The impact of cultural distance on fund transfers in the internal capital market[†]

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This version: September, 2021

Abstract
This paper studies how cultural distance affects the fund transfers in the multinational's internal capital market. We find that a larger cultural distance significantly reduces the internal fund transferred to foreign subsidiaries. Our results are robust when using different regression specifications and alternative measures for cultural distance. Further analysis shows that the negative impact becomes weaker when the subsidiary operates in a country with a better institutional environment, a closer linguistic distance, and a shorter geographical distance. The impact is also moderated by the subsidiary's investment opportunity. Overall, our results highlight the important role of culture in a firm's global operations.

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

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Abstract

This paper studies how cultural distance affects the fund transfers in the multinational's internal capital market. We find that a larger cultural distance significantly reduces the internal fund transferred to foreign subsidiaries. Our results are robust when using different regression specifications and alternative measures for cultural distance. Further analysis shows that the negative impact becomes weaker when the subsidiary operates in a country with a better institutional environment, a closer linguistic distance, and a shorter geographical distance. The impact is also moderated by the subsidiary's investment opportunity. Overall, our results highlight the important role of culture in a firm's global operations.

1. Introduction

As the trend of globalization becomes irreversible, more and more firms establish foreign subsidiaries to take advantage of global diversification. Different from single domestic firms, the foreign subsidiaries in multinational firms are able to source their financial needs from both the external capital market (such as the loan, stock and bond) and the internal capital market, where fund transfers take place between the parent and its subsidiaries within the multinational group. Given the importance and prevalence of international operations, it is important to understand how the funds are sourced in a multinational's internal capital market. Previous literature has documented that the formal institutional characteristics, such as the legal environment, can affect a firm's internal capital market (Goetz, Laeven, and Levine, 2013; Harford, Wang, and Zhang, 2017; Kolasinski, 2009). However, less is known about how informal institutional exposure affects fund transfers in the internal capital market.

In this paper, we focus on the effect of cultural distance. As a crucial informal institutional environment, cultural distance closely relates to decision-making regarding financial activities (Grinblatt and Keloharju, 2001; Mian, 2006). To explore whether and how cultural distance affects fund transfers in the internal capital market of multinationals, we propose and test three hypotheses: The agency hypothesis, the attraction hypothesis, and the efficient-market hypothesis. The agency hypothesis is built on the agency cost theory that argues that monitoring difficulties increase agency costs (Ozbas and Scharfstein, 2010; Scharfstein and Stein, 2000). A foreign subsidiary's complicated external environment makes its parent's monitoring more difficult and costly, and therefore increases the agency problem between the two parties (Roth and O'Donnell 1996). A greater cultural distance between a foreign subsidiary and its parent also decreases mutual trust and the effectiveness of information transfer, while a similar cultural environment facilitates internal fund transfers to foreign subsidiaries. Thus, the agency hypothesis predicts that a larger cultural distance impedes internal fund transfers to foreign

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subsidiaries. Second, the attraction hypothesis argues that the internal fund should be allocated to subsidiaries with a larger cultural distance. The psychology literature suggests that managers' decisions are more likely to be biased towards subsidiaries with different cultural environments as human beings could be attracted by unfamiliarity and infinite potential (Gaur, Pattnaik, Singh, and Lee, 2019; Newburry, Gardberg, and Belkin, 2006). Therefore, the attraction hypothesis implies that cultural distance between the parent firm and its foreign subsidiaries drives the internal fund transfers towards the foreign subsidiaries. Finally, the efficient-market hypothesis is developed according to the argument of the "bright side of the internal capital market". According to this literature, internal funds should be allocated to firms' best use to support available investment opportunities (Khanna and Tice, 2001; Stein, 1997). The internal fund transfers therefore should be based on the productivity of subsidiaries and not influenced by such frictions as cultural distance. In other words, the parent firms should see through the real situations in different subsidiaries and allocate the internal fund to the subsidiaries with the highest investment opportunities. Thus, the efficient-market hypothesis predicts that cultural distance has an insignificant effect on internal fund transfers.

To conduct the empirical analysis of the relation between cultural distance and internal fund transfers within multinationals, we follow the guideline of Beugelsdijk et al. (2018) and employ a Euclidian version of Kogut and Singh's (1988) formula with Hofstede's (2010) six cultural dimensions to calculate the cultural distance between a foreign subsidiary and its parent. Further, we use the approach of Rajan et al. (2000) to construct the measurement of the internal fund transfers. This approach allows us to evaluate fund transfers in two directions: (1) from the internal capital market to foreign subsidiaries (positive values of the measure) and (2) from foreign subsidiaries to the internal capital market (negative values of the measure). To feasibly carry out the analyses, we require the sample to have sufficient subsidiary-level financial and country information. Our final sample covers 1,568 U.S. listed multinationals with 48,451

foreign subsidiaries over the 2007 - 2011 period, providing us with 22,562 reliable observations.

Table 1 presents the country-year sample distribution. It shows that the top three countries hosting the most subsidiaries are the United Kingdom, Japan, and Canada. Intuitively, the United Kingdom and Canada have a very similar cultural background to the United States. This gives us some initial evidence that the parent firms are more likely to operate in countries with a similar cultural background to the home country. However, the large number associated with Japan suggests that further formal analyses are needed to investigate whether and how national culture could affect the multinational's policy on their foreign subsidiaries. Furthermore, the mean and median of fund transfers are negative in almost all countries, indicating that the foreign subsidiaries cannot obtain enough fund support from the parent firm and thus 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 argument that larger cultural distance impedes internal fund transfers and decreases investment in foreign subsidiaries.

We then conduct formal regression analyses. The findings support the initial evidence and the intuitive results stated above. In detail, we find that the internal fund transferred to the subsidiaries decreases significantly as the cultural distance increases, after controlling for other subsidiary-, firm-, and country-level factors. Our results are robust using the single Hofstede's cultural dimension. Among the different Hofstede's cultural dimensions, the uncertainty avoidance index demonstrates the strongest effect. The result of significantly negative relation holds consistently for other cultural dimensions as well, suggesting that our findings are not driven by a particular dimension. The result also holds with alternative cultural frameworks: The value and practice scores of GLOBE's (House et al., 2004) project, the cultural orientations of Schwartz (2009; 2014), the tightness measures of Gelfand et al. (2011), and an updated Hofstede scores by Tang and Koveos (2008). To provide further robustness, we estimate the

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cosine similarity as alterative measure of cultural distance. The cosine similarity is also commonly used in the literature (for instance, Hoberg et al., 2018; Li et al., 2021). The result using cosine similarity is consistent with our baseline result as well. Taken together, our findings are not biased due to any specific measurement selection.

To establish a causal interpretation, we conduct additional tests using different fixed-effects models, Heckman's selection model, and Tobit regression model. Since cultural distance is deeply rooted and time-invariant in a short time, there may be some omitted variables that drive our baseline result.[1] To address this concern, we use the region-fixed effect to control for macro-level time-invariant factors. The main result does not change in this test. Since our regressions use subsidiary-level observations, we apply parent-firm-fixed effects to capture all the firm-level time-invariant characteristics as a robustness check. The main result again consistently holds. Further, not all subsidiaries have fund transfers, which may introduce a sample selection bias to our findings. We use Heckman's two-stage selection model to mitigate the selection bias, and our results still hold and even become stronger. Further, the probit regression results reveal that a one-standard-deviation increase in the cultural distance decreases the likelihood of the fund being transferred to subsidiaries by about 5%. The negative effect of cultural distance on the internal fund transfers is also confirmed by the Tobit model. We also implement an exogenous shock on the relation between cultural distance and internal fund transfer. Specifically, we take advantage of the time-series heterogeneity and explore the impact of the 2007-2008 global financial crisis. The results show that the negative impact of cultural distance on internal fund transfers becomes more significant after the financial crisis, suggesting that parent firm's managers become more cautious and more sensitive to investments in unfamiliar environments after the financial crisis.

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[1] Our results are not likely to suffer the reverse causality concern as the culture formation needs a long time, and is out of firm's control. Thus, we mainly address the omitted variable concerns.

Considering the country level heterogeneity, we test whether cross-country differences in a range of well-documented formal and informal institutional factors affect the cultural distance and internal fund transfer relation. Our results show that larger linguistic distance and longer geographic distance intensify the negative effect of cultural distance. The prior studies have documented that linguistic and geographic distances increase agency problems (Doukas and Pantzalis, 2003; Luo and Shenkar, 2006). Our results provide further evidence supporting this claim. Djankov et al. (2007) and Kelley and Woidtke (2006) document that better investor protection would facilitate attracting foreign capital. Our findings are consistent with this argument, showing that operating in countries with better protections for stockholders and creditors attenuate the negative effect of cultural distance.

Lastly, we explore whether the subsidiary's investment opportunity could affect the relation between cultural distance and internal fund transfer. In the seminal paper by Rajan, Servaes, and Zingales (2000), they find that the asset-weighted investment opportunities, which captures the corporate diversification effect, will influence the resource allocation between different segments. Following Rajan, Servaes, and Zingales (2000), we construct investment opportunities (q) and asset-weighted investment opportunities (λq) at the subsidiary level. While q captures subsidiary investment opportunities, λq further takes the diversification effect into account. On average, we find a positive relation between cultural distance and the internal fund transfers to the subsidiaries that have high investment opportunities ($q > \bar{q}$) without considering the effect of diversification, suggesting that the subsidiaries' investment opportunities (q) could moderate the negative impact of the cultural distance on the internal fund transfer. What is more interesting, when diversification is taken into account, we find that the coefficient on cultural distance is negative for subsidiaries where $\lambda q > \overline{\lambda q}$, suggesting that capital flows from high λq to low λq subsidiaries, indicating that diversification negatively influences the moderation effect of subsidiary productivity. Overall, the results provide

evidence that while investment opportunities moderate the negative effect of cultural distance, diversification serves as a disruptive function for multinationals and prevents fund transfers into high investment-opportunity but culturally distant subsidiaries.

To summarize, our results are consistent with the prior research that cultural distance will negatively affect cross-border financing activities (Ahern et al., 2015; Siegel et al., 2013, 2011). We show that this is also true even within an organization. Yet under some conditions, the effect of cultural distance could be mitigated, thus increasing the subsidiaries' ability to obtain funds from the parent firm and to invest more compared with stand-alone domestic peers. Both the culture effect and other country-level institutional effects could coexist in the multinationals' internal capital market.

Our 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 et al., 2004; Harford et al., 2017; Kolasinski, 2009). Similar to Harford et al. (2017) and Kolasinski (2009), we argue that cultural distance is closely related to such frictions as information asymmetry and agency problems in the internal capital market of multinational. Unlike Desai et al. (2004) and Kolasinski (2009) who look at the financial position or capital structure of subsidiaries, our research studies capital activities by focusing on the internal capital transfers and subsidiary's investments. In particular, by employing cultural distance, we link the above studies and explore factors that can affect internal fund transfers and their efficiency. In doing so, we shed light on this literature from a novel angle and indicate that there are some new aspects to examine the internal fund transfers of multinationals.

Second, our paper contributes to the research of the internal capital market in general. Prior literature argues that diversification either leads to a higher level of financial flexibility, so-called the "bright" side of the internal capital market (Khanna and Tice, 2001; Stein, 1997), or causes a reduction in firm value due to the inefficiency across subsidiaries, so-called the

"dark" side of the internal capital market (Rajan et al., 2000; Scharfstein and Stein, 2000). Examining the underlying factors help understand each side of the entire internal capital market. Multinationals diversify operations in foreign markets and hence enlarge both effects. By providing evidence from multinationals, our results suggest that cultural distance is a strong determinant of financial activities in the internal capital market. We document that cultural distance is associated with international operations, influencing both the likelihood and the amount of cross-border financial activities. This provides an important view of understanding how the country-level factors affect the efficiency of the internal capital market.

