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Regulatory institutional distance and MNCs' subsidiary performance: climbing up vs. climbing down the institutional ladder

Abstract

We investigate the possibility of regulatory institutional distance exerting an asymmetric effect on multinational corporations' (MNCs') subsidiary performance depending on the direction of institutional distance. We use the term 'institutional ladder' to differentiate between upward distance, referred to as when the subsidiary is operating in a relatively stronger institutional environment than its parent-firm's home country, and downward distance for vice versa. Combining institutional theory with organisational imprinting and learning perspectives, we argue that the implications of regulatory institutional distance on subsidiary performance are relatively more positive (or less negative) when MNCs are climbing down the institutional ladder as compared to when MNCs are climbing up the institutional ladder. We also argue that subsidiary ownership strategy – i.e. the choice of a wholly owned subsidiary (WOS) versus joint venture (JV) – moderates the above-mentioned implications of institutional distance on subsidiary performance. We test these hypotheses based on a panel data-set of 1936 foreign subsidiaries representing 70 host countries and 66 home countries and spanning the 12-year period: 2002 – 2013.

Keywords: Institutional Distance, Subsidiary Performance, Institutional Theory, Organisational Imprinting

1. Introduction

Institutional distance, defined as cross-country differences in the ‘regulatory, normative and cognitive’ aspects of Multinational Corporations’ (MNCs’) home and host countries (Scott, 1995) is regarded as an important factor determining various decisions of MNCs such as their entry mode, ownership and staffing in host countries, and in subsequently having an effect on the performance of foreign subsidiaries (Ambos and Håkanson, 2014; Brouthers, 2002; Chao and Kumar, 2010; Dikova, 2009; Gaur et al., 2007; Gaur and Lu, 2007; Zaheer and Mosakowski, 1997). On the one hand, literature on the ‘liabilities of foreignness’ predominantly suggests that at higher levels of institutional distance, MNCs’ subsidiaries experience greater uncertainty about the host environment and have to bear greater costs of learning and adapting to the host-country’s ‘rules of the game’, leading to declining competitive advantages at the subsidiary level (Shirodkar and Konara, 2016). On the other hand, it is argued that as institutional distance increases, MNCs can benefit from greater opportunities for arbitrage (e.g. first-mover advantages, research and development advantages), improving the competitive advantages available to foreign subsidiaries (Dikova, 2009). In the light of this paradox about the implications of institutional distance, some studies have also found evidence of an inverted-U shaped relationship between institutional distance and subsidiary performance (e.g. Gaur and Lu, 2007).

We suggest that a crucial gap in research on the implications of institutional distance has been the arguably ‘symmetric’ treatment of institutional distance, i.e. most prior studies on the relationship between institutional distance and subsidiary performance have focused only on the magnitude of institutional distance and have ignored the issue of ‘direction’ of institutional distance. The issue of direction has only been recognised in a few recent studies (Chikhouni et al., 2017; Contractor et al., 2016; Hernández and Nieto, 2015; Trąpczyński and Banalieva, 2016). Contractor *et al* (2016), for instance, examine the moderating effect of the

direction of various distance-dimensions on the link between MNCs' intangible assets and subsidiary profitability. Therefore, in this paper we aim to resolve the aforementioned paradox on the institutional distance – subsidiary performance relationship by accounting for the directionality of institutional distance. To simplify things, we use the term institutional ladder i.e. when MNCs establish subsidiaries in host countries that are institutionally weaker than their home country, then, we suggest that they are moving in a *downward* direction on the institutional ladder (i.e. from a stronger to a weaker institutional environment). In contrast, when MNCs establish subsidiaries in host countries that are institutionally stronger than their home country, then, we suggest that they are moving in an *upward* direction on the institutional ladder (i.e. from a weaker to a stronger institutional environment)¹. We propose that the level of benefits of institutional arbitrage vs. the costs of adaptation - as suggested earlier, will depend not only on the magnitude of distance but also on the direction – i.e. whether MNCs are climbing up or down the institutional ladder. Further, we also argue that subsidiary ownership strategies – i.e. the choice of a wholly owned subsidiary (WOS) versus joint venture (JV) moderates this relationship.

