; Khanna and Tice 2001). Compared with the external financing activities, a diversified firm could control and allocate resources to different segments or subsidiaries at lower costs, and avoid the high transaction cost and financing cost from external markets (Matsusaka and Nanda 2002). However, previous literature documents a robust and negative relation between firm diversification and market value, i.e. diversified firms trade at a discount relative to a portfolio of single-segment firms in the same industries (Lang and Stulz, 1994; Berger and Ofek, 1995). Scharfstein and Stein (2000) propose “the dark side of internal capital markets”, and argue that resources held by division managers can raise their bargaining power and extract greater overall compensation by acquiring more internal resources. This distortion in the resource allocation leads to an inefficiency in the internal capital market.

The global diversification makes the internal capital markets even more complicated. Internal fund transfers will be affected by the formal and/or informal Country-level institutional factors in different countries. Harford, Wang, and Zhang (2017) document that the internal capital market is a channel through which multinationals can transfer more cash overseas in addition to their existing foreign cash. Desai, Foley, and Hines (2004) report that multinational subsidiaries are financed with less external debt in countries with underdeveloped capital markets or weak creditor rights, where local borrowing costs can be significantly high. The existing of internal fund market allows the multinational firms to employ internal capital to overcome imperfections in external capital markets, consistent with the model of Billett and Mauer (2015), who suggest that external financing constraints drive the value of the internal capital market.

However, the complex global operating environment will also exaggerate “the dark side of internal capital markets”. Duchin and Sosyura (2013) find that agency issues and information asymmetry are important underlying channels through which the internal capital market affects investment policies. These issues become more severe in the multinationals, which operate in different countries with different institutional environments. Huang (2015) and Goetz, Laeven, and Levine (2013) report that diversification globally or across regions impedes information transfers, increases insider activities and intensifies agency problems. The multinational operation will also hinder shareholders’ monitoring of the performance in subsidiaries and increase chances for insiders to snatch private interest. Roth and O’Donnell (1996) investigate the compensation of managers of multinationals’ foreign subsidiaries and find that it is significantly affected by agency issues associated with foreign operations. The multinationals’ foreign operations also reduce a subsidiary’s willingness of external borrowing in the local market and increase the tendency of relying on the internal capital market. This in turn affects investment efficiency.

Overall, comparing to domestic firms, multinationals commonly face more complicated capital market conditions. While the internal capital market gives multinationals an advantage relative to purely domestic firms to transfer funds as an alternative financing channel, internal capital allocation is not necessarily without fault. The literature has documented that foreign institutional conditions affect financial activities in the internal capital market of multinationals. In this paper, we investigate this issue in a novel perspective by focusing on national culture.

2.2 The effect of cultural distance: hypotheses development

As multinational firms expand their business overseas, it is inevitable to encounter different cultures. In this case, multinationals need to develop management and financial practices for each subsidiary in accordance with the national culture in which the subsidiary is operating,

this would unavoidably influence the financial activities of multinationals.

Following the agency cost hypothesis, cultural distance will increase monitoring difficulties and enlarge the information asymmetry. Huang (2015) argues that cultural distance creates barriers to communication between a parent firm and its foreign subsidiaries, which further lead to miscommunication and information asymmetry. Foreign operations also give rise to the unfamiliarity of the new culture, which increases friction in the internal capital market. If foreign subsidiaries hire managers locally, it can take time for staff in the parent company and subsidiaries to be acquainted with each other. If foreign subsidiaries use expatriate managers from the home country, then foreign subsidiaries may have to spend plenty of time and money to understand the local culture and form a trustworthy relationship with external financial resources providers if they would like to seek appropriate external funding resources. Heavy costs of external funding might force subsidiaries to more heavily depend on internal fund transfer from the parent company. Siegel, Licht, and Schwartz (2011) report that cultural distances have substantial impacts not only on cross-border mergers but also on cross-national flows of bond and equity issuances and syndicated loans. Foreign operations inevitably increase agency costs and financial frictions (Harford, Wang, and Zhang 2017). Cultural differences intensify these issues (Roth and O'Donnell 1996). In line with the agency cost hypothesis, larger culture distance will decrease the internal fund transferred to the foreign subsidiaries.

The above relation, however, will be tensioned under the efficient market hypothesis. Firms operate around the world to take advantage of the diversification. The existence of the internal capital market facilitates the cross-board fund transferring. By receiving funds transferred internally from the parent company, multinationals are not constrained by their ability to raise funds if they face fundamentally different external environments. The internal capital market

can substitute for the external capital market if external finance is costly or difficult to obtain. In line with this argument, Desai, Foley, and Hines (2004) show that multinational firms will use the internal capital market to overcome the imperfections in the external market. The internal fund should be allocated to the subsidiaries where the investment opportunities with highest valuation. Thus, the efficient market hypothesis predicts that the culture distance should not impact the fund transfer in the internal capital market.

To test the above predictions, and examine the real impact of culture distance on the internal fund transferring, we propose our first testable hypothesis and state as followings:

H1: Cultural distance decreases the amount of internal fund transferred to foreign subsidiaries.

Cultural distance will decrease the effectiveness of the information transferring between subsidiaries and parent firm, increases the monitoring difficulties from the parent firm, thus amplifies the agency problems between subsidiaries and parent firm. It is likely that top managers in culturally distant subsidiaries act in rent-seeking behavior by extracting their own financial benefit from CEOs (Roth and O'Donnell 1996). To exercise effective monitoring, CEOs at the parent company will also demand subsidiary managers more frequent fund transfers to the parent firm, and reduce the free cash flows in the subsidiaries. Limited free cash flow will help to mitigate the agency problem between parent and subsidiaries. Fund transferring out through the internal capital market would therefore facilitate to monitor rent-seeking behaviors of subsidiary managers. In line with this argument, we also expect the culture distance will affect the likelihood whether the subsidiaries can keep foreign cash in their own account. Specifically, firms in countries with similar cultures would be subject to fewer agency issues compared to those with distant cultures (Roth and O'Donnell 1996). Thus, the benefits of holding foreign cash exceeds the costs of agency problems. The subsidiary do not need to transfer fund into the patent firm frequently. To test this formally, we propose the following

hypothesis:

H2: Cultural distance increases the likelihood of fund transferred out from the foreign subsidiaries.

Desai, Foley, and Hines (2004) propose that capital market conditions such as borrowing costs, creditor rights, and legal environment can influence the amount of internal fund transfers. Beside those macro-environments, a more central argument in the internal capital market literature is the investment opportunities of subsidiaries or segments. Efficient internal capital markets can enhance firm value by allowing fund transfer from less promising projects to ones with more potentials (Stein 1997; Khanna and Tice 2001). Subsidiaries with high-potentials are more likely to be financed by parent-guaranteed subsidiary debts (Kolasinski 2009). The parent company also has the power to reallocate funds to high productivity subsidiaries (Ahn and Denis 2004). In doing so, the firm can ensure that fund is allocated to its best use and reduce the chances of undesirable investments thereby enhancing firm performance. These characteristics have illuminated that the internal capital market as a finance channel to multinationals provides more flexibility and high-quality finance at lower costs, and as such, it plays a significant role in financing the operation of multinationals. We therefore expect that the investment-opportunity associated with the subsidiaries could moderate the negative impact of cultural distance in the internal fund market. Thus, we propose the following hypothesis:

H3: The relation between culture distance and internal fund transfers will be affected by the investment-opportunity of the subsidiaries.

Taken together, different from the internal capital market of purely domestic firms, the internal capital market in multinationals dynamically interacts with national culture. The evaluation of how cultural distance affects the internal capital market can aid multinationals' decision-making of internal fund transfers.

3 Data and Methodology

3.1 Sample

The sample includes all multinational firms from the Orbis database, maintained by Bureau van Dijk, and Compustat's North America Industrial Annual file. Orbis database is used to retrieve information on a firm's subsidiaries, including the country of incorporation, the industry of the subsidiary (represented by four-digit NAICS codes), the subsidiary's total assets, operational revenue, and the number of employees. Compustat's North America Industrial Annual file is used to retrieve data on firm-level information, including a firm's total assets, total sales revenue, common shareholders' equity, and the number of business segments. Our analysis covers data from 2007 throughout 2011.¹

[Insert Table 1 Here]

To clean the data, we first eliminate subsidiaries without country information. However, we do not exclude the parent group to which these subsidiaries belong because one parent firm are associated with many subsidiaries. To ensure the data quality of the subsidiaries, we also require the subsidiaries to have non-missing total asset. We then classify all subsidiaries into domestic and foreign subsidiaries because the influence of cultural distance arises mainly from a firm's foreign operations where culture is different from the domestic market. In Table 1, the top panel gives a sample distribution of the number of all subsidiaries and the number of foreign subsidiaries. It shows that both numbers increase over time: The total number of all subsidiaries increases from 13,574 in 2007 to 21,779 in 2011 and the number of foreign subsidiaries increases from 6,163 in 2007 to 12,279 in 2012. As a result, the proportion of foreign subsidiaries increases slightly over the sample period (from 45.40% in 2007 to 56.38% in 2011).