Finally, our paper contributes to the literature on how culture affects financial activities. Earlier research on the effect of country factors on financial activities mainly focuses on formal institutions such as legal regimes (La Porta et al., 1998) and creditor rights (Nini et al., 2009; Stulz and Williamson, 2003). Recent scholars have increasingly shown the important role of culture in financial outcomes (Guiso et al., 2006), cross-border activities (Ahern et al., 2015), and foreign investments (Siegel et al., 2013). Specifically, culture influences the preferences and beliefs that contribute to different behaviors in financial activities (Guiso et al., 2006). To date, little research has explored whether culture influences decision-making in internal capital markets. Multinationals provide an excellent platform to study this issue. An advantage of studying this issue through multinationals is that they are subject to lower influences of cross-country differences in accounting rules since transactions in the multinationals are recorded by the accounting principle of the home country. With this, investigating capital transfers in the internal capital market of multinationals provides important insights into cultural studies.

The rest of the paper is organized as follows. Section 2 reviews prior literature and develops our hypotheses. Section 3 discusses the data and methodology. Section 4 presents our baseline results. Section 5 explore the cross-sectional heterogeneity and Section 6 concludes.

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 exists. As a firm grows larger, its internal structure becomes more and more complex. The firm begins to operate in different segments and even in different countries, leading to the establishment of the internal capital market. The internal capital market allows the parent company to transfer funds to promising projects and take funds away from the worsening segments or subsidiaries (Khanna and Tice, 2001; Stein, 1997). Through the internal capital markets, a diversified firm could control and allocate resources to different segments or subsidiaries at lower costs, and avoid the high transaction and financing costs from external markets (Matsusaka and Nanda, 2002). However, the literature documents a robust and negative relation between firm diversification and market value, i.e. diversified firms are traded at a discounted value relative to a portfolio of single-segment firms in the same industries (Berger and Ofek, 1995; Lang and Stulz, 1994). This has been attributed to the so-called "the dark side of internal capital markets". For instance, Scharfstein and Stein (2000) argue that one problem with diversification is that resources held by division managers can raise their bargaining power to extract greater perks and acquire more internal resources. This distortion in resource allocation leads to the inefficiency of the internal capital market.

Global diversification makes the internal capital markets even more complicated. Because in the global context, internal fund transfers will be affected by the formal and/or informal country-level institutional factors in different countries. Harford et al. (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 et al. (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

existence of the internal capital market allows multinational firms to employ internal funds to overcome imperfections in external capital markets. This finding is consistent with the model of Billett and Mauer (2015), who suggest that external financing constraints drive the value of the internal capital market.

The complex global operating environment, however, will also exaggerate "the dark side of internal capital markets". Duchin and Sosyura (2013) find that agency issues and information asymmetry are important underlying issues by which the internal capital market affects investment policies. These issues become more severe in multinationals, which operate in different countries with different institutional environments. Huang (2015) and Goetz et al. (2013) report that diversification globally (or across regions) impedes information transfers, increases insider activities, and intensifies agency problems. The multinational operation may hinder shareholders' ability to monitor subsidiary performance and increases the chances for insiders to snatch private interest. Roth and O'Donnell (1996) investigate the foreign subsidiary managers' compensations and find that they are significantly affected by agency issues associated with foreign operations and cultural differences. The unfamiliarity associated with foreign operations also reduce a subsidiary's willingness for external borrowing in the local market and increase the tendency of relying on the internal capital market.

The existing literature examines the effect of cultural differences on financial activities mainly from the perspective of the external capital market (see, for example, Ahern et al., 2015; Grinblatt and Keloharju, 2001; Mian, 2006; Siegel et al., 2011). While Desai et al. (2004) and Fee et al. (2009) focus on the internal capital market of multinationals, they do not address the role of cultural differences. This issue, however, is of great importance because it is inevitable for multinational firms to encounter different cultures in foreign operations. In this case, multinationals need to develop managerial practices for each subsidiary in accordance with the national culture in which the subsidiary is operating, which unavoidably influences the

financial activities of multinationals.

2.2 The effect of cultural distance: hypothesis development

To fill the research gap and investigate the cultural effect on the internal capital market of multinationals, we propose and test three hypotheses: the *agency hypothesis*, the *attraction hypothesis*, and the *efficient-market hypothesis*. The first hypothesis, the agency hypothesis, is built on the agency cost theory that argues the monitoring difficulties increase agency costs (Ozbas and Scharfstein, 2010; Scharfstein and Stein, 2000). A larger cultural distance reduces the effectiveness of communication, increases information asymmetry, and raises the sense of unfamiliarity, thereby increasing the agency costs and demotivating cross-border financial activities (Aabo et al., 2015; Huang, 2015; Shroff et al., 2014).

Foreign subsidiaries of multinationals face a more complicated operating environment than single domestic firms do (Desai et al., 2004; Kolasinski, 2009). Huang (2015) argues that cultural distance creates barriers to communication, which may lead to misinterpretation and misunderstanding. Because a multinational may have a huge number of diversified foreign subsidiaries operating in "unfamiliar" countries, they must be monitored more extensively and intensively. Large cultural distances between the parent and subsidiaries exaggerate agency problems (Roth and O'Donnell, 1996), which inevitably affects investment and financing activities such as fund transfers. If foreign subsidiaries hire employees locally, it takes time for staff in the parent company and subsidiaries to be acquainted with each other. If foreign subsidiaries are managed by expatriate managers from the home country, then they may have to spend plenty of time and cost to understand the local culture and to form a trustworthy relation with external financial resources providers if they would like to seek appropriate external funding resources. There seems a consensus in the literature that foreign operations inevitably increase agency costs and financial frictions (Harford et al., 2017) and cultural differences intensify these issues (Roth and O'Donnell, 1996).

To prevent managers in culturally distant subsidiaries from acting in rent-seeking behavior by extracting their own financial benefit from the parent firm, CEOs at the headquarter may demand subsidiary managers to increase the frequency of fund transfers to the parent firm, and thus reduce the free cash flows available in the subsidiaries. Limited free cash flow will help to mitigate the agency problem between the parent firm and subsidiaries. Fund transfers through the internal capital market would, therefore, facilitate monitoring the rent-seeking behaviors of subsidiary managers. With this argument, we expect that cultural distance reduces the chance that a subsidiary can keep foreign cash in its own account. Thus, *the agency hypothesis* predicts that,

H1: There is a negative relation between cultural distance and internal fund transfers towards foreign subsidiaries.

The attraction hypothesis argues that the internal fund should be allocated to subsidiaries with a larger cultural distance. The psychology literature suggests that managerial decisions are more likely to be biased towards subsidiaries with different cultures as human beings could be attracted by unfamiliarity and infinite potential (Gaur et al., 2019; Newburry et al., 2006). This means that the initial investments can be made heavier in the new and nonexpert areas.

As for multinational firms, subsidiaries with a larger cultural distance from the parent firm are likely to provide more diversification values. This means that the headquarter should take advantage of cultural differences within the multinational and allocate funds to subsidiaries with a larger cultural distance from the parent firm (Dellestrand and Kappen, 2012; Fisch and Schmeisser, 2020). In line with this argument, we expect that when more cash is available at a subsidiary manager's discretion, she would more flexibly respond to capital needs in the local market where culture may not be easily understood by the parent firm. Further, because these subsidiaries are difficult to obtain finance locally, they need support from parents through fund transfers in the internal capital market (Desai et al., 2004). Desai et al. (2004) point out that

multinationals may use the internal capital market as a substitution for external finance if borrowing costs are too high in the local market. In other words, multinational firms will use the internal capital market to overcome imperfections in the external market. Moreover, the higher costs of external funding in culturally distant markets may force subsidiaries to depend highly on internal funds. On this condition, the benefits of transferring funds would outweigh the costs. Thus, *the attraction hypothesis* predicts that,

H2: There is a positive relation between cultural distance and internal fund transfers towards foreign subsidiaries.

Finally, the efficient-market hypothesis is developed according to the argument of the "bright side of the internal capital market". According to this literature, internal funds should be allocated to firms' best use to support available investment opportunities (Khanna and Tice 2001; Stein 1997). The internal fund transfers therefore should be based on the productivity of subsidiaries and not influenced by external frictions such as cultural distance. In other words, the parent firms should see through the real situations in different subsidiaries and allocate the internal fund to the subsidiaries with the highest investment opportunities.

The internal capital market gives multinationals an advantage relative to purely domestic firms for fund transfers, which help align capitals faster with the investment opportunities. If the market is efficient, it can support the investments and operations of both parent and subsidiaries flexibly and at a low cost. Khanna and Tice (2001) document that the existence of an internal capital market facilitates cross-border fund transfers within a multinational. If local investment opportunities are luxuriant, more internal funds should be transferred irrespective of cultural distances. By transferring funds internally, local investment opportunities can be financed quickly and less costly as multinationals are not constrained by their ability to raise funds where they may face fundamentally different external environments. In other words, the internal capital market can substitute the external capital market when a local investment

opportunity appears. The internal fund transfers should therefore be mainly driven by investment opportunities and productivity of the subsidiary instead of cultural differences. With these arguments, *the efficient-market hypothesis* predicts that,

H3: There is no significant relation between cultural distance and internal fund transfers towards foreign subsidiaries.

3. Data and methodology

3.1 Sample

Our initial sample covers all multinational firms in both Orbis and Compustat/NA files from 2007 to 2011. Orbis database contains subsidiary-level data and Compustat/NA provides data on the parent firms.[2] To ensure the data quality, we eliminate subsidiaries without country information and require the subsidiaries to have non-missing total assets. We then classify the sample into domestic and foreign subsidiaries.

Table 1 reports the subsidiary distribution in our sample. The upper panel shows the time trend of all subsidiaries for both domestic and foreign subsidiaries. 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). In this paper, we focus on foreign subsidiaries as the influence of cultural distance arises mainly from foreign operations. Throughout the sample period, there are on average 51.06% of sample subsidiaries incorporated in foreign countries.

[Insert Table 1 Here]

We also report the country-by-country distribution of the foreign subsidiaries in the lower panel in Table 1. To save space, we only present the statistics for the top ten foreign countries

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[2] Since the Orbis database does not include information on the total assets of subsidiaries before 2007 and there is a structural change in Orbis data after 2011, we use 2007-2011 period data to ensure solidity and consistency.

hosting most of U.S. multinationals' subsidiaries. It is worth noting that although U.S. multinationals indeed operate in culturally distant markets (such as Japan and India), the majority of foreign operations of multinationals remain in the culture-proximate countries (e.g. Great Britain, Canada, and EU counties). This is also our first evidence that cultural distance could affect multinationals' foreign operations.