Although institutions comprise of regulatory, cognitive and normative pillars (Scott, 1995), we focus only on 'regulatory' (i.e. formal) institutional distance. This is because, first, regulative factors are coercive and therefore cannot be taken for granted by MNCs. At the same time, change in regulative institutions has been argued to be more frequent and rather rapid as compared to change in normative and cognitive factors (e.g. changes in culture) (Estrin et al., 2009). Therefore, a large number of studies have highlighted the relatively

¹ Hernandez and Nieto (2015) and Trąpczyński & Banalieva (2016) have used a similar notion of the two directions of distance, however, they use the terms positive and negative distance. This terminology can be confusing as it may imply that former direction is better than the latter, thus we prefer *upward* and *downward* terms instead.

greater importance of regulatory differences to MNCs in comparison to normative and cognitive factors (Chao and Kumar, 2010; Eden and Miller, 2004; Jackson and Deeg, 2008; Roth and Kostova, 2003; Yiu and Makino, 2002). Second, scholars have argued that focussing on all three pillars of institutional distance rather provides a broad basis for analysis, thus leading to oversimplification (Zaheer et al., 2012). In the light of the above, our key research questions are– (1) *To what extent does the direction of regulatory institutional distance affect MNCs’ subsidiary performance?* and (2) *To what extent does subsidiary ownership strategy moderate the relationship between institutional distance and subsidiary performance?*

We aim to contribute to existing literature in the following ways. First, by accounting for the direction (in addition to the magnitude) of the effect of regulatory institutional distance on subsidiary performance, we contribute to the on-going debate on this relationship to resolve this paradox. We suggest that the arbitrage opportunities and adaptation costs to MNCs dealing with institutional distance vary according to the direction, and can thus have varying implications on subsidiaries’ performance. To explain this, we use new theoretical insights – such as the organisational imprinting argument in combination with institutional and learning theories. The organisational imprinting argument (Stinchcombe, 1965) posits that conditions in the external environment surrounding firms ‘get stamped’ onto organisational behaviour, and that these characteristics persist even in the face of subsequent environmental changes. In our context, we suggest that common regulatory conditions faced by MNCs in their ‘home’ environments – e.g. levels of corruption, rule of law, enforcement of local regulations, government effectiveness, may create similar perceptions of opportunity or risk among firms founded in these environments. This subsequently has a lasting effect on the capabilities developed by MNCs to deal with their home institutions, and are likely to be transferred to subsidiary levels in host countries (Holburn and Zelner, 2010). We suggest that

in institutionally distant environments, the imprinting effects of home regulatory institutions can have two different implications on subsidiary performance: (1) Subsidiaries can **benefit** from arbitraging the imprinting effects of ‘home-institutions’ in addition to the opportunities provided by ‘host institutions’ (Gaur and Lu, 2007) (hereafter *institutional arbitrage*); and (2) Subsidiaries have to bear the **costs** incurred in not only ‘learning’ about host-institutions (Barkema and Vermeulen, 1998) but also in ‘unlearning’ the imprinting effects of home-institutions (Markoczy, 1994; Tsang and Zahra, 2008) (hereafter *institutional adaptation*). Recent studies in this context have argued that unlearning could be fundamentally different from learning (Tsang, 2008) and that unlearning involves separate processes of ‘disorganising knowledge by breaking routines, changing structures and managing cultures in ways that dismantle deeply embedded knowledge’ (de Holan et al., 2004). In the later sections we argue that the level of benefits of institutional arbitrage vs. the costs of adaptation will depend on the direction as well as the magnitude of institutional distance, potentially resulting in varying effects on subsidiary performance.