¹ This is to ensure the solidity and consistency of the information since the Orbis database does not include information on the total assets of subsidiaries before 2007.

Overall, there are 51.06% of sample subsidiaries are incorporated in foreign countries.

We also report the country-by-country distribution of the foreign subsidiaries in the second panel of Table 1. To save space, we only present the statistics for the top ten foreign countries where host the most of U.S. multinationals' subsidiaries. It is worth noting that although U.S. multinationals also operate in cultural distant markets (such as Japan and India), the main foreign operations of multinationals remain in the culture-proximate countries (e.g. Great Britain, Canada, and EU countries). This is also our first evidence that the culture distance will affect multinationals' foreign operation.

To get our final sample used in the regression analysis, we also complement some subsidiary-level financial information. For some subsidiaries (in some years), Orbis shows missing values in operations revenue and/or the number of employees. For this data, Orbis does not give an indication of whether there is no operation in those subsidiaries, or it is unable to obtain the data and therefore the information is truly missing. We therefore follow Denis, Denis, and Yost (2002) and patch missing values by zero. The advantage of setting the missing values to zero is that it can keep relevant information as much as possible. For example, Blackrock Inc. has 4,864 subsidiaries in 2008, among them, 4,638 subsidiaries have revenue information and 4,656 subsidiaries have assets information. With the approach of Denis, Denis, and Yost (2002), we can retain rich information and a large sample size with these sample firms.²

3.2 Measuring internal capital market fund transfer

To measure internal capital market fund transfer associated with a subsidiary, we employ a similar approach with Rajan, Servaes, and Zingales (2000),³ which underlying assumes that

² We also use another set of data in which we exclude all subsidiaries with missing data. The disadvantage of this data set is that it reduces sample size and does not capture the overall perspective of the multinational firms. Using this set of data confirms the robustness of our results.

³ This approach is an indirect measure fund transfers across subsidiaries as they cannot be observed directly. It is used in the internal capital market literature, such as Duchin (2010) and Ahn and Denis (2004).

fund transfers taken place in a subsidiary corresponds to the investments of the subsidiary. Based on Rajan, Servaes, and Zingales (2000), the fund transfers associated with a subsidiary within the internal capital market are measured by the difference between the investments that the subsidiary makes if it is a part of a multinational and the investments that it would have conducted if it is a standalone domestic firm. A positive value of this measure suggests that the subsidiary invest more than the standalone domestic peers, implying the subsidiary receive funds from the internal capital market, whereas a negative value means that the subsidiary underinvest compare to the domestic peers. The investment a subsidiary would have made on its own is approximated by the asset-weighted average of the changing in total assets of standalone domestic firms in the same industry (defined by four-digit NAICS codes) and year.

As noted by Rajan, Servaes, and Zingales (2000), this measure would still over-estimate funds transfers associated with a subsidiary, as it may incorrectly treat a fund transfer that happened between subsidiaries of a multinational firm, instead of the net increase or decrease associated with the subsidiary. To correct for this, one needs to further subtract the industry-adjusted investment ratio. In the context of multinational firms, the best proxy for the transfers that the segment receives (for positive value) or makes (for negative value) with the internal capital market (ICM) is therefore computed as,

$$ICM \text{ fund transfer}_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j \left(\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} \right), \quad (1)$$

where j denotes subsidiary j , sd refers to standalone domestic firms, and W_j is the segment j 's share of the total firm's assets, I_j refers to the investments made by subsidiary j , measured as the annual change in total assets of subsidiary j , and $Assets_j$ is the book value of total assets of subsidiary j .

[Insert Table 2 Here]

Table 2 reports the summary statistics of *ICM funder transfer* by countries associated with subsidiaries of U.S. multinationals. As *ICM funder transfer* can be negative, zero, and positive values, the values in the lower quartiles are more likely to be negative (indicating fund transferred out of the subsidiaries) and the values in the higher quartiles are more likely to be positive (indicating fund transferred into the subsidiaries). One important pattern appears. In almost all countries, the average (median) *ICM funder transfer* is negative, implying that foreign subsidiaries are not likely to receive fund from the parent firm, and invest less compared with the domestic peers. This pattern becomes more severe in countries with different cultures, such as Japan, South Korea, and Taiwan. This is the key finding in our paper, i.e. cultural distance impedes the fund transferred to the foreign subsidiaries, leading to less investment in the subsidiaries compared to the standalone domestic peers. The results are also consistent with the agency cost hypothesis. To conduct more formal regression analysis, we will quantify cultural distances in the next section.

3.3 Culture and cultural distance

Cultural distance is computed as an approach defined by (Kogut and Singh 1988),

$$CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i} \quad (2)$$

where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture the national culture, we use the cultural framework developed by Hofstede, Hofstede, & Minkov (2010) (hereafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty

avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND).⁴ Hofstede's cultural framework is commonly applied in the business and finance literature, such as Chui, Titman, & Wei (2010), Beugelsdijk & Frijns (2010), Eun, Wang, & Xiao (2015), Huang (2015), and Karolyi (2016). With an aggregation of Hofstede's cultural scores, we construct cultural distance between the parent and subsidiaries of U.S. multinationals using the same approach expressed in Equation (2). Consistent with our expectation, the countries with the lowest cultural distances from the United States include Australia (0.53), Canada (1.07), South Africa (1.44), Ireland (1.52), the United Kingdom (1.53), and New Zealand (1.54). The countries with the highest cultural distances include Russia (7.22), Slovakia (7.22), Albania (6.61), South Korea (6.56), Romania (6.56), Egypt (6.37), and Pakistan (6.36).

3.4 Control variables

To capture the economic effect of fund transfers on the internal capital market, we control a range of variables documented in the literature on how subsidiary characteristics affect internal capital markets (Kolasinski 2009; Desai, Foley, and Hines 2004). At the subsidiary-level, we control for subsidiary sales growth (*Sub. Sales growth*), subsidiary return on assets (*Sub. Return on assets*), subsidiary operational risk (*Sub. Operational risk*), subsidiary size (*Sub. Size*), utility subsidiaries (*Sub. Utility*), and the number of foreign subsidiaries (*FNTN*). *Sub. Sales growth* is the dollar amount change in subsidiary sales relative to the previous period, scaled by the multinational's total sales. *Sub. Return on assets* is calculated as subsidiary operating income divided by the book value of assets. *Sub. Operational risk* is the standard deviation of *Sub. Return on assets*. *Sub. Size* is the natural logarithm of total assets of the subsidiary. *Sub. Utility* is dummy indicating that a segment's primary three-digit NAICS code is 221. *FNTN* is the number of foreign subsidiaries to the total number of all subsidiaries, capturing the degree

⁴ For a detailed explanation of each Hofstede's dimension, see Hofstede, Hofstede, and Minkov (2005), Hofstede Insight website: <https://www.hofstede-insights.com>, and Hofstede's personal website: <https://geerthofstede.com>.

of foreign operations.

We also control for a set of firm-level and country-level characteristics. In terms of firm-level variables, we include *firm size*, *Tobin's Q*, *firm leverage* and *the number of segments*. *Firm size* is the natural logarithm of the firm's sales revenue. *Tobin's Q* is a proxy for a firm's growth opportunity and is computed as the firm's market value of total assets to the replacement value of total assets. The market value of total assets is calculated as the market value of equity plus the book value of assets minus the book value of equity. The replacement value of total assets is the book value of total assets. *Firm leverage* is measured by the firm's equity multiplier, computed as the book value of total assets divided by common shareholders' equity. *Number of segments* is the number of firm's business and operating segments in the different industries. In terms of country-level variables, we follow Desai, Foley, and Hines (2004) and control for inflation, creditor rights, and political risks. *Inflation* is the inflation rate of the host country where a foreign subsidiary is incorporated. *Creditor rights* are captured by an index of creditors rights developed in Djankov, McLiesh, and Shleifer (2007), which is range from zero to four with higher levels of the measure indicating stronger legal protection. Finally, *Political risk* is measured as the annual average of the index of the political risk presented in the International Country Risk Guide. In the Appendix, we detail the construction of all the variables.