3.2 Measuring internal capital market fund transfer

To measure the internal capital market fund transfers, we employ a similar approach with Rajan et al. (2000). This approach has been used in the internal capital market literature, such as Duchin (2010) and Ahn and Denis (2004). The assumption of this measure is that fund transfers that are taken place in a subsidiary should correspond to the investments of the subsidiary. In the spirit of Rajan et al. (2000), the fund transfer associated with a foreign subsidiary is measured by the difference between the investment made by the subsidiary and the investment that the subsidiary would have made if it were a stand-alone domestic firm in the same county, the same industry (3-digit classification), and the same year. To ensure robustness, we use two industry classifications to impute the fund transfer measure: NAICS imputed internal market fund transfers (*Fund Transfer NAICS*) and NACE imputed internal market fund transfers (*Fund Transfer NACE*). Following Rajan et al. (2000), we subtract the industry-adjusted investment ratio.[3] The proxy for the fund transfers in the multinational internal capital market is therefore computed as,

$$Fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum_{i=1}^{i=N} W_i(\frac{I_i}{Assets_i} - \frac{I_i^{sd}}{Assets_i^{sd}}), \qquad (1)$$

where I_j refers to the investments made by subsidiary j measured as the annual change in total assets of subsidiary j, I_{sd} refers to the investments made by subsidiary j's corresponding

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[3] As noted by Rajan et al. (2000), this is to correct over-estimated fund transfers associated with a subsidiary, as the initial step of this measure may treat a fund transfer that is happened between subsidiaries of a multinational firm instead of the net changes associated with the subsidiary.

domestic stand-along peers and is imputed by the median of the same three-digit industry and year,[4] and $Assets_j$ is the book value of total assets of subsidiary j, N is the total number of foreign subsidiaries within the firm, and W_i is the subsidiary i's share of the total firm's assets. A positive value suggests that the subsidiary invests more than the hypothetical stand-alone domestic peer, indicating that the subsidiary receives extra funds from the internal capital market; whereas a negative value suggests that the subsidiary underinvests compared to the domestic peer, implying that the subsidiary transfers funds to the internal capital market.

[Insert Table 2 Here]

Table 2 reports the summary statistics of *Fund Transfer NAICS* by countries associated with subsidiaries of U.S. multinationals.[5] *Fund Transfer NAICS* can be negative, zero, and positive — 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) *Fund Transfer NAICS* is negative, implying that foreign subsidiaries are less likely to receive funds from the U.S. parent firm, and invest less compared with their domestic peers. This pattern becomes more severe in the economies 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 stand-alone domestic peers. To empirically test this, we construct the measure of the cultural distance in the next section.

3.3 Culture and cultural distance

Following the guidance of Beugelsdijk et al. (2018), we use Kogut and Singh's (1988)

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[4] The subsidiary may have several stand-alone peers, and we use the median investment level of these peers as the hypothetical investment level for the domestic stand-alone firm. Our results are similar if we use the mean value.

[5] *Fund transfer NACE* shows similar summary statistics.

approach is used to compute cultural distance. This measure of cultural distance is commonly

used in the literature (such as Beugelsdijk and Frijns, 2010; Karolyi, 2016). Specifically, this

measure can be expressed as follows,

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

where $CDis_{US,j}$ is the score of cultural difference between the United States and the foreign

subsidiary j, $I_{i,US}$ 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 et al. (2010). 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).[6] Hofstede's cultural framework is commonly applied in

the business, finance and economic research, such as Chui et al. (2010), Beugelsdijk and Frijns

(2010), Eun et al. (2015), Huang (2015), and Karolyi (2016). With an aggregation of Hofstede's

cultural scores, we observe that 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 group of variables documented in the literature on how subsidiary characteristics affect

internal capital markets (Desai et al., 2004; Kolasinski, 2009). Specifically, we control for

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[6] For a detailed explanation of each Hofstede's dimension, see Hofstede Insight website: https://www.hofstede-insights.com, and Hofstede's website: https://geerthofstede.com.

subsidiary sales growth rate (*Sub. Sales growth*), subsidiary return on assets (*Sub. Return on assets*), subsidiary size (*Sub. Size*), utility subsidiaries (*Sub. Utility*), and the number of foreign subsidiaries (*FNTN*), foreign operational risk (*Foreign Operational risk*). *Sub. Sales growth* is the dollar amount change in subsidiary sales relative to the previous period, scaled by the subsidiary's sales in the previous period. *Sub. Return on assets* is calculated as subsidiary operating income divided by the book value of assets. *Foreign Operational risk* is the standard deviation of *Sub. Return on assets*. *Sub. Size* is the natural logarithm of the total assets of the subsidiary. *Sub. Utility* is a dummy variable indicating that a segment's primary three-digit NAICS code is 221. *FNTN* is the number of foreign subsidiaries to the total number of the firm's subsidiaries, capturing the degree of foreign operations. Follow Denis et al. (2002), we patch missing values by zero.[7]

We also control for a set of firm-level variables. Specifically, 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 the total assets is the book value of the 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 a firm's business and operating segments in the different industries.

In terms of country-level variables, we follow Desai et al. (2004) and control for inflation, creditor rights, and political risks. *Inflation* is the inflation rate of the host country where a

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[7] Some subsidiary-level financial information may be reported as missing values in Orbis, such as missing operation revenue and/or missing the number of employees. However, 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 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.

foreign subsidiary is incorporated. *Creditor rights* are captured by an index of creditors rights developed in Djankov et al. (2007), which ranges from zero to four with higher ranks indicating stronger legal protection. *Political risk* is measured by the annual average of the political risk index presented in the International Country Risk Guide (ICRG). Finally, we consider the country selection effect. For example, one may ask why firms establish subsidiaries overseas and why do they go to culturally distant markets. Obviously, this depends on country level characteristics such as market sizes and labor costs. We therefore control for geographical area and GDP per capita (we take natural logarithm for both in our analyses). One can also argue that host country growth is an important determinant of internal fund transfers, we therefore include GDP growth in our analyses.

[Insert Table 3 Here]

Table 3 reports the summary statistics. On average, the cultural distance from the foreign subsidiaries to the U.S. parent is 3.519 (the median is 3.930), as reported in the first row. For *Fund Transfer NAICS* and *Fund Transfer NACE*, all the mean/median values are negative, indicating again that on average subsidiaries do not receive fund transfers, and invest less than the domestic stand-alone firms. Regarding the control variables, the sales growth is negative and the subsidiary-level return on assets is about 4.6%, suggesting that foreign subsidiaries contribute marginally to the firm's overall sales.[8] On average, Tobin's Q of our sample firm is 1.581, suggesting that the sample multinationals in general are worth more than the cost of their assets. The mean (median) number of segments is 2.632 (2.000), 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 et al. (2004).[9] The Appendix gives detailed

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[8] This may be because not all foreign subsidiaries facilitate sales functions. See, Ling, et al. (2005) and Qu and Zhang (2015) for a detailed discussion on the issue of sales function of foreign subsidiaries.

[9] The inflation rate, creditor rights and political risk in Desai, Foley, and Hines (2004) are 5.710%, 2.000, and 0.205. The sample period of Desai, Foley, and Hines (2004) covers 1982, 1989, and 1994.

variable definitions.

4. Empirical results

4.1 Baseline result

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

$$
\begin{aligned}
Fund\ transfer_{j,t} &= \alpha + \beta_1 \text{CDis}_{US,j} + \beta_2 \text{Sub\_Controls}_{j,t} + \beta_3 \text{Firm\_Controls}_{j,t} \\
&\quad + \beta_4 \text{Country\_Controls}_{j,t} + \text{Fixed effects} + \varepsilon_{j,t}
\end{aligned} \tag{3}
$$

where $Fund\ transfer_{j,t}$ is fund transfers 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 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. *Fixed effects* contain industry and year dummies to control for economic-level shocks. Standard errors are clustered on firms to account 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 where column (1) uses *Fund Transfer NAICS*, and column (2) uses *Fund Transfer NACE*. In both columns, we find that cultural distance is negatively related to internal market fund transfers after controlling for subsidiary-, firm-, and country-level factors as well as industry- and year-fixed effects. The negative coefficients are significant at the 1% level in both columns, suggesting that internal fund transfers are significantly smaller to subsidiaries incorporated in the countries where cultural differences from the home country are larger. In terms of economic significance, a one-standard-deviation increase in cultural

distance, on average, is related to -0.56 and -0.52 decreases in the internal fund transfers, measured by *Fund Transfer NAICS* and *Fund Transfer NACE*, respectively. These figures correspond to -9.17% and -8.95% changes from the unconditional means of *Fund Transfer NAICS* and *Fund Transfer NACE*, respectively. These results suggest that even within the same organization, the internal fund transfers to subsidiaries in culturally distant locations is smaller.

Regarding the control variables, subsidiary sales growth, return on assets, operational risks, and size are positively and significantly related to *Fund transfer*, indicating that profitable and large foreign subsidiaries are more likely to obtain support from the parent via the internal capital market. While, at the firm level, *Firm size* and *Leverage* are negatively related to capital transfers in the internal capital market. *Tobin's Q* and *Number of segments* are positively related to fund transfers, suggesting that internal capital transfers associated with the subsidiary are determined by firm characteristics. Further, at the country level, inflation is positively related to internal fund transfers, whereas credit rights, geographic area and GDP per capita are negatively related to internal fund transfers. More important to the purpose of our paper, after including these relevant country-level factors, the negative effect of cultural distance on fund transfers in the internal capital market remains significant. This provides support for *H1*.

4.2 Robustness tests

4.2.1 Single cultural dimension

Our baseline tests use a composite cultural distance index aggregating Hofstede cultural dimensions. However, as argued by Shenkar (2001), this type of measure may be subject to the issue of "the assumption of equivalence" in that it implicitly assumes that all dimensions play equal roles. It may hide the fact that some dimensions may be more important than others in the context of internal fund transfers. To address this concern, we follow the suggestion of Shenkar (2001) and use each Hofstede's dimension to construct cultural distance using Equation (2) and then rerun our baseline test as in Equation (3).

In Panel A of Table 5, we report the results. We find that some dimensions indeed have a stronger effect than others. Among them, the uncertainty avoidance index (*UAI*) has the strongest effect in terms of both the magnitude of coefficient and the significance of the test statistics. This suggests that the cross-border internal fund transfers are strongly influenced by the cultural difference in uncertainty avoidance. Comparatively, some dimensions such as masculinity index (*MAS*) and power distance index (*PDI*) have relatively less strong influences. However, the cultural distances computed by all dimensions are negative and significant at the 1% level. Therefore, our baseline result is overall valid and is not biased to certain dimensions.

4.2.2 Alternative cultural frameworks

We further use several alternative cultural frameworks to conduct robustness checks whether our results are not specifically applied to Hofstede cultural framework. Our first alternative framework is the GLOBE project's (House et al., 2004) cultural indicators. Like Hofstede, the GLOBE researchers uncovered nine cultural indicators.[10] Unlike Hofstede's six cultural dimensions, however, the GLOBE project's nine indicators measure societal values (as things should be) and societal practices (as things are). The correlations between practices and values for societies, surprisingly, were found to be significantly negative for seven dimensions. This means that people's values are contrary to their practices. In this paper, we use both value scores and practice scores to construct cultural distance and repeat the estimation process as above. In Table 5, we report the results with GLOBE's cultural indicators in the first two columns of Panel B and find that both coefficients are significantly negative.

Our second alternative framework is Schwartz's (2009; 2014) cultural orientations.

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[10] Seven of these indicators are similar to those uncovered by Hofstede, namely 1) uncertainty avoidance, 2) power distance, 3) future orientation (the degree to which society values the long term) 4) assertiveness orientation (masculinity), 5) gender egalitarianism (femininity), 6) institutional, and 7) societal collectivism (similar to individualism/collectivism). The only two cultural dimensions unique to the GLOBE project are 8) performance orientation (the degree to which societies emphasize performance and achievement) and 9) humane orientation (the extent to which societies places importance on fairness, altruism, and caring).

Schwartz posits seven a *priori* cultural value orientations that correspond to cultural ideals, which are shared conceptions of good and desirable cultural standards. [11] A crucial aspect of this model is that the cultural value orientations are ordered in a systematic way according to their motivational synergies and conflicts. We use Schwartz's cultural orientations to construct cultural distance and again repeat the estimation process. The result is reported in the third column of Panel B in Table 5, showing that the coefficient on cultural distance is insignificant.