Second, by including a large number of home and host countries in our empirical analysis, we also contribute to the findings of recent studies on this issue that are limited to MNCs originating from a single home-country (i.e. Poland) (Trąpczyński and Banalieva, 2016). Recent research highlights that by focusing on a single home-country, the validity of the institutional distance construct can be undermined due to a greater conflation between ‘institutional distance’ and ‘institutional profile effects’ (Van Hoorn and Maseland, 2016), where ‘institutional profile’ relates to the institutional environment of a particular home or host country where firms are deeply embedded and face distinct opportunities and challenges (Meyer et al., 2009). We test our hypotheses by analysing the performance of 1936 MNC-subsidiaries over the 12-year period: 2002 – 2013, representing 70 host countries and 66

home countries, and this allows us to rigorously contribute to this discussion using firm-level data from a wide variety of home and host countries.

Finally, we also examine the complex effects of the choice of *ownership strategies* (i.e. partial vs. full-ownership of the subsidiary) in benefiting from arbitrage opportunities and in mitigating the costs of adapting to institutional differences while climbing up and down the ladder. The choice of ownership strategies has been considered as one of the key determinants of foreign subsidiary performance (Zhao et al., 2017). Prior studies have also examined the moderating effect of ownership strategy on the institutional distance – subsidiary performance relationship. In this context, generally, full subsidiary ownership has been argued to enhance existing positive effects of institutional distance (Dikova, 2009), and to mitigate the potentially negative implications of institutional distance on subsidiary performance (Gaur and Lu, 2007). On the other hand, within emerging markets specifically, partial subsidiary ownership has been found to reduce the negative effects of institutional distance on subsidiary performance (Shirodkar and Konara, 2016). In this context we contribute to these ongoing discussions by examining the moderating effect of ownership strategy on *the climbing up vs down the institutional ladder – subsidiary performance relationship*.

The rest of our paper is organised as follows. First we formulate our hypotheses on the relationship between the magnitude and direction of institutional distance and performance of MNCs' subsidiaries. We then describe our data and present our findings. Finally, we discuss our results, and conclude our paper by highlighting our contributions, limitations and suggesting worthwhile avenues for future research.

2. Theoretical Background and Hypotheses

2.1 Institutional arbitrage and adaptation: Towards a directional effect

Scholars have argued that institutional differences between MNCs' home and host countries provide arbitrage opportunities for MNCs (Gaur and Lu, 2007; Jackson and Deeg, 2008; Mallon and Fainshmidt, 2017). Such opportunities may arise in two ways (1) From the 'imprinting' effect of the MNC's 'home' regulatory environment where the MNC may be deeply embedded, and (2) Due to supportive 'host' country regulatory environments where MNCs may seek to 'escape' from certain constraints posed by its home institutions. In the former (i.e. imprinting) case, firm-level capabilities and knowledge imprinted within firms from stronger 'home institutions' can be advantageous to their foreign subsidiaries (Cuervo-Cazurra and Genc, 2008). For instance, developed countries with stronger home-institutions encourage their firms to develop more sophisticated capabilities, such as by encouraging their firms to innovate. When these institutionally imprinted capabilities are transferred to subsidiary levels, these form an important basis of their subsidiaries' competitiveness, particularly for subsidiaries in institutionally weaker countries, where local firms may lack innovative products and superior management techniques (Luo and Peng, 1999; Mallon and Fainshmidt, 2017). Likewise, in the latter (i.e. escape) case, stronger host institutions relative to the MNC's home country also provide escape-based arbitrage advantages. For instance, MNCs from weaker institutional settings often set up research and development (R&D) centres in developed countries (such as the United States) due to better institutional support for protecting innovative technologies (Gaur and Lu, 2007). Thus, in either direction, MNCs can benefit from arbitrage opportunities as institutional distance increases.

Despite the potential benefits from arbitrage, as institutional differences increase, this would also result in increasing *adaptation* costs for MNCs' subsidiaries (Kostova and Roth, 2002; Kostova et al., 2008). These costs could, again, be two-fold: (1) from an imprinting

perspective, greater regulatory institutional distance increases pressures on ‘unlearning’ (de Holan et al., 2004; Markoczy, 1994; Tsang and Zahra, 2008) deeply embedded political and social knowledge that could be part of the MNC’s competitive advantage in its home country; and (2) from a ‘learning’ perspective, greater distance increases the pressure on acquiring knowledge of the new local rules of the game of the host country.