[Insert Table 3 Here]

Table 3 reports the summary statistics. On average, the cultural distance from the countries of sample subsidiaries to the United States is 3.53 (the median is 3.93), as reported in the first row. We report two *ICM* fund transfer measure, one measure using data imputed at the NAICS level, and the other using data imputed at the NACE level. All the mean/median values are negative, indicating that on average subsidiaries do not receive fund transfers, and invest less than the domestic peer firms. Regarding the control variables, the sales growth is negative and

subsidiary-level return on assets is about 4.7%, suggesting that foreign subsidiaries contribute marginally to the firm's overall sales. This may be because not all foreign subsidiaries facilitate sales function.⁵ Second, Tobin's Q of our sample firm is 1.6, suggesting that on average the sample multinationals are worth more than the cost of their assets. The mean (median) number of segments is 2.65 (2.00), suggesting that the sample multinationals in general operate in two to three different industries. Finally, the medians of the rate of inflation, creditor rights and political risk are 2.477%, 2.880 and 0.267, respectively. These figures are comparable to Desai, Foley, and Hines (2004).⁶

4 Empirical results

4.1 Baseline result

Our empirical analysis starts with the ordinary least square (OLS) regressions to estimate the relationship between cultural distance and the level of the internal fund transfer. Specifically, we estimate the following model,

$$\begin{aligned}
 ICM \text{ fund transfer}_{j,t} & \\
 &= \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub_Controls_{j,t} + \beta_3 Firm_Controls_{j,t} \quad (3) \\
 &+ \beta_4 Country_Controls_{j,t} + \text{Fixed effects} + \varepsilon_{j,t}
 \end{aligned}$$

where $ICM \text{ fund transfer}_{j,t}$ is fund transfers in the internal capital market associated with subsidiary j at year t as described in Section 3.2, $CDis_{US,j}$ is the cultural distance between the country where the subsidiary j is incorporated and the home country (the United States) of sample multinationals as described in Section 3.3, $Sub_Controls$, $Firm_Controls$, and $Country_Controls$ represent subsidiary-, firm-, and country-level control variables, respectively, as described in Section 3.4. Standard errors are clustered on the firm level with

⁵ See, for example, Ling, Floyd, & Baldrige (2005) And Qu & Zhang (2015) for a detailed discussion on the issue of sales function of foreign subsidiaries.

⁶ The rate of inflation, creditor rights and political risk in Desai et al. (2004) are 5.710%, 2.000, and 0.205. The sample period of Desai et al. (2004) covers 1982, 1989, and 1994.

accounting for temporal and cross-sectional correlation (Petersen 2009). Our coefficient of interest is β_1 , which tells us the relation between cultural distance and the internal market fund transfer after controlling for other effects.

[Insert [Table 4](#) Here]

[Table 4](#) reports the results from OLS regressions, where the dependent variable in Panel A is NAICS imputed internal market fund transfers and that in Panel B is NACE imputed internal market fund transfers. In Column (1) of Panel A, after controlling for other subsidiary-, firm-, and country-level factors, finding that cultural distance is negatively related to internal market fund transfers. The negative effect is statistically significant at the 1% level, suggesting that fund transfers are smaller to subsidiaries incorporated in the countries where cultural differences from the home country are greater. Besides, subsidiary sales growth, return on assets, operational risks and size are positively and significantly related to *ICM fund transfer*, indicating that profitable and large foreign subsidiaries are more likely to obtain support from multinationals through the internal capital market.

In Column (2) of Panel A in [Table 4](#), we further control for year fixed effects in addition to other subsidiary-, firm-, and country-level factors. This increases the adjusted R^2 from 0.237 to 0.241. The results show that the negative and significant effect of cultural distance on *ICM market fund transfers* remains. In terms of economic significance, a one-standard-deviation increase in cultural distance is associated with -0.33 units change in the internal fund transfer, which corresponds -5% change from the unconditional mean of *ICM fund transfer*. Consistent with previous studies that document a negative effect of cultural distance on cross-border capital flows between two different entities (Ahern, Daminelli, and Fracassi 2015; Siegel, Licht, and Schwartz 2011), our results suggest that within the internal capital market of the same organization, the amount of fund transfers to subsidiaries incorporated in culturally distance

locations is also smaller.

Column (1) of Panel B, where the dependent variable is NACE imputed internal market fund transfers, shows that the negative association between cultural distance and fund transfers in the internal capital market continues to hold after controlling for other subsidiary-, firm-, and country-level factors. Statistically, the effect is significant at the 1% level. The result also shows that *Firm size* and *Leverage* are negatively related to capital transfers in the internal capital market. On the contrary, *Tobin's Q* and *The number of segments* are positively related to fund transfers. These effects are consistent with those in Panel A of [Table 4](#), suggesting that internal capital transfers are determined by both firm and subsidiary characteristics.

In Column (2) of Panel B [Table 4](#), we further consider the year fixed effects. This increases the adjusted R^2 from 0.231 to 0.235. The result that cultural distance is negatively related to internal market fund transfers holds consistently. The negative effect remains statistically significant at the 1% level. Further, it shows that inflation and political risk of the host countries are positively related to fund transfers in the internal capital market at 1% and 10% levels of statistical significance, respectively. Whereas creditor rights negatively related to internal fund transfers with the 1% level. These results are in line with previous tests. More important to the purpose of our paper, after including country-level factors, the effect of cultural distance on fund transfers in the internal capital market remains economically significant: A one-standard-deviation increase in cultural distance corresponds to a -0.253 change in fund transfers in the internal capital market by a subsidiary, which is -4.43% change from the unconditional mean of *ICM fund transfer*.

The above results, however, are only indicative. First, *ICM fund transfer* can be positive, zero and negative. (The positive sign suggests that the subsidiaries receive fund transfers and the negative sign indicates that the subsidiaries make fund transfers). Therefore, pooling *ICM fund*

transfer in OLS regressions may not be numerically sensible. Second, *ICM fund transfer* depends on two conditions: Whether there is a transfer and how much of the transfer. It is more meaningful to estimate the level of the transfer only conditional upon the likelihood of the fund transfer. In the subsequent sections, we tackle these issues and first investigate how cultural distance affects the likelihood of *ICM fund transfer*.

4.2 Cultural distance and the likelihood of ICM fund transfer

In this section, we formulate a model for the effect of cultural distance on the probability or likelihood of fund transfers in the internal capital market. In general, the model is written as,

$$P(FT_{j,t} = 1 | Dis_{US,j}, x_{i,j}) = F(Dis_{US,j}, x_{i,j}, \beta) \quad (4)$$

where FT denotes a dummy variable on whether there are fund transfers associated with a subsidiary in the internal capital market ($FT = 1$ if the subsidiary receives or makes fund transfers in the internal capital market and $FT = 0$ otherwise), Dis is the cultural distance, and x_i is a vector of explanatory variables as we discussed above. Equation (4) says that the probability of having $FT = 1$ depends on Dis and other subsidiary-, firm-, and country-level characteristics.⁷ Fund transfers reported here are NAICS imputed, but NACE imputed fund transfers produce similar results. Year fixed effects are included in all regressions to control for time-related shocks. Standard errors are clustered by firm accounting for temporal and cross-sectional correlation (Petersen 2009). Estimation of the model yields results that can be used to predict the probability of fund transfers in the internal capital market for each subsidiary.

[Insert [Table 5](#) Here]

In [Table 5](#), we estimate the model (4) using logistic regressions. Specifically, we estimate three

⁷ $F(\cdot)$ is the cumulative distribution function and usually is the standard normal distribution, expressed as $\Phi(z_i) = (1/\sigma\sqrt{2\pi})e^{-\frac{1}{2}(\frac{z_i}{\sigma})^2}$.

regressions. In addition to the test of whether there is a transfer (where the dependent variable is denoted as *FT*), we also examine whether there is a positive transfer (i.e., a subsidiary receives funds from the internal capital market, where the dependent variable is denoted as *FT+*) and whether there is a positive transfer (i.e., a subsidiary makes funds to the internal capital market, where the dependent variable is denoted as *FT-*). As we mentioned above, the pooled linear regression may give misleading results as it confounds the positive, zero and negative fund transfers. The logistic regressions distinguish the effects of cultural distance on the positive, zero and negative transfers and thus generate more meaningful results.

In Column (1) of [Table 5](#), the result shows a positive coefficient on cultural distance with the 1% statistical significance level. This suggests that the cultural distance associated with a subsidiary is positively related to its likelihood of fund transfer activities in the internal capital market. In other words, a subsidiary located in countries with greater cultural distance from the home country tends to have a higher likelihood of either receiving or make transfers from the internal capital market. The effect is economically significant as well. The corresponding odds ratios are 1.077, suggesting that for a one-unit change in the cultural distance, the likelihood of internal capital market transfers increases by 7.7%. For a one-standard-deviation increase in the cultural distance, the likelihood of internal capital market transfers increases by 12.97%.

In Column (2) of [Table 5](#), we report results for the effect of cultural distance on the likelihood of positive fund transfers, i.e., a subsidiary receives fund transfers from the internal capital market. The result shows a negative coefficient on cultural distance. However, this result is not statistically significant. This suggests that the cultural distance associated with a subsidiary is not significantly related to the likelihood that it receives fund transfers from the internal capital market. In other words, a subsidiary located in countries with greater cultural distance from the home country does not show a stronger likelihood of receiving transfers from the internal

capital market. This result is in fact in line with our main argument that multinationals do not transfer funds to culturally distance subsidiaries.