Our third alternative culture measure is a tightness-looseness classification system, which assesses how much a culture adheres to social norms and tolerates deviance. According to Gelfand et al. (2011), tight cultures are more restrictive, with stricter disciplinary measures for norm violations while loose cultures have weaker social norms and a higher tolerance for deviant behavior.[12] This measure of culture has been recently adopted in the literature such as Eun et al. (2015). We use Gelfand et al.'s (2011) scores of tightness-looseness to construct cultural distance and repeat the above estimation process. The result is reported in the fourth column of Panel B in Table 5, showing that the coefficient on cultural distance is significantly negative, which is in line with our baseline.

Our final alternative culture measure is an updated version of Hofstede scores by Tang and Koveos (2008), who argue that some national culture traits may be shaped by economic development. This argument is based on the distinction between cultural dynamics and institutional traditions. In other words, some cultural traits are more prone to the influence of the economy. Some other traits however are less likely to significantly change if they embody more stable institutional traditions. With this argument, Tang and Koveos (2008) incorporate

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[11] The seven cultural value orientations are Intellectual Autonomy (being independent), Affective Autonomy (pursuing positive affective experiences), Mastery (encouraging self-assertion), Hierarchy (unequal distribution of power), Embeddedness (being part of a collective), Harmony (being at ease with the world), and Egalitarianism (being concerned for others). The seven cultural value orientations can be ordered along three dimensions: Embeddedness vs. Autonomy, Hierarchy vs. Egalitarianism, and Mastery vs. Harmony.

[12] Gelfand finds that a history of threats, such as natural disasters, high population density, or vulnerability to infectious diseases, is associated with greater tightness. Her research shows that tightness allows cultures to coordinate more effectively to survive threats.

national wealth, measured by GDP per capita, into the Hofstede cultural scores. We use these updated scores to construct cultural distance and re-conduct our estimation. In Table 5, we report the result in the last column of Panel B and find a significantly negative coefficient on cultural distance.

Overall, in this section, we use alternative cultural frameworks and find that four out of the five measures produce consistent results with our baseline that the effect of cultural distance on internal fund transfers is significantly negative. Therefore, our main result generally holds.

4.2.3 Alternative metrics for cultural differences

Since culture is a multi-dimensional concept, in the main tests we use Euclidean distance to capture the cultural difference. In this section, to provide further robustness, we estimate the cosine similarity which is also commonly used in the literature (for example, Hoberg et al., 2018; Li et al., 2021). Li et al. (2021) provide an excellent description of how the cosine similarity captures multi-dimensional cultural similarity. Following Li et al. (2021), we define the cosine similarity as follows,

$$CSim_{US,j} = \frac{I_{US} \cdot I_J}{\|I_{US}\|\|I_J\|} = \frac{\sum_{i=1}^{6} I_{i,US} \cdot I_{i,j}}{\sqrt{\sum_{i=1}^{6} I_{i,US}^2} \sqrt{\sum_{i=1}^{6} I_{i,j}^2}} \tag{4}$$

where $CSim_{US,j}$ is the score of the cosine cultural similarity between the U.S. parent firm and the foreign subsidiary j, $I_{i,US}$ 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. Again, Hofstede's six cultural dimensions are applied to capture the national culture. A high degree of this measure indicates the culture of the foreign country where subsidiary j operates is close to the culture of the United States. To be consistent with our main results, we follow Hoberg et al. (2018) and adjust Equation (4) to reflect cultural distance as follows,

$$CDis\_COS_{US,j} = 1 - \sqrt{CSim_{US,j}} \tag{5}$$

where $CDis\_COS_{US,j}$ is the score of cultural distance based on the cosine cultural similarity between the U.S. and the foreign subsidiary j. In Panel B of Table 5, we report the results in the last column. The coefficient on cultural distance is -13.516 with a t-statistic of 4.604, suggesting that cultural distance is negatively and significantly associated with the internal fund transfers. [13] This is again consistent with our baseline result.

4.3 Identification strategy

4.3.1 Evidence from the fixed-effects model

National culture is deep root and evolves slowly over time. Correspondingly, the measures of cultural distance used in this study are time-invariant. In this case, an endogenous problem may arise from omitted variables. In other words, the observed relation between cultural distance and internal fund transfers may be driven by some other common factors aside from cultural distance. One way to address this issue is to use lower or higher dimensional fixed effects, in which all the firm-level time-invariant characteristics can be captured by firm-fixed effects and region-level time-invariant characteristics can be captured by region-fixed effects. Since the model uses subsidiary-level observations with country-level variables, parent-firm-level and region-level fixed effects are applicable in the empirical tests.

[Insert Table 6 Here]

In Table 6, we report the results for parent-firm-level and region-level fixed effects in columns (1) and (2), respectively. In terms of the parent-firm-level fixed effects, we employ a standard panel-data approach and demean variables at the multinational firm level. In terms of the region-level fixed effects, we take continents and landlocks into account given the fact that many European countries are landlocked where cultures are more likely to interact with

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[13] We replace $CDis_{US,j}$ by $CSim_{US,j}$ to estimate Equation (3). The result shows a coefficient 7.336 on $CSim_{US,j}$ with a t-statistic of 4.721, suggesting that cultural similarity is positively and significantly related to the internal fund transfers.

neighboring countries. Both columns (1) and (2) of Table 6 show that cultural distance is negatively related to the internal fund transfers with the 1% significance level. This confirms our baseline. Because we measure *Foreign Operational risk* across foreign subsidiaries and over time, firm-level fixed effects would eliminate this variable. Apart from *Foreign Operational risk*, we find consistent results for control variables. For instance, *subsidiary sales growth, subsidiary size* and *inflation* are positively related to internal fund transfers, whereas *firm size*, *leverage* and *foreign market size* measured by geographic area are negatively associated with internal fund transfers. These results again suggest that strong and profitable foreign subsidiaries obtain more supports from the parents and that firms with strong external finance use less internal transfers.

Overall, the results using different fixed effects provide supports for our baseline result, indicating that our finding is not driven by firm-level or region-level common factors. Therefore, our main result is not seriously subject to endogeneity problems.

4.3.2 Evidence from Heckman's section model

We next estimate the amount of fund transfers in the internal capital market using a standard Heckman's (1979) two-step procedure. The results from OLS regression may be subject to self-selection in that we can only access observations with funds transfer occurred 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 these observations may introduce bias. Heckman's (1979) two-step procedure ensures that our findings are not driven by non-fund transfer subsidiaries.

To estimate the Heckman procedure, in the first stage, we formulate a model for the probability of fund transfers in the internal capital market. The canonical test for this stage is a probit regression for whether there are fund transfers associated with a subsidiary in a given

year. In the second stage, the self-selection issue is corrected by incorporating the predicted probabilities from the first stage as an additional explanatory variable. Expressly, we estimate the following specification[14],

$$
\begin{aligned}
Fund\ transfer_{j,t} \big| P(FT_{j,t} = 1, Dis_{US,j}, x_{i,j}) \\
= \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub\_Controls_{j,t} + \beta_3 Firm\_Controls_{j,t} \\
+ \ \beta_4 Country\_Controls_{j,t} + Fixed\ effects + \lambda\rho\sigma_\varepsilon
\end{aligned}
\tag{6}
$$

where 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 is 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. Heckman's selection model therefore corrects omitted variables bias as it is conditional on both independent variables and λ.

In Table 6, we report the results.[15] The probit model in column (3) shows that cultural distance is positively related to the possibility of fund transfers in the internal capital market at the 1% significance level. The results from the second stage of Heckman's selection model are reported in columns (4) of Table 6. First, the inverse Mills ratio (λ) is -7.625 and is statistically significant at the 1% level. This suggests that the sample-selection bias does exist, and the sample is not randomly selected. More importantly, even after accounting for the selection bias, cultural distance is still significantly and negatively related to the amount of the subsidiary's fund transfers. In other words, conditional on the likelihood of fund transfers, the subsidiaries incorporated in countries with higher cultural distances from the home country receive a lower level of funds from the internal capital market. Meanwhile, they transfer more funds into the

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[14] Similar to the previous section, we do not include country-fixed effects, because they cause the models to have not concave (no convergence) at the last iteration in these tests. All other country-level variables are included.
[15] To save space, we report results with NAICS imputed fund transfers in Table 6 for this section, NACE imputed fund transfers produce very similar results.

internal capital market. Overall, the above evidence suggests that our baseline result is unbiased.

4.3.3 Evidence from the Tobit model

To further disentangle the direction of the fund transfers, i.e. positive (receiving) and negative (making) transfers, we employ 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. Like Heckman's section model, the Tobit model considers the sample selection before estimating the relation between cultural distance and the amount of *fund transfer*. While, unlike Heckman's section model, the Tobit model censors the values above or below a threshold. Thus, in the context of this paper, the Tobit model is particularly useful as it allows us to censor non-positive or non-negative values. In other words, the relation between cultural distance and the amount of *fund transfer* can be estimated by the Tobit model for the positive and negative fund transfers, respectively. For the positive internal fund transfers, we can estimate a model as follows,

$$
\begin{aligned}
Fund\ transfer_{j,t} | P(FT+_{j,t} &= 1, Dis_{US,j}, x_{i,j}) \\
&= \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub\_Controls_{j,t} + \beta_3 Firm\_Controls_{j,t} \\
&\quad + \beta_4 Country\_Controls_{j,t} + Fixed\ effects + \lambda\rho\sigma_\varepsilon
\end{aligned}
\tag{7}
$$

where *FT+* is a dummy variable if *fund transfer* is positive and otherwise zero. Thus, this model censors values by a lower limit threshold of zero. Therefore, Equation (7) estimates the relation between cultural distance and the amount of funds **received** by subsidiary *j*. For negative *fund transfer*, we estimate a model as follows,

$$
\begin{aligned}
Fund\ transfer_{j,t} | P(FT-_{j,t} &= 1, Dis_{US,j}, x_{i,j}) \\
&= \alpha + \beta_1 CDis_{US,j} + \beta_2 Sub\_Controls_{j,t} + \beta_3 Firm\_Controls_{j,t} \\
&\quad + \beta_4 Country\_Controls_{j,t} + Fixed\ effects + \lambda\rho\sigma_\varepsilon
\end{aligned}
\tag{8}
$$

where *FT-* is a dummy variable if *fund transfer* is negative and otherwise zero. Thus, this model censors values by an upper limit threshold of zero. Therefore, Equation (8) estimates the relation between cultural distance and the amount of fund transfers **made** by subsidiary *j*.

Table 6 reports the estimated results. In column (5) of Table 6, the number of uncensored

observations is 7,272, suggesting that 21.67% of foreign subsidiaries receive fund transfers from the internal capital market. The coefficient on cultural distance is negative and statistically significant at the 1% level, suggesting that multinational firms tend to reduce the amount of funds transfers into subsidiaries located in the culturally distant market from the internal capital market. The corresponding marginal effect at mean is -0.209, suggesting that a one-standard-deviation increase in the cultural distance would lead to a decrease in fund transfers to foreign subsidiaries by 4.18% from the mean value of positive transfers.

Results in column (6) of Table 6 show that outflow funds from the foreign subsidiary are larger. The number of uncensored observations is 24,010, suggesting that 71.54% of foreign subsidiaries made fund transfers into the internal capital market. 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. The corresponding marginal effect at mean is -0.231, suggesting that a one-standard-deviation increase in the cultural distance would lead to a decrease in funds of foreign subsidiaries by 3.63% from the mean value of negative transfers.