Thus, institutional distance can be argued to have two different implications on subsidiary performance. First, as institutional distance increases, MNCs can ‘arbitrage’ from the knowledge embedded due to home-imprinting effects, and the favourable regulations available in the host country. Second, with greater distance, MNCs’ subsidiaries need to bear the costs of ‘adapting’ by not only learning about the host environment but also by unlearning certain aspects of the knowledge imprinted within the MNC from its home environment. In the following sections we argue that these implications of institutional distance, i.e. level of potential benefits of arbitrage and the costs of adapting, may vary depending on the direction of institutional distance. This direction-based approach of dealing with institutional distance enables us to clearly identify the channels in which dissimilarity can affect subsidiary performance while recognising that the home-institutions are embedded in the firm (or the MNC) and host-institutions are largely embedded in the operating environment of the subsidiary.

2.1.1 Extent of arbitrage advantages: Climbing up vs climbing down the institutional ladder

Greater institutional distance when ‘climbing down’ the institutional ladder enables MNCs to gain from several arbitrage advantages. The first advantage, as suggested previously, is associated with imprinting. Well-developed home-institutions place an emphasis on its firms to develop stronger R&D capabilities to produce innovative products, achieve better production efficiencies, and to adopt more effective marketing and

management processes that enhance firms' competitive advantages (Kriauciunas and Kale, 2006). Also, stronger home-institutions encourage its firms to develop more sophisticated non-market capabilities – i.e. capabilities to interact and negotiate policy terms with governments; whereas the lack of such mechanisms in weakly institutionalised countries leads its firms to use bribery and connections that may incur reputational risks to firms (Campos and Giovannoni, 2007). In line with imprinting theory, when operating in a focal host country, subsidiaries of MNCs from stronger home-institutions are imprinted with such better market-based and non-market capabilities, and the transfer of these capabilities to the host-subsiary provides subsidiaries with advantages when competing with subsidiaries of MNCs originating from weaker home-institutional countries. Therefore, with greater institutional distance in the downward direction, subsidiaries can benefit from a greater positive home-imprinting effect.

In the opposite direction of MNCs 'climbing up' the institutional ladder, as distance increases, we argue that the opportunities in arbitraging the imprinting effects of their 'home environments' are fewer. This is because, weak home institutions are inefficient in providing the necessary resources and infrastructure to support firms to develop high-tech innovative products (Cuervo-Cazurra and Genc, 2011). Also, weak home-institutions provide weak bases for its firms to nurture external financial, organizational and technological resources needed to compete internationally (Gillespie and Teegen, 1996). As such, with greater distance when going up the institutional ladder, the imprinting effects of home-institutions reduce the competitive advantages that are transmitted to subsidiary levels from their MNCs' home-countries. Therefore, in terms of exploiting arbitrage advantages associated with the imprinting effect, with greater distance in the upward direction, subsidiaries of MNCs experience a greater degree of competitive disadvantage in comparison to subsidiaries of MNCs going in the downward direction.

The second set of arbitrage advantages are associated with ‘escape’, however, we suggest that the institutional distance is less likely to have an effect on performance at the subsidiary level. E.g. in the case of ‘climbing down’, MNCs in pollution-intensive industries often co-locate their production activities in emerging economies with weaker environmental protection regulations in order to reduce pollution abatement costs (Eskeland and Harrison, 2003). Likewise, in the case of ‘climbing up’ the ladder MNCs from emerging markets often invest in developed countries to be able to ‘catchup’ on latest technologies that are needed to compete in a global environment (Athreya and Cantwell, 2007; Luo and Tung, 2007). However, such escape-related opportunities are equally available to all subsidiaries (of all MNCs) in the host country (regardless of distance). Also, the performance advantages of escape are more likely to be realised at an MNC or other subsidiary levels (e.g. via knowledge transfer) rather than at the focal-subsubsidiary level. Thus, in sum, we suggest that the extent of arbitrage opportunities (related to imprinting) available for MNCs that could affect subsidiary performance is considerably higher when MNCs are climbing down the institutional ladder compared to when MNCs are climbing up the institutional ladder.