In Column (3) of [Table 5](#), we report results for the effect of cultural distance on the likelihood of negative fund transfers, i.e., a subsidiary makes fund transfers to the internal capital market. The result shows a positive coefficient on cultural distance with the 1% statistical significance level. This suggests that the cultural distance associated with a subsidiary is positively related to the likelihood that it makes fund transfers into the internal capital market. In other words, a subsidiary located in countries with greater cultural distance from the home country tends to have a higher likelihood of making transfers to the internal capital market. Further, the effect is economically significant. The corresponding odds ratios are 1.029, suggesting that for a one-unit change in the cultural distance, the likelihood of making funds from the internal capital market increases by 2.9%. For a one-standard-deviation increase in the cultural distance, the likelihood of receiving internal capital market transfers increases by 5.04%.

Overall, the results in this section show evidence that cultural distance associated with foreign subsidiaries is positively related to the likelihood of the subsidiaries make transfers to, instead of receiving transfers from, the internal capital market of multinationals.

4.3 Cultural distance and the amount of ICM fund transfer

4.3.1 Evidence from Heckman's section model

To estimate the association between cultural distance and the amount of fund transfers in the internal capital market, we use a standard Heckman's (1979) two-step procedure. The results from OLS regression may be subject to the self-selection issue, in which we can access to observations for only funds are transferred in the internal capital market. Since subsidiaries that receive or make fund transfers may be non-randomly selected from the sample, estimating the determinants of fund transfers from the subsample that has fund transfers may introduce bias.

Heckman's (1979) two-step procedure ensures that our conclusions regarding cultural distance and other factors that drive fund transfers in the internal capital market are not driven by non-fund transfer subsidiaries that make sample inclusion more likely.

The Heckman procedure takes place in two stages. In the first stage, we formulate a model for the probability of making fund transfers in the internal capital market. The process in this stage is the same with our test in the previous section, except only that the canonical test for this stage is a probit regression instead of a logistic regression. In the second stage, the self-selection issue is corrected by incorporating the predicted probabilities from the first stage as an additional explanatory variable, and estimate the following specification,

$$\begin{aligned}
 ICM \text{ fund transfer}_{j,t} &| P(FT_{j,t} = 1, Dis_{US,j}, x_{i,j}) \\
 &= \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub_Controls_{j,t} + \beta_3 Firm_Controls_{j,t} \\
 &+ \beta_4 Country_Controls_{j,t} + Fixed \text{ effects} + \lambda \rho \sigma_\varepsilon
 \end{aligned} \tag{5}$$

where ρ is the correlation between unobserved determinants of propensity to make fund transfer in the internal capital market and unobserved determinants of cultural distance, σ the standard deviation of residual in the first stage, and λ is the inverse Mills ratio that contains information from the first step to control for unobservable factors which make sample inclusion more likely. If the sample-selection bias does exist or the sample is not randomly selected, then λ is expected to be statistically significant. Therefore, Heckman's selection model mainly corrects omitted variables bias as it is conditional on both independent variables and λ .

[Insert [Table 6](#) Here]

In [Table 6](#), we report the results. Again, *Fund transfers* reported here are NAICS imputed, but NACE imputed fund transfers produce similar results. Probit regression results are reported in Columns (1) of [Table 6](#). Consistent with the results from the logistic regressions in the previous section, the probit model shows that cultural distance is positively related to the possibility of

fund transfers in the internal capital market with the statistical significance at the 1% level. The marginal effect at the mean for the corresponding coefficient on cultural distance suggests that for each unit increase in cultural distance, subsidiaries are approximate 0.25%⁸ more likely to carry out fund transfers in the internal capital market. This further confirms the significant effect of cultural distance.

The results from Heckman's selection model are reported in Columns (2) of [Table 6](#). First, the inverse Mills ratio (λ) is -7.988, which is statistically significant at the 1% level. This suggests that the sample-selection bias does exist, and the sample is not randomly selected. It is therefore indeed important to correct the selection bias. After correcting the selection bias, cultural distance is significantly and negatively related to the amount of the subsidiary's fund transfers, conditional upon there are fund transfers associated with a subsidiary. In other words, with subsidiaries incorporated in countries with higher cultural distances from the home country, they tend to transfer a greater (or receive or hold smaller) amount of funds into the internal capital market. The effect is statistically significant at the 1% level. This result indicates that cultural distance not only increases the likelihood of fund transfers but also increases the amount of fund transfers made by foreign subsidiaries into the internal capital market.

In terms of economic significance, the test from the marginal effects indicates that a subsidiary with a one-unit higher cultural distance would lead to a -0.197 change in fund transfers in the internal capital market, holding the values of all variables at the mean. Given the standard deviation of 1.743 for a cultural distance of our sample, this corresponds to a -5.73% change in making fund transfers in the internal capital market. In other words, conditional upon there are fund transfers in the internal capital market, for a subsidiary incorporated in a location where cultural distance is a standard deviation higher than the sample mean, the subsidiary

⁸ The number is approximate as cultural distance is a continuous rather than categorical variable.

would increase fund transfers into the internal capital market by 5.73%. This change is slightly higher but comparable to our baseline result of 5%.

The results here, however, still need to be explained with caution. While it corrects the selection bias by disentangling zero transfers and the results are conditional upon the likelihood of the transfers, it still confounds positive (receiving) and negative (making) transfers. In the next section, we employ Tobit model to look into receiving and making fund transfers, respectively.

4.3.2 Evidence from the Tobit model

The Tobit model, also called a censored regression model, is designed to estimate relations between variables when there is either left- or right-censoring in the dependent variable (also known as censoring by setting upper limits or lower limits, respectively). Like Heckman's section model, the Tobit model also considers the sample selection before estimating the relation between cultural distance and the amount of *ICM fund transfer*. Unlike Heckman's section model, the Tobit model censors the values above or below a threshold. Therefore, the relation between cultural distance and the amount of *ICM fund transfer* can be estimated by the Tobit model after censoring the threshold values of *ICM fund transfer*.

To estimate the positive and negative fund transfers, the Tobit model is particularly useful as it can censor all non-positive or non-negative values. For the positive *ICM fund transfer*, we can estimate a model as follows,

$$\begin{aligned}
 & ICM\ fund\ transfer_{j,t} | P(FT_{+j,t} = 1, Dis_{US,j}, x_{i,j}) \\
 & = \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub_Controls_{j,t} + \beta_3 Firm_Controls_{j,t} \\
 & + \beta_4 Country_Controls_{j,t} + Fixed\ effects + \lambda\rho\sigma_\varepsilon
 \end{aligned} \tag{6}$$

where FT_{+} is a dummy variable if *ICM fund transfer* is positive and otherwise zero. Thus, this model censors values by a lower limit that is threshold zero. Therefore, equation (6) estimate the relation between cultural distance and the amount of funds **received** by subsidiary j .

In [Table 6](#), we report the estimated results of Equation (6) in Column (3) with NAICS imputed fund transfers (NACE imputed fund transfers produce similar results). First, the number of uncensored observations is 7,320, suggesting that 21.65% of foreign subsidiaries receive fund transfers from the internal capital market in a given year. The coefficient on cultural distance is negative and statistically significant at the 10% level. This suggests that multinational firms tend to reduce the amount of funds transfers into subsidiaries located in the culturally distant market from the internal capital market. In terms of economic significance, the corresponding marginal effect at mean is -0.171. Given that the mean of the negative *ICM fund transfer* for *FT+* is 8.66, a one-standard-deviation increase in the cultural distance would lead to a decrease in funds of foreign subsidiaries by 3.44%, compared to the sample mean.

For the negative *ICM fund transfer*, we can estimate a model as follows,

$$\begin{aligned}
 & ICM \text{ fund transfer}_{j,t} | P(FT_{-j,t} = 1, Dis_{US,j}, x_{i,j}) \\
 & = \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub_Controls_{j,t} + \beta_3 Firm_Controls_{j,t} \\
 & + \beta_4 Country_Controls_{j,t} + Fixed \text{ effects} + \lambda \rho \sigma_\varepsilon
 \end{aligned} \tag{7}$$

where *FT-* is a dummy variable if *ICM fund transfer* is negative and otherwise zero. Thus, this model censors values by an upper limit that is threshold zero. Therefore, equation (7) estimates the relation between cultural distance and the amount of fund transfers **made** by subsidiary *j*.

In [Table 6](#), we report the estimated results of Equation (7) in Column (4) with NAICS imputed fund transfers (NACE imputed fund transfers produce similar results). First, the number of uncensored observations is 24,180, suggesting that 71.52% of foreign subsidiaries made fund transfers into the internal capital market in a given year. The coefficient on cultural distance is negative and statistically significant at the 1% level, suggesting that the higher the cultural distance, the larger the amount of fund transfers out of the foreign subsidiaries and into the internal capital market. In terms of economic significance, the corresponding marginal effect

at mean is -0.152. Given that the mean of the negative *ICM fund transfer* for *FT-* is -10.996, a one-standard-deviation increase in the cultural distance would lead to a decrease in funds of foreign subsidiaries by 2.41%, compared to the sample mean.