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 *fund transfer* for *FT+* and *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* is positively related to *fund transfer* for *FT+* and insignificantly related to *fund transfer* for *FT-*, suggesting that large subsidiaries receive more internal funds. *FNTN* is positively related to *FT+* and is negatively *fund transfer* for *FT-*, suggesting that multinationals with a greater number of foreign subsidiaries tend to both receive more funds from and make more transfers. As for firm-level control variables, firms with a larger size and more leverage tend to receive less from but transfer more into the internal capital market. In contrast, firms

with higher Tobin's Q and greater industrial diversification transfer more into but receive less from the internal capital market. As for country-level control variables, operating in countries with better creditor rights and higher GDP per capita tend to receive less from but transfer more into the international capital market. In addition, subsidiaries operating in the big markets transfer more whereas subsidiaries operating in the markets with greater inflation transfer less into the internal capital market.

Overall, these results suggest that in the internal capital market, the larger fund transfers are significantly related to cultural differences from the subsidiary locations, this is true for both making and receiving fund transfers in the internal capital market.

4.3.4 The impact of the financial crisis

The previous research has documented that the financial crisis systematically impacts corporate decisions and leads to a significant reduction of fund transfer overseas and a mass exodus of overseas capitals back to the home country (Giannetti and Laeven, 2012). The financial crisis may shape a firm's risk perception, leading to a more cautious internal fund allocation. Consequently, managers would reduce the investments in unfamiliar areas. Hence, if the cultural distance affects the internal fund transfer as *H1* predicted, we expect that the significant negative effect of cultural distance on internal fund transfers will be more significant after the global financial crisis.

[Insert Table 7 Here]

To test the above proposition, we define a dummy variable: *post* = 1 for the years of 2009, 2010 and 2011 and *post* = 0 for the years of 2007 and 2008. We then let this dummy variable interact with cultural distance. This interaction term is our variable of interest. The results are reported in Table 7. It first can be seen that coefficients on dummy variable *Post* are significantly negative in both regressions, suggesting that the global financial crisis does have a negative impact on the internal fund transfers. More importantly, results in Table 7 shows

that the coefficients on interactions are negative and statistically significant for both *Fund Transfer NAICS* and *Fund Transfer NACE*, revealing that fund transfers in the internal capital market indeed vary according to their cultural environment. Further, this suggests that the financial crisis amplifies the negative effect of the cultural distance on internal fund transfers relating to foreign subsidiaries as predicted by *H1*. Hence, this section provides circumstantial evidence on the cultural effect on internal fund transfers.

5. Cross-sectional analyses

5.1 Country-level informal institutional factors

The informational environment is crucial to fund transfers in the context of international operations. Cultural differences engender communication barriers in that the subtle ways of information expression and interpretation can be different across cultures (Sperber and Hirschfeld, 2004). In addition to the cultural difference, other country-level institutional similarities and distances that give rise to informational frictions may cause misunderstanding and increase the cost of communication between the home country and foreign subsidiaries. This can in turn affects the relation between cultural distance and internal fund transfers.

For the empirical tests, we focus on three country-level factors relating to communication: common language, linguistic distance, and geographic distance.[16] We assume that common language can facilitate communications — foreign operations in English-speaking countries could have fewer communication frictions for U.S. multinational firms. Whereas, the effect of cultural distance would be aggravated for subsidiaries in countries where the language spoken is very different from the language of the home country. Finally, the physical distance would make communication more difficult and costly. We therefore also consider geographic distance.

[Insert Table 8 Here]

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[16] We use Spolaore and Wacziarg's (2018) data for linguistic distance and CEPII data for geographical distance.

Table 8 reports the results. For the common language, we introduce a dummy variable that equals one for subsidiaries in English-Speaking countries and otherwise zero. We then let the dummy variable interact with cultural distance. For linguistic distance and geographic distance, we let each of them interact with cultural distance. The results in Table 8 show an insignificant interaction between the English dummy and cultural distance, though their standalone effects on internal fund transfers are both significant. This result corresponds to Hofstede's (2001) claim that social evolution include proceeding in languages and cultures that causally unrelated directions. In the context of this study, this result indicates that that common language does not mitigate the negative effect of cultural distance on internal fund transfers.

The effect of cultural distance, however, becomes aggravated for subsidiaries in those countries where the language spoken is highly different from the language of the home country or where the geographic distance is far away from the home country. Table 8 shows that the interactions between cultural distance and each of these two types of distances are significantly negative, providing evidence that the effect of cultural distance on internal capital transfers can be affected by other informal institutional factors and country-level distances. Therefore, those factors that create communication barriers aggravate the negative effect of cultural distance.

5.2 Country-level formal institutional environment

The existing studies have documented that country-level formal institutions may affect corporate agency costs. La Porta et al., (2000) report that common law countries are subject to lower agency problems than civil law countries do. Studies also show that laws related to country-level investor protection affect firm-level governance and agency costs (Aggarwal et al., 2010; McLean et al., 2012). Further, Bekaert et al. (2007) argue that a country's openness has a strong impact on cross-border capital flows. Consistent with these arguments, Desai et al. (2006) find that country-level capital controls impact significantly the activities of U.S. multinational firms. Therefore, if cultural distance affects internal fund transfers through the

agency channel, then the above country-level factors, which reduce the agency cost, should attenuate the negative impact of cultural distance.

[Insert Table 9 Here]

To explore whether the effect of cultural distance is moderated by these country-level factors, we let cultural distance interact with shareholder protection using data from La Porta et al. (2000), with creditor right protection using data from Djankov et al. (2007), and with capital control using data from Fernández, Klein et al. (2016). The empirical results are reported in Table 9, which shows that while all coefficients on cultural distance remain negative, the interaction between cultural distance and each of these factors is significantly positive. This provides evidence that the negative effect of cultural distance can be attenuated if the firm operates in countries with better investor protection or greater capital control. Overall, these results provide support for the agency channel of cultural effect on internal fund transfers and suggest that better country-level formal institutions can mitigate the impact of cultural distance.

5.3 Subsidiary level investment opportunities

Although we document a significant negative impact of cultural distance on internal fund transfers, the results do not tell us whether these transfers are from subsidiaries with high productivity to low productivity or the other way around. This issue is crucial. Because without considering this, a conclusion would simply be that multinationals should be better off not at all establishing subsidiaries in culturally distant countries. Rajan et al. (2000) point out that the resource allocation in the internal capital markets depends highly on the investment opportunities of a subsidiary. Efficient internal capital markets can enhance firm value by allowing fund transfer from less promising projects to ones with more potentials (Khanna and Tice, 2001; Stein, 1997). If the internal capital market is efficient, then the 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).

With this line of the literature, the question concerning our research is whether the negative cultural effect means that internal fund flows 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 subsidiaries with poor performance to subsidiaries 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 argument of the "dark side" of the internal capital market by Scharfstein and Stein (2000), suggesting that those fund transfers associated with the increased cultural distance are not efficient. Both the efficient internal capital market model and Scharfstein and Stein (2000) focus on investment opportunities (q). As an alternative argument, Rajan et al. (2000) claim that fund transfers in the internal capital market depend on asset-weighted investment opportunities (λq), rather than q of a subsidiary. The major difference between q and λq is that λq relates to the degree of diversification. It is diversification that leads to internal capital transfers from high λq to low λq subsidiaries.

We therefore examine whether culture-related fund flows are efficient. Specifically, we follow Rajan et al. (2000) to investigate whether and how a subsidiary's fund transfers associated with cultural distance are affected by investment opportunities (q) and asset-weighted investment opportunities (λq). Accordingly, we divide our sample into four categories according to the sample mean of q and λq and regard the subsidiaries above the mean as high productivity subsidiaries and the subsidiaries below the mean as low productivity subsidiaries. We then estimate Equations (3) for each group.

[Insert Table 10 Here]

Panel A of Table 10 reports the results using *Fund Transfer NAICS* and Panel B reports the results using *Fund Transfer NACE*. First, when we look at the number of observations in

each group, we find that almost half of our sample subsidiaries belong to the category of $q < \bar{q}$ and $\lambda q < \overline{\lambda q}$ as shown in columns (4).[17] This means that almost half of the foreign subsidiaries have lower investment opportunities with both traditional measures and taking diversification into account. When we investigate cultural effects, column (1) of Table 10 does not give a consistent result in that the coefficient on cultural diversity is significant in Panel A but insignificant in Panel B. The results in columns (2), (3) and (4), however, are agreed. We therefore focus our discussions on columns (2), (3) and (4).

The results show that without considering the diversification effect, the coefficients on cultural distance are positive in high investment-opportunity subsidiaries, where $q > \bar{q}$ (in column (2)). This suggests that higher investment opportunities moderate the effect of cultural distance. These results are in line with the efficient internal capital market model and Scharfstein and Stein (2000). However, the results also show that coefficients are negative when $q < \bar{q}$ (in columns (3) and (4)). This indicates that low investment opportunity aggravates the negative effect of cultural distance on internal transfers.

With further considering the diversification effect. Column (2) shows a positive effect of cultural distance on fund transfers of subsidiaries with below-average λq ($\lambda q < \overline{\lambda q}$) and column (3) shows a negative effect on fund transfers of subsidiaries with above-average λq ($\lambda q > \overline{\lambda q}$). In other words, increased cultural distance is associated with transfers from high λq to low λq subsidiaries. This suggests that excessive diversification may result in inefficient fund transfers due to higher cultural distance. These results are in line with Rajan, et al. (2000), implying that diversification deteriorates the moderation effect of investment opportunities.

In summary, the results in this section indicate that subsidiary productivity can mitigate the negative effect of the cultural difference on internal fund transfers. However, the evidence

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[17] The observations are 3,760 for the group of $q > \bar{q}$ and $\lambda q > \overline{\lambda q}$, 8,055 for the group of $q > \bar{q}$ and $\lambda q < \overline{\lambda q}$, 4,389 for the group of $q < \bar{q}$ and $\lambda q > \overline{\lambda q}$, and 13,698 for the group of $q < \bar{q}$ and $\lambda q < \overline{\lambda q}$.

also suggests that this mitigating effect deteriorates with excessive diversification. Therefore, whether fund transfers are efficient depends on both productivity and diversification.

6. Conclusion

In this paper, we explore how the cultural distance between a foreign subsidiary and its parent firm affects fund transfers in the internal capital markets. Using a sample of U.S. multinationals, we find a significantly negative relation between cultural distance and internal fund transfers, suggesting that larger cultural distance impedes internal fund transfers to foreign subsidiaries. Our main result consistently holds when using each single Hofstede cultural dimension or alternative cultural frameworks. Next, we show that those country-level factors that mitigate the agency cost could moderate the impact of cultural distance; whereas those country-level factors that create communication barriers could aggravate the effect of cultural distance. Further, we show that higher investment opportunities of a subsidiary mitigate the negative effect of cultural distance on the subsidiary. However, excessive diversification may cause this mitigating effect to become weaker.

Our study highlights the unique and important role of cultural distance in multinational operations. A larger cultural distance makes the parent's monitoring over foreign subsidiaries more difficult and costly, and thus increases the agency problem between the two parties. For the firms establishing foreign subsidiaries to diversify risk, it seems that the foreign subsidiaries do not obtain sufficient support from the parent if they operate in culturally distant countries. A greater cultural distance between a foreign subsidiary and its parent may decrease the effectiveness of information transfer. Overall, given a fierce debate on globalization and multinationals in recent years, our findings provide important implications about the international diversification strategies for future research.

Reference:

Aggarwal, R., Erel, I., Stulz, R., and Williamson, R. 2010. Differences in governance practices between US and foreign firms: Measurement, causes, and consequences. *Review of Financial Studies*, 23(3): 3131–3169.