2.1.2 Extent of adaptation costs: Climbing up vs climbing down the institutional ladder

Greater institutional distance when ‘climbing down’ the institutional ladder increases adaptation (i.e. learning + unlearning) costs. ‘Learning’ costs involve acquiring local knowledge to deal with information asymmetries and institutional voids, e.g. gaining reliable market-research information (Chacar and Vissa, 2005) and managing perceptions of stakeholders who may perceive MNCs from stronger home-institutional countries as exploitative towards the host countries’ local resources (Child and Tsai, 2005). However, we suggest that, even though ‘learning’ costs increase in the downward direction, the costs associated with ‘unlearning’ reduce. This is because, in this direction MNCs bring in

advanced technologies and superior management techniques to host countries, and external stakeholders in developing host countries are less likely to expect MNCs to ‘unlearn’ these capabilities (Cuervo-Cazurra and Genc, 2011). On the contrary, to compete with MNCs from stronger institutions, greater unlearning is expected on part of subsidiaries of MNCs from lesser distant (i.e. relatively weaker) home-institutions, who are expected to upgrade their market-based and nonmarket capabilities. For example, in China, since the 1990s, an increasing number of local and foreign firms have been moving away from relational mechanisms of doing business towards arms-length transactional mechanisms (Luo, 1997; Peng and Luo, 2000). Therefore, when climbing down the institutional ladder, whereas subsidiaries from lesser distant (i.e. weaker) home-institutional settings must bear a greater level of adaptation costs of both learning and unlearning, subsidiaries of firms from more distant (i.e. stronger) home-institutions must only learn to adapt (with little unlearning).

In the reverse direction, i.e. when ‘climbing up’ the institutional ladder, we suggest that the extent of adaptation costs is higher. MNCs from weakly institutionalised (or emerging) countries are embedded in regulatory frameworks that are characterised by information asymmetry, higher levels of corruption, political instability and ineffective enforcement of local regulations. Consequently, MNCs based in these contexts develop specific nonmarket capabilities (such as through political or family connections) to operate in the absence of legitimate mechanisms of business-government interface (Cuervo-Cazurra and Genc, 2011). On the contrary, host countries with stronger institutions offer formal and more legitimate mechanisms to gain non-market support. When climbing up the institutional ladder, with greater distance, the imprinting effect of organisational practices (Kriauciunas and Kale, 2006) increases the pressure on MNCs’ subsidiaries to ‘unlearn’ their home-based practices (e.g. the practice of relying on connections), in addition to bearing the costs of ‘learning’ the local (and arguably more legitimate) rules of the game. Therefore, we expect that MNCs

climbing up the institutional ladder must bear a greater level of adaptation costs in terms of both learning and unlearning in relation to MNCs climbing down the institutional ladder.

2.1.3 The asymmetric effect of institutional distance: climbing down vs. climbing up the institutional ladder

As suggested above, the implications of institutional distance, i.e. level of potential benefits of arbitrage and the costs of adapting, vary depending on the direction of institutional distance. In comparison to MNCs climbing up the institutional ladder, MNEs climbing down the institutional ladder can benefit from a much greater level of positive imprinting-based arbitrage advantages. Therefore, in terms of (1) ‘arbitrage opportunities’, performance implications of institutional distance are relatively more positive in the downward direction than in the upward direction. At the same time, in relation to MNCs climbing down the institutional ladder, MNCs climbing up the institutional ladder must bear a greater level of adaptation costs in terms of both learning and unlearning. Therefore, in terms of (2) ‘adaptation costs’, performance implications of institutional distance are also relatively more positive in the downward direction than in the upward direction. Thus, the effect of arbitrage advantages and adaptation costs that is likely to impact subsidiary performance is relatively more positive for MNEs climbing down the institutional ladder as compared to that for MNEs climbing up the institutional ladder. Therefore, we formulate the following hypothesis:

Hypothesis 1: *Ceteris paribus*, the performance implications of regulatory institutional distance on subsidiary performance are relatively more positive (or less negative) when MNCs are climbing down the institutional ladder as compared to when MNCs are climbing up the institutional ladder.