Control variables also show some interesting results. For instance, *Sub. Sales growth*, *Sub. Return on assets*, and *Sub. Operational risk* is positively related to both *ICM fund transfer* for *FT+* and *ICM fund transfer* for *FT-*, indicating that subsidiaries with higher profitability and growth opportunities receive more funds from and make fewer transfers into the internal capital market. *Sub. Size* and *FNTN* are positively related to *ICM fund transfer* for *FT+* and negatively related to *ICM fund transfer* for *FT-*, suggesting that large subsidiaries and multinationals with a greater number of foreign subsidiaries are more active in the internal capital market, as they tend to both receive and make more fund transfers. As for firm- and country-level control variables, firms with a larger size, higher leverage, and operating in countries with higher creditor rights tend to receive more internal funds from foreign subsidiaries. In contrast, firms with higher Tobin's Q, more segments, and operating in countries with greater inflation tend to transfer more internal funds to foreign subsidiaries. In addition, firms operating in countries with greater political risks tend to avoid internal fund transfers. These effects are statistically significant at the 5% level or better.

Overall, these results suggest that within the internal capital market, the larger fund transfers tend to occur in subsidiaries incorporated in culturally distance locations, even after controlling for other factors affecting fund transfers in the internal capital market.

4.4 Transfers associated with subsidiary investment opportunities

Rajan, Servaes, & Zingales (2000) point out that the resource allocation in the internal capital markets depends highly on the investment opportunities of a subsidiary. In the above sections, we have documented that cultural distance is significantly related to negative internal fund

transfers. In other words, cultural distance is associated with internal funds out of foreign subsidiaries. To multinationals, therefore, it is important to understand whether the internal fund transfers are out of subsidiaries with high productivity or those with low productivity. If fund transfers are out of subsidiaries with low productivity, then our results would be in line with the efficient internal market models, where internal funds should be transferred from segments with poor performance to segments with better investment opportunities. On the other hand, if the fund transfers are out of subsidiaries with high productivity, then our results would be consistent with the inefficient internal capital market argument of Scharfstein and Stein (2000), suggesting that those fund transfers associated with the increased cultural distance are not efficient (Scharfstein and Stein 2000).

Different from the above two arguments, Rajan, Servaes, & Zingales (2000) claim that fund transfers in the internal capital market depend on asset-weighted investment opportunities (λq), rather than just investment opportunities (q) of a subsidiary. Rajan, Servaes, & Zingales (2000) argue that asset-weighted investment opportunities are related to the degree of diversification. It is diversification that leads internal capital transfers from high λq to low λq subsidiaries. The efficient internal capital market model and Scharfstein and Stein (2000) both focus on q . The former argues that internal funds transfer from low q to high q subsidiaries, whereas the latter argues that internal funds transfer from high q to low q subsidiaries.

According to this theory, we therefore also need to investigate how fund transfers are affected by investment opportunities of a subsidiary and its asset-weighted investment opportunities, as a result of cultural distance changes. Although we documented a significant effect of cultural distance on internal fund transfers, the results do not tell us whether the fund transfers from high- q to low- q subsidiaries or from high- λq to low- λq subsidiaries. This issue is crucial. Because if our result is related to the fund transfers from high- q to low- q subsidiaries, then

there is “dark side of the internal capital market” (Scharfstein and Stein 2000). If so, multinationals should be better off not establishing subsidiaries in culturally distant countries. However, if our result is related to the fund transfers from high- λq to low- λq subsidiaries, then the fund transfers in the internal capital market are related to diversification. If so, it is OK for a multinational to establish subsidiaries in culturally distant countries given that the multinational does not excessively diversify.

To examine this effect, we follow the approach of Rajan, Servaes, & Zingales (2000) to q and λq of subsidiaries, we then categorize our sample into four categories in terms of whether a subsidiary has q and λq above the sample average. We then estimate OLS regression in each group using Equations (3). To show the robustness of our results, we report results with both NAICS imputed internal market fund transfers and NACE imputed internal market fund transfers. Same with previous tests, our specifications control for all subsidiary-, firm-, and country-level characteristics, including year fixed effect.

[Insert [Table 7](#) Here]

In Panel A of [Table 7](#), we report the result with NAICS imputed internal market fund transfers. We find that the influence of cultural distance on fund transfers is most significant in the middle two columns (the coefficient on cultural distance in both columns (2) and (3) are statistically significant at the 1% level). Specifically, the result shows a positive effect of cultural distance on fund transfers of subsidiaries with below-average λq and a negative effect on fund transfers of subsidiaries with above-average λq . In other words, increased cultural distance leads to the fund transfers from high λq to low λq subsidiaries. This suggests that cultural distance may result in inefficient fund transfers, which is associated with diversification. However, the result also shows that a negative effect of cultural distance on fund transfers of subsidiaries with

below-average q and a positive effect on fund transfers of subsidiaries with above-average q . In other words, a higher cultural distance relates fund transfers from low q to high q subsidiaries. This is in line with efficient internal capital market models. Besides, we find a negative coefficient on the cultural distance at the 10% significance level in columns (4), where both λ and λq below the sample average. This again provides support for efficient market models.

In Panel B of [Table 7](#), we report the result with NACE imputed internal market fund transfers. This result is fairly close to that in Panel A, confirming that our estimation of internal fund transfers is not biased to the specific methodology used. The magnitude of the effect of cultural distance on making fund transfers from low-productivity subsidiaries is also economically significant. In column (2) of [Table 7](#), a one-standard-deviation increase in cultural distance corresponds 0.585 and 0.564 of NAICS and NACE imputed internal market fund transfers of high q and low λq subsidiaries respectively, which are 9.75% and 9.88% increase from their unconditional mean. In column (3) of [Table 7](#), a one-standard-deviation increase in cultural distance corresponds -0.909 and -0.887 of NAICS and NACE imputed internal market fund transfers of low q and high λq subsidiaries respectively, which are 15.16% and 15.53% increase from their unconditional mean. In column (4) of [Table 7](#), a one-standard-deviation increase in cultural distance corresponds -0.290 and -0.256 of NAICS and NACE imputed internal market fund transfers of low q and low λq subsidiaries respectively, which are 4.84% and 4.48% decrease from their unconditional mean. Thus, fund transfers in the internal capital market allow multinationals to control subsidiaries in culturally distant locations.

In summary, our results provide general supports for efficient market models that internal fund transfers from low q subsidiaries to high q subsidiaries. There is also evidence consistent with Scharfstein and Stein (2000) in that subsidiary diversification moderates the effect of cultural distance as results shows that fund transfers from high λq subsidiaries to low λq subsidiaries.

Therefore, provided that there is no excessive diversification, fund transfers in the internal capital market allow multinationals to economize high-investment opportunities and control low investment-opportunity subsidiaries incorporated in culturally distant locations.

5 Conclusion

In this paper, we explore how cultural distances between a foreign subsidiary and its parent firm affect the internal capital markets of U.S. multinationals. Using the model of Rajan, Servaes, and Zingales (2000) as a proxy for funding activities in the internal capital market and the approach of Kogut and Singh's (1988) with Hofstede's cultural dimensions to capture cultural distance, we find a significantly negative relation between cultural distance and the fund transfer associated with the foreign subsidiary.

To correct the selection bias, we employ logistic, Heckman's selection, and Tobit models, in addition to the OLS specification. The results from these models confirm that cultural distance is negatively related to both the likelihood and the amount of fund transfers of culturally distant subsidiaries. To investigate further the feature of fund transfers associated with cultural distance, we then group subsidiaries by investment opportunities (q) and asset-weighted investment opportunities (λq). The results suggest that fund transfers are mainly out of low q and high λq subsidiaries. This provides support for efficient internal capital market models, but also stresses the negative effect of diversification as in Scharfstein and Stein (2000).

Overall, due to the lack of understanding of distant cultures, multinationals may not be willing foreign subsidiaries hold excessive funds. The internal capital market provides a channel for funds generated in these subsidiaries remitted back to the home headquarter. While our results provide evidence that cultural distance affects the internal capital market at the subsidiary-level, the question of how national culture affects financial activities of multinationals at the firm level remains intact. We hope future research will explore this important area.

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Table 1: Raw Sample distribution

The top panel provides the raw sample distribution for the number of subsidiaries and parents of U.S. multinationals by year and for the entire sample. We require the subsidiaries to have non-missing total asset. The second panel report a sample distribution of top ten countries that host the foreign subsidiaries of U.S. multinationals over the period from 2007 to 2011.

	2007	2008	2009	2010	2011	Total
Number of subsidiaries	13,574	18,041	19,708	21,792	21,779	94,894
Foreign subsidiaries	6,163	8,851	9,289	11,869	12,279	48,451
Foreign subsidiaries (%)	45.40%	49.06%	47.13%	54.46%	56.38%	51.06%
Number of parents	992	1,134	1,129	1,084	1,099	1,568
Top ten foreign countries (full sample)						
United Kingdom	1,024	1,749	1,637	1,743	1,332	7,485
Japan	211	544	545	947	855	3,102
Canada	324	455	515	606	636	2,536
Germany	324	399	425	533	494	2,175
Netherlands	270	373	407	436	416	1,902
France	262	342	356	406	362	1,728
Switzerland	110	143	191	261	264	969
Mexico	120	157	172	187	204	840
India	119	196	143	187	176	821
Italy	118	138	135	217	193	801

Table 2: Country-level summary statistics

This table present a country-level summary statistic for fund transfers in the internal capital market of U.S. multinationals. *N* is the number of observations. *Mean* is the mean value. *Stdev* stands for standard deviation. *Q10*, *Q25*, *Q50*, *Q75*, and *Q90* are fund transfers in the 10th, 25th, 50th, 75th, and 90th quartiles, respectively. The sample period is from 2007 to 2011.