Ahern, K. R., Daminelli, D., and Fracassi, C. 2015. Lost in translation? The effect of cultural values on mergers around the world. *Journal of Financial Economics*, 117(1): 165–189.

Ahn, S., and Denis, D. J. 2004. Internal capital markets and investment policy: evidence from corporate spinoffs. *Journal of Financial Economics*, 71(3): 489–516.

Bekaert, G., Harvey, C. R., Lundblad, C., and Siegel, S. 2007. Global growth opportunities and market integration. *The Journal of Finance*, 62(3): 1081–1137.

Berger, P. G., and Ofek, E. 1995 Diversification's effect on firm value. *Journal of Financial Economics*, 37(1): 39–65.

Beugelsdijk, S., Ambos, B., and Nell, P. C. 2018. Conceptualizing and measuring distance in international business research: Recurring questions and best practice guidelines. *Journal of International Business Studies*, 49(9): 1113–1137.

Beugelsdijk, S., and Frijns, B. 2010. A cultural explanation of the foreign bias in international asset allocation. *Journal of Banking and Finance*, 34(9): 2121–2131.

Billett, M. T., and Mauer, D. C. 2015. Cross-subsidies, external financing constraints, and the contribution of the internal capital market to firm value. *Review of Financial Studies*, 16(4): 1167–1201.

Brückner, M., and Pappa, E. 2015. News shocks in the data: Olympic Games and their macroeconomic effects. *Journal of Money, Credit and Banking*, 47(7): 1339–1367.

Chui, A. C. W., Titman, S., and Wei, K. C. J. 2010. Individualism and momentum around the world. *The Journal of Finance*, 65(1): 361–392.

Dellestrand, H., and Kappen, P. 2012. The effects of spatial and contextual factors on headquarters resource allocation to MNE subsidiaries. Journal of International Business Studies, 43(3): 219–243.

Denis, D. J., Denis, D. K., and Yost, K. 2002. Global diversification, industrial diversification, and firm value. *The Journal of Finance*, 57(5): 1951–1979.

Desai, M. A., Foley, C. F., and Hines, J. R. 2004. A multinational perspective on capital structure choice and internal capital markets. *The Journal of Finance*, 59(6): 2451–2487.

Desai, M. A., Foley, C. F., and Hines, J. R. 2006. Capital controls, liberalizations, and foreign direct investment. *Review of Financial Studies*, 19(4): 1433–1464.

Djankov, S., McLiesh, C., and Shleifer, A. 2007. Private credit in 129 countries. *Journal of financial Economics*, 84(2): 299–329.

Doukas, J. A., and Pantzalis, C. 2003. Geographic diversification and agency costs of debt of multinational firms. *Journal of Corporate Finance*, 9(1): 59–92.

Duchin, R., and Sosyura, D. 2013. Divisional managers and internal capital markets. *The Journal of Finance*, 68(2): 387–429.

Eun, C. S., Wang, L., and Xiao, S. C. 2015. Culture and R2. *Journal of Financial Economics*, 115(2): 283–303.

Fernández, A., Klein, M. W., Rebucci, A., Schindler, M., and Uribe, M. 2016. Capital control measures: A new dataset. *IMF Economic Review*, 64(3): 548–574.

Fisch, J. H., and Schmeisser, B. 2020 Phasing the operation mode of foreign subsidiaries: Reaping the benefits of multinationality through internal capital markets. *Journal of International Business Studies*, 51(8): 1223–1255.

Gaur, A. S., Pattnaik, C., Singh, D., and Lee, J. Y. 2019. Internalization advantage and subsidiary performance: The role of business group affiliation and host country characteristics. *Journal of International Business Studies*, 50(8): 1253–1282.

Giannetti, M., and Laeven, L. 2012. The flight home effect: Evidence from the syndicated loan market during financial crises. *Journal of Financial Economics*, 104(1): 23–43.

Goetz, M. R., Laeven, L., and Levine, R. 2013. Identifying the valuation effects and agency costs of corporate diversification: Evidence from the geographic diversification of U.S. banks. *Review of Financial Studies*, 26(7): 1787–1823.

Grinblatt, M., and Keloharju, M. 2001. How distance, language, and culture influence stockholdings and trades. *The Journal of Finance*, 56(3): 1053–1073.

Guiso, L., Sapienza, P., and Zingales, L. 2006. Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20(2): 23–48.

Harford, J., Wang, C., and Zhang, K. 2017. Foreign cash: Taxes, internal capital markets, and agency problems. *Review of Financial Studies*, 30(5): 1490–1538.

Heckman, J. J. 1979. Sample selection bias as a specification error. *Econometrica,* 47(1): 153–161.

Hofstede, G. H., Hofstede, G. J., and Minkov, M. 2010. Cultures and organizations: software of the mind : intercultural cooperation and its importance for survival. New York, NY: McGraw-Hill.

Huang, X. 2015. Thinking outside the borders: Investors' underreaction to foreign operations information. *Review of Financial Studies*, 28(11): 3109–3152.

Karolyi, G. A. 2016. The gravity of culture for finance. *Journal of Corporate Finance*, 41: 610–625.

Kelley, E., and Woidtke, T. 2006. Investor protection and real investment by U.S. multinationals. *Journal of Financial and Quantitative Analysis*, 41(3): 541–572.

Khanna, N., and Tice, S. 2001. The bright side of internal capital markets. *The Journal of Finance*, 56(4): 1489–1528.

Kogut, B., and Singh, H. 1988. The effect of national culture on the choice of entry mode. *Journal of International Business Studies*, 19(3): 411–432.

Kolasinski, A. C. 2009. Subsidiary debt, capital structure and internal capital markets. *Journal of Financial Economics*, 94(2): 327–343.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. 1998. Law and finance. *Journal of Political Economy*, 106(6): 1113–1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. 2000. Agency problems and dividend policies around the world. *The Journal of Finance*, 55(1): 1–33.

Lang, L. H. P., and Stulz, R. M. 1994. Tobin's Q, corporate diversification, and firm performance. *Journal of Political Economy*, 102(6): 1248–1280.

Ling, Y., Floyd, S. W., and Baldridge, D. C. 2005. Toward a model of issue-selling by subsidiary managers in multinational organizations. *Journal of International Business Studies*, 36(6): 637–654.

Luo, Y., and Shenkar, O. 2006. The multinational corporation as a multilingual community: Language and organization in a global context. *Journal of International Business Studies*, 37(3): 321–339.

Matsusaka, J. G., and Nanda, V. 2002. Internal capital markets and corporate refocusing. *Journal of Financial Intermediation*, 11(2): 176–211.

McLean, D. R., Zhang, T., and Zhao, M. 2012. Why does the law matter? Investor protection and its effects on investment, finance, and growth. *The Journal of Finance*, 67(1): 313–350.

Mian, A. 2006. Distance constraints: The limits of foreign lending in poor economies. *The Journal of Finance*, 61(3): 1465–1505.

Newburry, W., Gardberg, N. A., and Belkin, L. Y. 2006. Organizational attractiveness is in the eye of the beholder: the interaction of demographic characteristics with foreignness. *Journal of International Business Studies*, 37(5): 666–686.

Nini, G., Smith, D. C., and Sufi, A. 2009. Creditor control rights and firm investment policy. *Journal of Financial Economics*, 92(3): 400–420.

Ozbas, O., and Scharfstein, D. S. 2010. Evidence on the dark side of internal capital markets. *Review of Financial Studies*, 23(2): 581–599.

Petersen, M. A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, 22(1): 435–480.

Qu, R., and Zhang, Z. 2015. Market orientation and business performance in MNC foreign subsidiaries - Moderating effects of integration and responsiveness. *Journal of Business Research*, 68(5): 919–924.

Rajan, R. G., Servaes, H., and Zingales, L. 2000. The cost of diversity: The diversification discount and inefficient investment. *The Journal of Finance*, 55(1): 35–80.

Roth, K., and O'Donnell, S. 1996. Foreign subsidiary compensation strategy: An agency theory perspective. *Academy of Management Journal*, 39(3): 678–703.

Scharfstein, D. S., and Stein, J. C. 2000. The dark side of internal capital markets: Divisonal rent-seeking and inefficient investment. *The Journal of Finance*, 55(6): 2537–2546.

Scharfstein, D., and Stein, J. 2000. The dark side of internal capital markets: Divisional rent-seeking. *The Journal of Finance*, 55: 2537–2565.

Siegel, J. I., Licht, A. N., and Schwartz, S. H. 2011. Egalitarianism and international investment. *Journal of Financial Economics*, 102(3): 621–642.

Siegel, J. I., Licht, A. N., and Schwartz, S. H. 2013. Egalitarianism, cultural distance, and foreign direct investment: A new approach. *Organization Science*, 24(4): 1174–1194.

Sperber, D., and Hirschfeld, L. A. 2004. The cognitive foundations of cultural stability and diversity. *Trends in cognitive sciences*, 8(1): 40–46.

Spolaore, E., and Wacziarg, R. 2018. Ancestry and development: New evidence. *Journal of Applied Econometrics*, 33(5): 748–762.

Stein, J. C. 1997. Internal capital markets and the competition for corporate resources. *The Journal of Finance*, 52(1): 111–133.

Stulz, R. M., and Williamson, R. 2003. Culture, openness, and finance. *Journal of Financial Economics*, 70(3): 313–349.

Appendix: Variable Description

Variables	Definition
Fund Transfer NAICS	Fund Transfer NAICS is defined as the fund transfer from the parent firm to the subsidiary firm j in the internal capital market. It is calculated as NAICS industry adjusted investment ratio as defined in Rajan et al. (2000): $Fund\ transfer_j = \frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}} - \sum W_j(\frac{I_j}{Assets_j} - \frac{I_j^{sd}}{Assets_j^{sd}})$, where I_j refers to the investments made by subsidiary j measured as the change in total assets of subsidiary j, I_{sd} refers to the investments made by subsidiary $j's$ corresponding domestic stand-along peer that is imputed by the same industry (3-digit classification) and year, and $Assets_j$ is the book value of total assets of subsidiary j, N is the total number of foreign subsidiaries within the firm, and W_i is the subsidiary i's share of the total firm's assets.
Fund Transfer NACE	Fund Transfer NACE is defined in the same way as Fund Transfer NAICS, but we use NACE industry to do the adjustment.
Cultural Distance	Cultural distance is measured by Kogut and Singh's (1988) approach: $Cultural\ Distance_{US,j} = \sqrt{\sum_{i=1}^{6}(I_{i,US} - I_{i,j})^2/V_i}$, where $Cultural\ Distance_{US,j}$ 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 et al.'s (2010) cultural framework that 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 subsidiary's sale in previous period
Sub. Return on assets	Subsidiary operating income dividend by book value of 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.
Foreign. Operational risk	The standard deviation of Sub. Return on assets.
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 by 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 by PRS Group.
Area	The natural logarithm of geographic area. Data source: CEPII.
GDP per capita	The natural logarithm of GDP divided by population. Data source: IMF.
GDP growth	Annual percentage change in GDP. Data source: IMF.

Table 1: Raw sample distribution

This table reports the sample distribution in each year. The upper panel provides the raw sample distribution for the number of subsidiaries and parents U.S. multinationals by year and for the entire sample. The lower panel reports a sample distribution of top ten countries that host the foreign subsidiaries of U.S. multinationals. We require the subsidiaries to have non-missing total asset. Our sample period covers 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						
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 presents the country-level summary statistic for our key variable: fund transfer in the internal capital market of U.S. multinationals. "N" stands for the number of observations, "Mean" reports the mean value, "Stdev" is the standard deviation, and the last five columns report corresponding percentiles. The sample period covers from 2007 to 2011.