2.2 Moderating effect of subsidiary ownership strategy

Notwithstanding the effects of institutional distance, subsidiary ownership strategy has been argued as an important mechanism by which MNCs can gain further from arbitrage benefits and mitigate the adaptation costs posed by institutional differences (Meyer et al., 2009; Wright et al., 2005). Therefore, we next examine whether the ownership strategy (full ownership vs. partial ownership) can moderate the effect of the upward and downward institutional distance on subsidiary performance.

As argued previously, the extent of arbitrage advantages available for MNCs is relatively higher for MNCs climbing down the institutional ladder compared to those for MNCs climbing up the institutional ladder. We argue that with greater (or full) ownership of the subsidiary by the foreign parent, the positive effect of home-institutional imprinting is further enhanced. Full-ownership of the subsidiary allows greater control of the subsidiary and facilitates easier transfer of MNC-level capabilities to the subsidiary level, thus enhancing the imprinting effect, and allowing the subsidiary to gain from the positive imprinting-based arbitrage advantages to a greater extent. On the contrary, the scope of arbitraging from the home-institutional imprinting effect is generally reduced when the subsidiary has to operate in collaboration with a partner. Although it has been argued that a joint venture mode reduces an MNC's liabilities of foreignness and learning costs, collaboration with a partner can also lead to conflicts in decision making, and the focal MNC may also fear the risk of misappropriation by the partner when transferring its valuable resources and capabilities at the subsidiary level (Contractor et al., 2016; Gaur and Lu, 2007). Therefore, in terms of capitalising arbitrage opportunities, the benefits of full ownership are much greater for MNCs climbing down the institutional ladder as compared to MNCs climbing up the institutional ladder, as the extent of arbitrage advantages available for MNCs is considerably higher in the downward direction than in the upward direction.

In terms of adaptation costs, we argued that MNCs climbing up the institutional ladder must bear a greater level of adaptation costs in terms of both learning and unlearning as compared to MNCs climbing down the institutional ladder. A joint venture partner can help to reduce the MNC's liabilities of foreignness and learning/unlearning costs. Such learning-based advantages of operating in collaboration are more important in the upward direction due to the greater level of adaptation costs. In addition to this, greater (or full) ownership of the subsidiary enhances the negative imprinting effect of MNCs climbing up the institutional ladder— leading to further deficiencies in subsidiary-level resources. In order to complement for these deficiencies and to reduce both learning and unlearning costs, MNCs climbing up the ladder may benefit more from local partners having technological and reputational resources and capabilities (Hitt et al., 2000). Therefore, by operating collaboratively, rather than by taking full ownership of the subsidiary, with greater distance climbing up the institutional ladder, subsidiaries of MNCs can mitigate the negative imprinting effect of weak home-institutions, and reduce their learning and unlearning costs in adapting to the stronger institutional environment. Therefore, in terms of adaptation costs, the benefits of joint ventures are much greater for MNCs climbing up the institutional ladder as compared to MNCs climbing down the institutional ladder, as the level of adaptation costs is higher for the former direction than the latter direction.

Based on the above, we suggest that subsidiary ownership strategy will have a varying effect on the competitive advantages of the subsidiary depending on the direction of distance. In this context, we expect that full ownership will be more beneficial for capitalising the arbitrage opportunities, and will therefore be relatively more beneficial in the downward direction where such opportunities are greater; and the joint ownership strategy will be more beneficial for mitigating learning and unlearning costs, and therefore will be relatively more

beneficial in the upward direction where such costs are greater. We therefore formulate the following hypothesis:

Hypothesis 2: *Ceteris paribus*, full subsidiary-ownership (as opposed to partial ownership) is likely to be more beneficial for subsidiary performance when MNCs are climbing down the institutional ladder than when MNCs are climbing up the institutional ladder.

3. Methodology

3.1 Data collection

Our panel data was collected from Bureau van Dijk's OSIRIS database, which provides firm-level data on listed, and major unlisted/delisted, companies around the world. We track the performance of 1936 firms over the 12-year period: 2002 – 2013, representing 70 host countries and 66 home countries (see Appendix 1 for the full list of countries represented by this dataset). Altogether, there are 11,922 firm-year observations.