Country Name	N	Mean	Stdev	Q10	Q25	Q50	Q75	Q90
United Kingdom	7,485	-6.571	16.172	-17.106	-13.251	-4.395	0.000	1.725
Japan	3,102	-10.696	18.813	-25.611	-14.767	-12.440	-1.791	3.110
Canada	2,536	-6.362	17.170	-18.393	-13.724	-2.155	0.064	3.362
Germany	2,175	-3.476	12.451	-14.143	-6.882	-1.177	0.000	1.097
Netherlands	1,902	-2.727	10.509	-11.520	-5.166	-0.423	0.000	0.952
France	1,728	-3.890	11.958	-14.430	-7.324	-1.055	0.000	1.212
Switzerland	969	-5.706	14.380	-15.749	-12.845	-4.292	0.000	2.803
Mexico	840	-3.159	12.183	-14.118	-6.397	-0.894	0.000	2.485
India	821	-8.088	16.369	-19.482	-14.143	-4.660	-0.309	3.407
Italy	801	-4.978	13.696	-14.671	-8.676	-1.335	0.000	1.727
Brazil	781	-6.512	14.640	-15.418	-13.834	-4.626	0.000	2.582
Ireland	758	-2.782	12.446	-14.143	-5.865	-0.961	0.000	2.210
Spain	727	-3.924	11.872	-14.143	-6.470	-1.130	0.000	0.639
Belgium	627	-3.695	11.787	-14.143	-6.008	-0.817	0.000	0.431
Australia	610	-9.893	16.429	-19.089	-14.671	-13.166	-2.218	1.987
South Korea	580	-8.759	16.409	-24.740	-14.671	-8.921	0.000	3.518
Sweden	533	-4.690	12.179	-14.671	-8.922	-1.687	0.000	1.654
Taiwan, China	524	-11.248	16.386	-25.086	-14.926	-13.835	-3.973	3.421
Poland	488	-6.421	13.446	-14.753	-12.022	-5.553	-0.008	1.814
China	429	-6.923	13.726	-16.565	-14.143	-5.499	-0.102	1.184
Denmark	381	-3.776	11.324	-14.143	-6.381	-0.848	0.000	0.382
South Africa	347	-6.671	16.190	-18.142	-14.143	-3.967	0.003	3.303
Norway	338	-3.948	12.200	-14.143	-8.038	-2.167	0.000	2.803
Austria	330	-4.743	11.124	-14.671	-8.070	-3.271	0.000	0.546
Thailand	304	-7.712	15.710	-16.651	-14.501	-6.668	0.016	4.124
Finland	294	-5.642	9.925	-14.671	-13.251	-3.649	-0.011	1.036
Hong Kong	288	-9.141	15.437	-18.403	-14.671	-12.054	-0.211	2.213
Singapore	281	-8.203	14.899	-15.569	-14.143	-6.948	-0.042	3.117
Turkey	279	-8.571	15.658	-18.645	-14.671	-13.351	1.318	4.049
Malaysia	272	-6.259	13.000	-15.658	-14.143	-2.916	1.101	3.393
Chile	213	-6.540	12.946	-15.286	-14.143	-4.358	0.788	3.515
Czech	188	-2.002	9.371	-11.778	-5.178	-0.391	0.000	3.233
Argentina	160	-3.694	12.542	-13.969	-5.665	-1.044	0.000	2.444
Portugal	160	-4.515	10.380	-14.355	-8.204	-3.206	-0.052	0.092
Luxembourg	157	-7.283	13.471	-15.298	-13.043	-5.097	-0.024	1.618
Russia	155	-6.513	14.934	-17.226	-14.143	-6.648	0.000	3.233
Indonesia	148	-9.409	15.896	-26.682	-14.671	-13.437	0.686	4.133
Hungary	128	-3.666	9.915	-13.795	-6.445	-0.998	0.000	1.814
Greece	121	-7.925	11.356	-19.556	-14.143	-6.947	-0.096	0.031
Peru	114	-7.591	15.941	-30.374	-14.143	-5.109	0.006	3.374
Philippines	112	-6.876	16.760	-24.662	-14.143	-2.614	2.554	3.655
Egypt	81	-4.985	12.197	-17.241	-13.619	-0.841	2.692	4.506
New Zealand	77	-9.386	10.795	-15.055	-14.671	-14.143	-0.756	2.666
Romania	59	-0.553	12.836	-9.652	-5.241	-0.099	1.814	15.886
Colombia	57	-0.857	10.492	-13.694	-5.169	0.000	2.692	3.591
Venezuela	55	-4.006	3.961	-9.016	-6.475	-4.214	-0.033	0.003
Slovakia	40	-3.802	7.129	-8.480	-5.149	-0.735	0.000	0.005
Estonia	36	0.056	3.328	-5.292	-0.812	0.208	2.740	3.591
Pakistan	35	-2.665	11.468	-15.226	-9.016	1.685	3.591	3.591
Bulgaria	34	-0.045	4.647	-4.879	-3.612	0.191	2.692	3.591
Lithuania	34	0.262	9.703	-6.814	-1.059	1.750	3.081	3.645
Croatia	31	-0.924	3.411	-5.166	-4.678	-0.011	1.685	2.789
Morocco	31	0.197	4.183	-6.399	-2.301	1.685	3.591	3.591
Slovenia	23	-0.808	9.074	-9.389	-1.335	1.685	2.692	3.591
Latvia	17	-5.232	4.804	-12.431	-8.562	-6.127	-1.008	1.617
Jordan	16	3.018	1.942	0.176	2.189	3.066	3.715	6.282
Serbia	12	-0.080	7.258	-5.707	-1.492	-0.115	0.004	0.085
Uruguay	12	-3.242	3.256	-7.730	-5.789	-2.466	-0.011	0.000
El Salvador	7	-2.103	2.756	-6.372	-5.499	-0.616	0.010	0.056
Ghana	7	2.690	0.686	1.685	1.988	2.692	3.396	3.591
Trinidad and Tobago	7	-1.171	2.481	-6.743	-0.979	-0.102	0.000	0.000
Vietnam	6	3.562	6.955	-7.021	2.692	3.591	3.591	14.925
Dominican	3	-0.014	0.024	-0.042	-0.042	0.000	0.000	0.000
Iceland	3	-6.083	5.508	-11.189	-11.189	-6.814	-0.245	-0.245
Lebanon	2	2.638	1.348	1.685	1.685	2.638	3.591	3.591
Saudi Arabia	2	-0.528	3.035	-2.673	-2.673	-0.528	1.618	1.618
Zambia	2	-0.561	0.671	-1.036	-1.036	-0.561	-0.086	-0.086

Table 3: Descriptive statistics

The table provides a summary statistic for subsidiary-level variables, cultural distance measures and firm-level variables. *ICM fund transfer* is internal capital market fund transfer and calculated as industry adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j (\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets. *CDis* is Cultural distance measured by Kogut and Singh's (1988) approach: $CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) (hereinafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND). *Sub. Sales growth* is the change in sales revenue of subsidiaries and calculated as dollar amount (\$million) change in subsidiary sales relative to the previous period, scaled by the firm sales. *Sub. Return on assets* is subsidiary operating income dividend by book value of assets. *Sub. Operational risk* is the standard deviation of Sub. Return on assets. *Sub. Size* is subsidiary size and measured by the natural log of total assets. *Sub. Utility* is dummy indicating that a segment's primary three-digit NAICS code is 221. *FNTN* is the number of foreign subsidiaries to the number of total subsidiaries. *Firm size* is the natural logarithm of firm's sales revenue. *Tobin's Q* is the firm's market value of total assets to the replacement value of total assets. The market value of total assets is calculated as the market value of equity plus the book value of assets minus the book value of equity. The replacement value of total assets is proxied by the book value of total assets. *Leverage* is the firm's equity multiplier, computed as the book value of total assets divided by common shareholders' equity. *Number of segments* is the number of firm's business and operating segment in the different industries. *Inflation* is the inflation rate of host country where subsidiary j is incorporated. *Creditor rights* is an index of creditor rights developed in Djankov et al. (2007), which is range from zero to four with higher levels of the measure indicating stronger legal protection. *Political risk* is the annual average of the index of political risk presented in the International Country Risk Guide. N is the number of observations. *Mean* is the mean value. *Stdev* stands for standard deviation. *Q10*, *Q25*, *Q50*, *Q75*, and *Q90* are fund transfers in the 10th, 25th, 50th, 75th, and 90th quartiles, respectively. The sample period covers between 2007 and 2011.