Economy	N	Mean	Stdev	P10	P25	P50	P75	P90
United Kingdom	7,576	-6.520	16.167	-17.053	-13.251	-4.479	0.000	1.813
Japan	3,110	-10.673	18.795	-25.607	-14.766	-12.427	-1.713	3.097
Canada	2,556	-6.311	17.146	-18.035	-13.677	-2.197	0.062	3.381
Germany	2,220	-3.481	12.403	-14.143	-6.866	-1.185	0.000	1.091
Netherlands	1,841	-2.859	10.342	-11.436	-5.188	-0.493	0.000	0.972
France	1,759	-3.948	11.962	-14.430	-7.338	-1.182	0.000	1.197
Switzerland	985	-5.693	14.289	-15.650	-12.556	-4.292	0.000	2.664
Mexico	857	-3.151	12.286	-13.977	-6.399	-0.861	0.000	2.446
Brazil	794	-6.500	14.560	-15.418	-13.795	-4.557	0.000	2.456
Italy	776	-5.023	13.785	-14.671	-8.718	-1.335	0.000	1.812
Spain	737	-3.778	11.819	-14.143	-6.428	-1.130	0.000	0.676
Ireland	713	-2.697	12.866	-14.143	-6.308	-1.014	0.000	2.386
India	676	-9.127	17.241	-25.115	-14.562	-6.799	0.000	3.553
Belgium	644	-3.641	11.686	-14.143	-5.888	-0.817	0.000	0.414
Australia	611	-9.894	16.413	-18.973	-14.671	-13.161	-2.218	1.984
South Korea	584	-8.714	16.381	-24.430	-14.671	-8.753	0.000	3.540
Sweden	546	-4.640	12.051	-14.671	-8.760	-1.602	0.000	1.648
Taiwan	523	-11.264	16.398	-25.086	-14.978	-13.839	-3.985	3.421
Poland	498	-6.373	13.321	-14.747	-12.022	-5.509	-0.030	1.685
China	417	-7.046	13.784	-16.565	-14.143	-6.015	-0.099	1.184
Denmark	383	-3.837	11.298	-14.143	-6.475	-0.864	0.000	0.375
South Africa	355	-6.549	16.046	-16.996	-14.111	-3.953	0.003	3.303
Norway	344	-3.888	12.426	-14.143	-8.038	-2.276	0.000	2.803
Austria	335	-4.729	11.058	-14.671	-8.070	-3.198	0.000	0.477
Thailand	306	-7.654	15.673	-16.651	-14.489	-6.582	0.016	4.124
Finland	301	-5.571	9.914	-14.671	-13.185	-3.780	-0.050	1.036
Turkey	279	-8.571	15.658	-18.645	-14.671	-13.351	1.318	4.049
Singapore	278	-8.245	14.974	-15.758	-14.143	-7.436	-0.034	3.233
Malaysia	274	-6.247	12.961	-15.658	-14.143	-2.916	1.036	3.393
Hong Kong	271	-9.543	15.806	-18.580	-14.671	-12.585	-0.528	2.224
Chile	214	-6.509	12.923	-15.286	-14.143	-4.325	0.788	3.515
Czech Republic	190	-2.167	9.348	-11.730	-5.236	-0.517	0.000	1.843
Argentina	163	-3.662	12.431	-13.795	-5.608	-1.036	0.000	2.210
Portugal	162	-4.683	10.591	-14.385	-8.210	-3.445	-0.057	0.055
Russian Federation	149	-6.749	14.639	-17.700	-14.143	-6.681	0.016	3.233
Indonesia	146	-9.486	15.991	-26.682	-14.671	-13.601	1.062	4.133
Hungary	126	-3.609	9.984	-13.795	-6.283	-0.979	0.000	1.814
Greece	121	-7.925	11.356	-19.556	-14.143	-6.947	-0.096	0.031
Peru	115	-7.768	15.985	-30.374	-14.143	-5.128	0.006	3.374
Philippines	114	-6.563	16.916	-24.662	-14.143	-2.614	2.606	3.782
Egypt	81	-4.985	12.197	-17.241	-13.619	-0.841	2.692	4.506
New Zealand	74	-9.460	10.958	-15.055	-14.671	-14.143	-0.339	2.666
Romania	62	-1.077	13.092	-9.652	-5.241	-0.422	1.685	3.656
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	44	-3.241	7.730	-8.038	-5.149	-0.895	0.000	0.008
Pakistan	35	-2.665	11.468	-15.226	-9.016	1.685	3.591	3.591
Bulgaria	33	-0.047	4.719	-4.879	-3.612	0.376	2.692	3.591
Morocco	31	0.197	4.183	-6.399	-2.301	1.685	3.591	3.591
Uruguay	12	-3.242	3.256	-7.730	-5.789	-2.466	-0.011	0.000
Ghana	7	2.690	0.686	1.685	1.988	2.692	3.396	3.591
Vietnam	6	3.562	6.955	-7.021	2.692	3.591	3.591	14.925
El Salvador	5	-1.670	2.344	-5.499	-2.301	-0.616	0.010	0.056
Dominican Rep	3	-0.014	0.024	-0.042	-0.042	0.000	0.000	0.000
Luxembourg	2	-2.111	0.872	-2.728	-2.728	-2.111	-1.494	-1.494
Saudi Arabia	2	-0.528	3.035	-2.673	-2.673	-0.528	1.618	1.618
Trinidad and Tobago	2	-0.185	0.118	-0.269	-0.269	-0.185	-0.102	-0.102
Zambia	2	-0.561	0.671	-1.036	-1.036	-0.561	-0.086	-0.086

Table 3: Descriptive statistics

The table reports the sample summary statistic, including the number of observations, mean, standard deviation, and the percentile distributions. *Cultural distance* is the cultural distance between foreign subsidiaries and the U.S. parent firm. *Fund Transfer NAICS* and *Fund Transfer NACE* are the fund transfer from the parent firm to the subsidiary firm in the internal capital market. *Sub. Sales growth* is the subsidiaries' sales growth rate. *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 that is range from zero to four developed by Djankov et al. (2007). *Political risk* is the annual average of the index of political risk presented in the International Country Risk Guide. Detailed variable definition is listed in Appendix. The sample period covers from 2007 to 2011.

Variables	N	Mean	Stdev	Q10	Q25	Q50	Q75	Q90
Cultural Distance	33,562	3.519	1.749	1.440	1.535	3.930	4.715	5.760
Fund Transfer NAICS	33,562	-6.106	15.008	-15.838	-13.251	-4.233	0.000	2.636
Fund Transfer NACE	33,562	-5.813	14.583	-15.151	-13.036	-4.046	0.000	2.597
Sub. Sales growth	33,562	-0.112	0.776	-0.541	-0.029	0.001	0.045	0.356
Sub. Return on assets	33,562	0.046	0.104	0.000	0.001	0.005	0.030	0.134
Sub. Size	33,562	5.521	2.499	1.946	3.584	5.722	7.330	8.724
Sub. Utility	33,562	0.016	0.127	0.000	0.000	0.000	0.000	0.000
FNTN	33,562	0.574	0.193	0.282	0.444	0.570	0.728	0.827
Foreign Operational risk	33,562	0.871	0.279	0.702	0.715	0.740	0.998	1.240
Firm size	33,562	22.437	1.430	20.607	21.716	22.774	22.929	24.154
Tobin's Q.	33,562	1.581	0.824	1.006	1.050	1.270	1.808	2.584
Leverage	33,562	4.760	3.899	1.620	1.982	3.373	7.182	7.316
Number of segments	33,562	2.632	2.484	1.000	1.000	2.000	3.000	6.000
Inflation	33,562	2.941	5.338	-1.728	1.412	2.477	3.419	4.861
Creditor rights	33,562	2.415	1.131	1.000	1.560	2.880	3.000	3.720
Political risk	33,562	0.266	0.137	0.110	0.168	0.267	0.373	0.411
Area	33,562	12.831	1.768	10.642	12.405	12.706	13.212	15.957
GDP per capita	33,562	10.360	0.834	9.122	10.462	10.653	10.774	10.903
GDP growth	33,562	2.216	1.251	1.335	1.702	2.079	2.247	3.779

Table 4: **The OLS regressions of internal fund transfer and cultural distance**

This table reports our baseline results. We conduct the OLS regression analyses of how cultural distance affects the internal fund transfer to a subsidiary in the parent's internal capital market after controlling for the subsidiary-, firm- and country-level factors as well as year- and industry-level fixed effects. Column (1) and (2) report the results based on *Fund Transfer NAICS* and *Fund Transfer NACE*, respectively. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. Detailed variable definition is listed in Appendix. The sample period covers between 2007 and 2011. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Fund Transfer NAICS	Fund Transfer NACE
Column	(1)	(2)
Cultural distance	-0.320***	-0.300***
	(-5.413)	(-4.972)
Sub. Sales growth	6.435***	6.179***
	(4.937)	(4.879)
Sub. Return on assets	9.826***	9.100***
	(5.514)	(5.296)
Sub. Size	0.720**	0.676*
	(1.969)	(1.905)
Sub. Utility	0.722	0.187
	(0.645)	(0.185)
FNTN	1.341	1.244
	-0.749	-0.707
Foreign Operational risk	6.832***	6.538***
	(3.302)	(3.220)
Firm Size	-2.008***	-1.907***
	(-3.305)	(-3.226)
Tobin's Q	1.620***	1.568***
	(3.559)	(3.547)
Leverage	-0.478***	-0.456***
	(-4.765)	(-4.861)
Number of segments	0.807**	0.784**
	(2.423)	(2.383)
Inflation	0.046***	0.046***
	(3.612)	(3.944)
Creditor rights	-0.496***	-0.454***
	(-4.659)	(-4.268)
Political risk	0.130	0.191
	(0.109)	(0.178)
Area	-0.248***	-0.225***
	(-4.641)	(-4.481)
GDP per capita	-0.414*	-0.380*
	(-1.818)	(-1.735)
GDP growth	-0.035	-0.039
	(-0.554)	(-0.623)
Constant	37.351***	35.297***
	(4.373)	(4.142)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Adjusted R^2	0.243	0.237
Observations	33,562	33,562

Table 5: Robustness tests using single cultural dimensions and alternative cultural measures

This table reports the robustness test results. In Panel A, we examine whether our findings are driven by any specific dimension in the Hofstede's cultural framework. In Panel B, we use alternative cultural frameworks and metrics to estimate the cultural distance. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. Detailed variable definition is listed in Appendix. The sample period covers between 2007 and 2011. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Hofstede cultural dimensions						
Dimension	PDI	IDV	MAS	UAI	LTO	IVR
Cultural distance	-0.443***	-0.615***	-0.159***	-0.701***	-0.506***	-0.412***
	(-3.105)	(-5.055)	(-3.171)	(-6.422)	(-6.190)	(-4.770)
Constant	36.181***	38.355***	32.776***	31.869***	32.366***	34.472***
	(4.096)	(4.350)	(3.478)	(3.614)	(3.539)	(3.721)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.243	0.243	0.243	0.244	0.243	0.243
Observations	33,562	33,562	33,268	33,268	33,562	33,562
Panel B: Alternative cultural measurements						
Dimension	GLOBE_V	GLOBE_P	Schwartz	Tightness	TK (2008)	Cosine Similarity
Cultural distance	-0.416***	-0.393***	0.068	-0.933***	-0.495***	-13.516***
	(-5.388)	(-3.760)	(0.843)	(-4.263)	(-4.369)	(-4.604)
Constant	36.456***	34.142***	31.766***	38.051***	37.308***	37.216***
	(4.124)	(3.604)	(3.319)	(4.385)	(4.383)	(4.395)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.248	0.247	0.243	0.248	0.246	0.243
Observations	31,847	31,847	33,497	25,454	32,020	33,562

Table 6: **Evidence from various econometric techniques**

This table shows the results based on different fixed-effects model, Heckman two-stage selection regression, and Tobit regression analysis. Column (1) and (2) report the results using parent-firm-fixed effects and region-fixed effects, respectively. Region-fixed effects consider continents and landlocks. Column (3) and (4) report results using Heckman selection model, and column (5) and (6) show the results using Tobit regression model. The dependent variables in columns (1) and (2) are the amount internal fund transfers. The dependent variable in column (3) is the dummy variable that equals one if there are internal capital market fund transfers and otherwise zero. The dependent variable in column (4) is the amount of internal capital market fund transfers. The dependent variable in column (5) is the positive amount of internal capital market fund transfer. The dependent variable in column (6) is the negative amount of internal capital market fund transfer. We control for various subsidiary-, firm- and country-level factors. Detailed variable definition is listed in Appendix. The standard errors are robust standard errors clustered by firm. t-statistics are reported in the parentheses using two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Model	Fixed effects		Heckman selection		Tobit regression	
	Parent Firm	Region	1st stage	2nd stage	Positive FT	Negative FT
Regression	(1)	(2)	(3)	(4)	(5)	(6)
Cultural Distance	-0.110***	-0.332***	0.052***	-0.377***	-0.264**	-0.389***
	(-2.797)	(-5.338)	(4.986)	(-6.431)	(-2.498)	(-7.277)
Sub. Sales growth	6.785***	6.435***	-0.493***	6.811***	3.070***	6.850***
	(6.191)	(4.931)	(-14.783)	(58.716)	(16.234)	(71.980)
Sub. Return on assets	-4.123	9.825***	1.357***	8.690***	20.974***	13.806***
	(-1.586)	(5.516)	(9.452)	(9.142)	(15.481)	(14.559)
Sub. Size	1.496***	0.721**	0.108***	0.750***	2.666***	-0.059
	(4.593)	(1.973)	(15.218)	(16.624)	(33.865)	(-1.505)
Sub. Utility	1.506*	0.696	0.027	0.779	4.894*	0.401
	(1.819)	(0.621)	(0.083)	(0.569)	(1.942)	(0.317)
FNTN	-4.229*	1.338	1.938***	-0.228	2.745***	-5.874***
	(-1.960)	(0.748)	(27.286)	(-0.360)	(3.110)	(-11.807)
Foreign Operational Risk		6.835***	-0.162***	8.446***	5.942***	8.304***
		(3.304)	(-3.905)	(23.658)	(10.408)	(25.977)
Firm Size	-4.438***	-2.006***	0.367***	-2.794***	-3.024***	-3.448***
	(-3.837)	(-3.299)	(34.749)	(-25.107)	(-22.493)	(-47.207)
Tobin's Q	0.002	1.623***	-0.023*	1.689***	2.305***	2.696***
	(0.007)	(3.569)	(-1.666)	(14.686)	(13.039)	(23.442)
Leverage	-0.258*	-0.478***	0.055***	-0.543***	-0.348***	-0.571***
	(-1.663)	(-4.760)	(13.861)	(-21.032)	(-7.681)	(-25.820)
Number of segments	-0.257	0.805**	-0.054***	0.941***	0.555***	0.993***
	(-0.968)	(2.417)	(-8.234)	(23.249)	(7.856)	(28.387)
Inflation	0.035***	0.045***	-0.005	0.049***	0.029	0.061***
	(3.324)	(3.542)	(-1.479)	(2.850)	(0.982)	(3.767)
Creditor rights	-0.083	-0.528***	0.082***	-0.583***	-0.421***	-0.712***
	(-0.836)	(-5.240)	(6.228)	(-7.006)	(-2.892)	(-9.415)
Political risk	0.252	-0.020	0.189	0.157	-1.533	-0.967
	(0.381)	(-0.016)	(1.436)	(0.192)	(-1.059)	(-1.275)
Area	-0.067*	-0.279***	0.015	-0.254***	-0.082	-0.317***
	(-1.786)	(-4.831)	(1.419)	(-4.403)	(-0.795)	(-5.946)
GDP per capita	-0.039	-0.441*	-0.019	-0.352**	-0.548**	-0.679***
	(-0.499)	(-1.837)	(-0.663)	(-2.377)	(-2.078)	(-4.925)
GDP growth	0.074	-0.056	0.063***	-0.030	-0.001	-0.018
	(1.555)	(-0.812)	(4.307)	(-0.412)	(-0.006)	(-0.274)
Constant	92.301***	38.222***	-8.577***	54.972***	33.681***	81.803***
	(3.881)	(4.640)	(-14.703)	(14.596)	(6.189)	(28.553)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Inverse Mills ratio (λ)				-7.625		
[P-value]				(-7.659)		
Overall/Adjusted/Pseudo R^2	0.086	0.243	0.291		0.045	0.065
Uncensored observations				31,282	7,272	24,010
Total observations	33,562	33,562	33,562	33,562	33,562	33,562

Table 7: **The impact of the global financial crisis**

This table reports the analysis of how the global financial crisis could affect the relation between cultural distance and internal fund transfer. Post dummy is defined as 1 if the observation falls in the year 2009, 2010, and 2011, and 0 otherwise. The dependent variable is the fund transfer in the internal capital market. We control for various subsidiary-, firm- and country-level factors, but to save space, we do not report the corresponding coefficients. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The sample covers the 2007-2011 period.

Dependent variable	Fund Transfer NAICS	Fund Transfer NACE
Cultural distance	-0.121	-0.048
	(-1.009)	(-0.358)
Post	-1.896*	-1.723*
	(-1.901)	(-1.889)
Post*Cultural distance	-0.274**	-0.347**
	(-2.111)	(-2.484)
Constant	36.343***	34.024***
	(4.351)	(4.119)
Control variables	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Adjusted R^2	0.244	0.237
Observations	33,562	33,562

Table 8: The impact of informal institutional environment on cultural distance and internal fund transfer

This table reports the analysis of how different informal institutional environments could affect the relation between cultural distance and internal fund transfer. We focus on three informal institutional environments, which are: 1) whether the country is English speaking country or not, 2) how large difference are the linguistic between subsidiary country and parent country, and 3) how far is the geographical distance between subsidiary country and parent country. The linguistic difference is calculated by Spolaore and Wacziarg (2018). Data for common language and geographical distance are obtained from CEPII. The dependent variable is the fund transfer in the internal capital market. We control for various subsidiary-, firm- and country-level factors, but to save space, we do not report the corresponding coefficients. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The sample period covers between 2007 and 2011.

Model	Common language		Linguistic difference		Geographical distance	
	Fund Transfer NAICS	Fund Transfer NACE	Fund Transfer NAICS	Fund Transfer NACE	Fund Transfer NAICS	Fund Transfer NACE
Cultural distance	-0.633***	-0.591***	3.126***	3.022***	4.434***	4.280***
	(-5.203)	(-4.724)	(3.790)	(3.843)	(3.384)	(3.159)
English dummy	-1.498**	-1.460*				
	(-1.969)	(-1.887)				
Cultural distance* English dummy	-0.023	-0.007				
	(-0.097)	(-0.030)				
Linguistic distance			5.226***	4.797***		
			(2.737)	(2.786)		
Cultural distance* Linguistic distance			-3.504***	-3.349***		
			(-3.877)	(-3.944)		
Log kilometers					0.108	0.073
					(0.276)	(0.210)
Cultural distance* Log kilometers					-0.505***	-0.485***
					(-3.495)	(-3.262)
Constant	45.016***	42.905***	31.570***	30.394***	38.536***	37.106***
	(4.787)	(4.538)	(3.059)	(2.999)	(4.202)	(4.015)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.245	0.239	0.244	0.238	0.245	0.239
Observations	31,202	31,202	30,912	30,912	31,202	31,202

Table 9: The impact of institutional environment on cultural distance and internal fund transfer

This table reports the analysis of how different country institutional environments could affect the relation between cultural distance and internal fund transfer. We focus on three formal institutional environments, which are: 1) whether the country is common law country or not, 2) how well are the creditors protected, and 3) how open is the country's capital market. The definition of common law country is the same as in La Porta et al. (2000). The creditor protection is measured by the creditor rights as in Djankov et al.(2007). Capital market openness is measured by the capital control proposed by Fernández et al. (2016). The dependent variable is the fund transfer in the internal capital market. We control for various subsidiary-, firm- and country-level factors, but to save space, we do not report the corresponding coefficients. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The sample period covers between 2007 and 2011.

Dependent variable	Shareholder protection		Creditor protection		Country openness	
	Fund Transfer NAICS	Fund Transfer NACE	Fund Transfer NAICS	Fund Transfer NACE	Fund Transfer NAICS	Fund Transfer NACE
Cultural distance	-0.661***	-0.591***	-0.384*	-0.337**	-0.346***	-0.313***
	(-5.498)	(-4.980)	(-1.928)	(-2.024)	(-6.160)	(-5.286)
Common law dummy	-2.157***	-2.051***				
	(-3.293)	(-3.334)				
Cultural distance* Common law dummy	0.322**	0.349**				
	(2.181)	(2.505)				
Private credit			1.009***	0.935***		
			(3.332)	(3.441)		
Cultural distance* Private credit			0.133**	0.122**		
			(2.021)	(2.090)		
Capital control					-3.650***	-3.551***
					(-3.632)	(-3.744)
Cultural distance* Capital control					0.942***	0.908***
					(4.224)	(4.047)
Constant	41.464***	39.930***	38.424***	37.883***	39.510***	39.199***
	(4.836)	(4.620)	(4.301)	(4.134)	(4.300)	(4.026)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.245	0.239	0.245	0.239	0.244	0.238
Observations	31,202	31,202	31,202	31,202	30,633	30,633

Table 10: The impact of investment opportunity

This table reports the analysis of how subsidiaries' investment opportunity could affect the relation between cultural distance and internal fund transfer. Panel A and B show the results using *Fund Transfer NAICS* and *Fund Transfer NACE*, respectively. All subsidiaries are divided into four sub-groups 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 ($\lambda q > \overline{\lambda q}$). λq is defined as the asset-weighted investment opportunities. We control for various subsidiary-, firm- and country-level factors, but to save space, we do not report the corresponding coefficients. The standard errors are robust standard errors clustered by firm. *t*-statistics are reported in the parentheses using two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The sample period covers between 2007 and 2011.

	$q > \bar{q}$ & $\lambda q > \overline{\lambda q}$	$q > \bar{q}$ & $\lambda q < \overline{\lambda q}$	$q < \bar{q}$ & $\lambda q > \overline{\lambda q}$	$q < \bar{q}$ & $\lambda q < \overline{\lambda q}$
	(1)	(2)	(3)	(4)
Panel A: Fund Transfer NAICS				
Cultural distance	-0.266**	0.168**	-0.447***	-0.311***
	(-2.324)	(2.362)	(-3.540)	(-3.661)
Constant	36.520**	43.604***	7.961	41.659***
	(2.412)	(3.148)	(0.784)	(4.476)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.101	0.27	0.089	0.303
Observations	3,760	8,055	4,389	13,698
Panel B: Fund Transfer NACE				
Cultural distance	-0.063	0.284**	-0.528***	-0.256***
	(-0.540)	(2.046)	(-4.497)	(-2.644)
Constant	38.456***	38.738***	23.426**	36.628***
	(3.030)	(3.034)	(2.155)	(3.668)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Adjusted R^2	0.089	0.267	0.092	0.297
Observations	3,699	7,907	4,435	13,837