Variables	N	Mean	Stdev	Q10	Q25	Q50	Q75	Q90
Cultural Distance	34,585	3.532	1.743	1.440	1.535	3.930	4.715	5.760
Fund transfer (NAICS imputed)	34,585	-5.997	14.884	-15.688	-13.203	-4.061	0.000	2.623
Fund transfer (NACE imputed)	34,585	-5.711	14.454	-15.039	-12.884	-3.759	0.000	2.594
Sub. Sales growth	34,413	-0.114	0.782	-0.557	-0.029	0.001	0.045	0.358
Sub. Return on assets	34,585	0.047	0.105	0.000	0.001	0.005	0.031	0.139
Sub. Operational risk	34,556	0.871	0.280	0.684	0.715	0.740	1.003	1.241
Sub. Size	34,585	5.500	2.498	1.946	3.555	5.704	7.302	8.699
Sub. Utility	34,585	0.016	0.126	0.000	0.000	0.000	0.000	0.000
FNTN.	34,585	0.576	0.194	0.282	0.451	0.570	0.729	0.827
Firm size	34,489	22.419	1.451	20.569	21.668	22.700	22.929	24.160
Tobin's Q	34,462	1.592	0.835	1.006	1.050	1.287	1.808	2.604
Leverage	34,571	4.717	3.884	1.615	1.978	3.251	7.182	7.316
Number of segments	34,567	2.645	2.481	1.000	1.000	2.000	3.000	6.000
Inflation	34,374	2.964	5.397	-1.112	1.412	2.477	3.419	4.861
Creditor rights	34,374	2.417	1.127	1.000	1.560	2.880	3.000	3.720
Political risk	34,244	0.267	0.138	0.110	0.168	0.267	0.373	0.449

Table 4: The OLS regressions of internal capital market fund transfer within multinationals

Parameter estimates of OLS regression analyses of how cultural distance affects internal fund transfer of a subsidiary after controlling for the determinants of subsidiary-, firm- and country-level factors. The dependent variable is internal capital market fund transfer, calculated as industry adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j (\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets. The key variable of interest is Cultural distance measured by Kogut and Singh's (1988) approach: $CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) (hereinafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND). See Appendix for the construction of control variables. Standard errors are clustered by firm. P-value and t-statistic are reported in bracket and parenthesis, respectively. All regressions include year fixed effects. The sample period covers between 2007 and 2011.

Dependent variable	ICM Fund transfer			
	Panel A: NAICS imputed		Panel B: NACE imputed	
Regression	(1)	(2)	(1)	(2)
Cultural distance	-0.189 [-0.001] (-3.457)	-0.150 [-0.004] (-2.916)	-0.183 [-0.001] (-3.188)	-0.146 [-0.007] (-2.684)
Sub. Sales growth	6.500 [0.000] (4.958)	6.472 [0.000] (4.967)	6.234 [0.000] (4.895)	6.208 [0.000] (4.905)
Sub. Return on assets	10.176 [0.000] (6.149)	10.105 [0.000] (5.743)	9.445 [0.000] (5.970)	9.360 [0.000] (5.518)
Sub. Operational risk	7.522 [0.001] (3.243)	7.240 [0.001] (3.446)	7.207 [0.001] (3.186)	6.939 [0.001] (3.374)
Sub. Size	0.645 [0.074] (1.789)	0.676 [0.070] (1.815)	0.606 [0.084] (1.730)	0.635 [0.079] (1.758)
Sub. Utility	0.184 [0.842] (0.199)	0.279 [0.761] (0.304)	-0.204 [0.820] (-0.228)	-0.116 [0.897] (-0.130)
FNTN	0.943 [0.602] (0.522)	1.855 [0.319] (0.996)	0.819 [0.644] (0.462)	1.707 [0.351] (0.934)
Firm Size	-2.056 [0.002] (-3.126)	-1.992 [0.001] (-3.235)	-1.958 [0.002] (-3.070)	-1.897 [0.002] (-3.165)
Tobin's Q	1.876 [0.001] (3.297)	1.641 [0.001] (3.419)	1.836 [0.001] (3.291)	1.606 [0.001] (3.439)
Leverage	-0.459 [0.000] (-4.512)	-0.488 [0.000] (-4.957)	-0.437 [0.000] (-4.445)	-0.464 [0.000] (-5.025)
Number of segments	0.879 [0.019] (2.343)	0.835 [0.015] (2.432)	0.852 [0.020] (2.324)	0.812 [0.016] (2.408)
Inflation	0.035 [0.013] (2.477)	0.040 [0.002] (3.150)	0.034 [0.004] (2.877)	0.039 [0.000] (3.615)
Creditor rights	-0.306 [0.000] (-4.301)	-0.310 [0.000] (-3.784)	-0.285 [0.000] (-3.760)	-0.289 [0.000] (-3.321)
Political risk	1.648 [0.090] (1.699)	1.479 [0.119] (1.560)	1.694 [0.054] (1.929)	1.529 [0.086] (1.718)
Constant	27.410 [0.004] (2.872)	28.282 [0.003] (2.996)	26.000 [0.005] (2.814)	26.920 [0.004] (2.924)
Year fixed effect	No	Yes	No	Yes
Adjusted R^2	0.237	0.241	0.231	0.235
Observations	33,809	33,809	33,809	33,809

Table 5: Cultural distance and the likelihood of the internal capital market fund transfer

Parameter estimates of Logistic regression analyses of how cultural distance affects the likelihood of internal fund transfer of a subsidiary after controlling for the determinants of subsidiary-, firm- and country-level factors. In general, the model is written as $P(FT = 1|Dis, x_i) = F(Dis, x_i, \beta)$, where FT denotes a dummy variable on whether there are fund transfers associated with a subsidiary in the internal capital market ($FT = 1$ if the subsidiary receives or makes fund transfers in the internal capital market and $FT = 0$ otherwise), Dis is the cultural distance, and x_i is a vector of explanatory variables. The internal capital market fund transfer, calculated as industry adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j(\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets. $FT+$ denotes positive transfers and $FT-$ denotes negative transfers. The key variable of interest is Cultural distance measured by Kogut and Singh's (1988) approach: $CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) (hereinafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND). See Appendix for the construction of control variables. Standard errors are clustered by firm. P-value and t-statistic are reported in bracket and parenthesis, respectively. All regressions include year fixed effects. The sample period covers between 2007 and 2011.

Dependent variable	FT	FT+	FT-
Regression	(1)	(2)	(3)
Cultural distance	0.074 [0.008] (2.655)	-0.002 [0.899] (-0.127)	0.029 [0.009] (2.602)
Sub. Sales growth	-1.000 [0.000] (-10.387)	0.252 [0.004] (2.863)	-0.518 [0.000] (-8.123)
Sub. Return on assets	2.801 [0.006] (2.761)	3.014 [0.000] (13.682)	-2.342 [0.000] (-8.782)
Sub. Operational risk	-0.463 [0.107] (-1.610)	0.602 [0.097] (-1.661)	-0.733 [0.077] (-1.769)
Sub. Size	0.237 [0.000] (5.025)	0.156 [0.018] (2.373)	-0.065 [0.311] (-1.013)
Sub. Utility	0.674 [0.312] (1.011)	0.345 [0.103] (1.632)	-0.257 [0.325] (-0.984)
FNTN	3.587 [0.000] (7.475)	-0.492 [0.477] (-0.711)	1.845 [0.000] (3.622)
Firm Size	0.697 [0.000] (6.962)	-0.353 [0.004] (-2.910)	0.614 [0.000] (4.628)
Tobin's Q	0.014 [0.908] (0.115)	0.340 [0.001] (3.391)	-0.318 [0.000] (-3.821)
Leverage	0.127 [0.000] (3.810)	-0.046 [0.026] (-2.223)	0.076 [0.002] (3.137)
Number of segments	-0.116 [0.113] (-1.583)	0.050 [0.451] (-0.754)	-0.096 [0.209] (-1.256)
Inflation	-0.007 [0.386] (-0.867)	0.006 [0.121] (-1.549)	-0.008 [0.081] (-1.745)
Creditor rights	0.116 [0.004] (2.844)	-0.056 [0.010] (-2.576)	0.092 [0.000] (4.571)
Political risk	0.107 [0.814] (0.236)	-0.010 [0.963] (-0.047)	0.156 [0.337] (0.960)
Constant	-16.537 [0.000] (-8.031)	5.140 [0.024] (2.257)	2.931 [0.000] (-6.278)
Year fixed effect	Yes	Yes	Yes
Pseudo R^2	0.270	0.122	0.189
Observations	33,809	33,809	33,809

Table 6: Cultural distance and internal fund transfer: Heckman selection and Tobit regression

Parameter estimates of how cultural distance affects the amount of internal fund transfer of a subsidiary after controlling for the determinants of subsidiary-, firm- and country-level factors. Panel A uses Heckman's two-stage selection approach and Panel B uses the Tobit model. The dependent variable in Regression (1) is the dummy variable that equals one if there are internal capital market fund transfers and otherwise zero. The dependent variable in Regression (2) is the amount of internal capital market fund transfers. The dependent variable in Regression (3) is the positive amount of internal capital market fund transfer. The dependent variable in Regression (4) is the negative amount of internal capital market fund transfer. The internal capital market fund transfer is calculated as industry adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j (\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets. $FT+$ denotes positive transfers and $FT-$ denotes negative transfers. The key variable of interest is Cultural distance measured by Kogut and Singh's (1988) approach: $CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) (hereinafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND). See Appendix for the construction of control variables. Standard errors are clustered by firm. P-value and t-statistic are reported in bracket and parenthesis, respectively. All regressions include year fixed effects. The sample period covers between 2007 and 2011.

Regression	Panel A: Heckman Selection		Panel B: Tobit	
	1 st stage	2 nd stage	Positive transfers	Negative transfers
Cultural Distance	0.040 [0.000] (4.720)	-0.197 [0.000] (-4.010)	-0.171 [-0.063] (-1.859)	-0.152 [-0.001] (-3.372)
Sub. Sales growth	-0.513 [0.000] (-15.736)	6.884 [0.000] (57.563)	3.178 [0.000] (16.115)	6.914 [0.000] (72.362)
Sub. Return on assets	1.366 [0.000] (9.743)	8.980 [0.000] (9.404)	22.462 [0.000] (15.903)	14.315 [0.000] (15.040)
Sub. Operational risk	-0.253 [0.000] (-6.271)	9.015 [0.000] (25.745)	6.340 [0.000] (10.866)	8.880 [0.000] (28.385)
Sub. Size	0.120 [0.000] (17.364)	0.690 [0.000] (15.079)	2.750 [0.000] (33.784)	-0.103 [0.008] (-2.636)
Sub. Utility	0.237 [0.096] (1.667)	0.058 [0.924] (0.096)	2.613 [0.016] (2.415)	0.336 [0.551] (0.596)
FNTN	1.815 [0.000] (26.562)	0.338 [0.590] (0.539)	3.137 [0.001] (3.472)	-5.382 [0.000] (-10.957)
Firm Size	0.361 [0.000] (35.495)	-2.808 [0.000] (-24.138)	-3.077 [0.000] (-22.109)	-3.443 [0.000] (-47.370)
Tobin's Q	-0.017 [0.222] (-1.221)	1.738 [0.000] (15.244)	2.424 [0.000] (13.249)	2.755 [0.000] (24.051)
Leverage	0.058 [0.000] (-14.774)	-0.556 [0.000] (-21.415)	-0.392 [0.000] (-8.315)	-0.581 [0.000] (-26.301)
Number of segments	-0.059 [0.000] (-9.344)	0.980 [0.000] (24.081)	0.595 [0.000] (8.201)	1.034 [0.000] (29.990)
Inflation	-0.004 [0.167] (-1.383)	0.040 [0.013] (2.472)	0.039 [0.182] (1.336)	0.053 [0.001] (3.441)
Creditor rights	0.068 [0.000] (-6.031)	-0.385 [0.000] (-5.118)	-0.405 [0.003] (-2.981)	-0.486 [0.000] (-7.093)
Political risk	0.127 [0.230] (1.200)	1.330 [0.045] (2.005)	-0.062 [0.959] (-0.051)	1.308 [0.034] (2.118)
Constant	-8.405 [0.000] (-38.131)	47.373 [0.000] (16.094)	18.825 [0.000] (108.107)	12.332 [0.000] (213.240)
Year fixed effect	Yes	Yes	Yes	Yes
Inverse Mills ratio (λ)		-7.988 [0.000]		
[P-value]				
Pseudo R^2	0.270		0.043	0.064
Uncensored observations		31,500	7,320	24,180
Total observations	33,809	33,809	33,809	33,809

Table 7: The impact of investment opportunity

This table presents evidence from parameter estimates of OLS regression analyses on the effect of cultural distance on internal capital market fund transfer for subsidiaries with high and low investment opportunities. Subsidiaries are divided according to whether they have better opportunities than the firm's average ($q > \bar{q}$) and more resources-weighted opportunities than the firm's average ($\lambda q > \bar{\lambda q}$). Subsidiary q is defined as the asset-weighted average q of standalone domestic firms that operate in the same industry as the subsidiary. The industry is defined by the narrowest NAICS code in Panel A and NACE code in Panel B. To be consistent with Rajan et al. (2000), we divide a subsidiary's assets by the firm's assets, and use the subsidiary's share of total assets as a measure of its resources. The internal capital market fund transfer is calculated as the industry- and firm-adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j (\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets. Using the approach of Denis et al. (2002), The investment ratio for a standalone domestic firm is imputed by the median of investment ratios of sample subsidiaries with the same industry and the same year. In panel A, industries are classified based on the narrowest NAICS grouping. In panel B, industries are classified based on the narrowest NACE grouping. Cultural distance is measured by Kogut and Singh's (1988) approach: $CD_{iUS,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CD_{iUS,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) that consists of six dimensions: Power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence. See Appendix for the construction of control variables. Standard errors are clustered by firm. P-value and t-statistic are reported in bracket and parenthesis, respectively. All regressions include year fixed effects. The sample period covers between 2007 and 2011.

	$q > \bar{q} \ \& \ \lambda q > \bar{\lambda q}$	$q > \bar{q} \ \& \ \lambda q < \bar{\lambda q}$	$q < \bar{q} \ \& \ \lambda q > \bar{\lambda q}$	$q < \bar{q} \ \& \ \lambda q < \bar{\lambda q}$
	(1)	(2)	(3)	(4)
Panel A: NAICS Imputed				
Cultural distance	-0.169 [0.137] (-1.491)	0.337 [0.002] (3.138)	-0.494 [0.002] (-3.057)	-0.162 [0.077] (-1.769)
Constant	21.415 [0.050] (1.960)	24.225 [0.037] (2.085)	25.349 [0.086] (1.719)	30.151 [0.003] (2.940)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.100	0.257	0.084	0.304
Observations	4,138	8,968	4,662	14,645
Panel B: NACE Imputed				
Cultural distance	-0.102 [-0.327] (-0.981)	0.349 [0.018] (2.364)	-0.507 [-0.001] (-3.237)	-0.143 [-0.098] (-1.658)
Constant	17.72 [0.035] (2.110)	22.985 [0.033] (2.135)	25.066 [0.114] (1.584)	28.547 [0.006] (2.772)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.092	0.254	0.085	0.296
Observations	4,078	8,837	4,707	14,765

Appendix: Variable Description

Variables	Definition
ICM fund transfer	The internal capital market fund transfer calculated as Industry adjusted investment ratio as defined in Rajan et al. (2000): $ICM\ fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j \left(\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} \right)$, where j denotes subsidiary j , sd refer to standalone domestic firms, and W_j is segment j 's share of the total firm's assets.
$CDis$	Cultural distance measured by Kogut and Singh's (1988) approach: $CDis_{US,j} = \sqrt{\sum_{i=1}^6 (I_{i,US} - I_{i,j})^2 / V_i}$, where $CDis_{US,j}$ is the score of cultural measure of the United States, $I_{i,US}$ is the score of cultural dimension i of the United States, and $I_{i,j}$ is the score of cultural dimension i of the country where subsidiary j is incorporated. To capture national culture, we use the cultural framework developed by Hofstede, Hofstede, and Minkov (2010) (hereinafter referred to as Hofstede's cultural framework). Hofstede's cultural framework consists of six dimensions: Power distance index (PDI), individualism index (IDV), masculinity index (MAI), uncertainty avoidance index (UAI), long-term orientation index (LTO), and indulgence index (IND).
Sub. Sales growth	Dollar amount change in subsidiary sales relative to the previous period, scaled by the firm's sales revenue.
Sub. Return on assets	Subsidiary operating income dividend by book value of assets.
Sub. Operational risk	The standard deviation of Sub. Return on assets.
Sub. Size	The natural logarithm of a subsidiary's total assets.
Sub. Utility	Dummy indicating that a subsidiary's primary three-digit NAICS code is 221.
FNTN	The number of foreign subsidiaries to the number of total subsidiaries.
Firm size	The natural logarithm of firm's sales revenue.
Tobin's Q	The firm's market value of total assets to the replacement value of total assets. The market value of total assets is calculated as the market value of equity plus the book value of assets minus the book value of equity. The replacement value of total assets is proxied by the book value of total assets.
Leverage	The firm's equity multiplier computed as the book value of total assets divided by common shareholders' equity.
Number of segments	The number of firm's business and operating segments in the different industries.
Inflation	The inflation rate of host country where subsidiary j is incorporated.
Creditor rights	An index of creditor rights developed in Djankov et al. (2007), which is range from zero to four with higher levels of the measure indicating stronger legal protection.
Political risk	The annual average of the index of political risk presented in the International Country Risk Guide.