3.2 Measures

We measured MNCs' *subsidiary performance* by return on equity (ROE), which is our dependent variable. ROE has been used in a vast number of studies as a measure of firm performance (e.g. Klarner and Raisch, 2012; Zahra et al., 2000). In a cross country setting, ROE is a better performance measure compared to return on assets (ROA), as asset turnover depends on the market value of assets, which can vary significantly due to differences in the market value of assets across countries (Chan et al., 2010). Our key explanatory variable is the *institutional distance* (regulatory) between the host country of the subsidiary firm and the home country of the parent firm. Following Dikova (2009), we operationalized institutional distance based on the Worldwide Governance Indicators that are based on the work of

Kaufmann and colleagues (Kaufmann et al., 2007; Kaufmann et al., 1999). For each country, six dimensions of governance, i.e. Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption are reported in Worldwide Governance Indicators. Based on these six governance indicators, we calculated a composite variable² for the host country (institutional profile scores for the host country) by carrying out factor analysis. Similarly, we calculated a composite variable³ for the home country (institutional profile scores for the home country). We then calculated the institutional distance (ID) by subtracting the host country institutional profile score from the home country institutional profile score, therefore, a positive score represents climbing down the institutional ladder and a negative score represents climbing up the institutional ladder. We partitioned our composite institutional distant measure (ID) into an upward institutional distance variable (ID_u) and a downward institutional distance variable (ID_d) as follows:

$$ID_u = |ID| \text{ if } ID < 0$$

$$ID_u = 0 \text{ otherwise}$$

$$ID_d = |ID| \text{ if } ID > 0$$

$$ID_d = 0 \text{ otherwise}$$

Partitioning the institutional distant measure (ID) into two vectors is required to properly capture the effect of these two directions of institutional distance. ID_u captures the distance in the upward direction (when ID<0) and this needs to take the value of zero in the downward direction (when ID>0) and no institutional distance (ID=0). In contrast, ID_d captures the distance in the downward direction (when ID>0) and this needs to take the value of zero in the upward direction (when ID<0) and no institutional distance (ID=0). To illustrate

² This composite variable accounted for 99.8% of the variance.

³ This composite variable accounted for 98.4% of the variance.

further, our composite variable ID spans from -4.67 to +3.61 and our upward institutional distance measure ID_u varies from 0 to 4.67 and the downward institutional distance measure ID_d varies from 0 to 3.61. Employing a measure of institutional distance constructed by subtracting the host country institutional profile score from the home country institutional profile score only allows us to examine the performance implications of positive institutional distance compared to negative institutional distance (either test H1). Deconstructing this variable into two directional variables also allows us to disentangle the two effects of upward distance ($ID < 0$) and downward distance ($ID > 0$) compared to the effect of zero institutional distance ($ID = 0$). This approach allows us to examine the net effect of imprinting-based arbitrage advantages and the level of adaptation costs on subsidiary performance in each direction.

We measure whether a subsidiary is fully owned or partially owned by a dummy variable (*Full ownership*) that takes the value of one if the subsidiary is owned by the foreign owner with at least 90% stake and zero if the firm is partially owned with at least a 10% stake.

Guided by previous literature and empirical evidence, we included several control variables. To control for the effect of informal institutional (culture) distance between the host and the home country, we include two measures, i.e. *language distance* and *religious distance* between the host and the home country. Among the firm level determinants of firm performance, firm's *size* and *age* are the two most widely used demographic characteristics of firms (Klarner and Raisch, 2012), therefore we include firm size and age. Research and Development (R&D) activities have long been seen as an important source for a firm's sustainable competitive advantages, therefore contributing to firm performance (Delios and Beamish, 2001b). Therefore, we also include *R&D intensity* (R&D expenditure as a proportion of sales) as a control variable. We include the number of *patents* registered by the firm in the last 3 years as a firm's intellectual properties can affect firm performance. Existing

literature shows that the board and ownership structure can have implications on firm performance (Barth et al., 2005; Core et al., 1999), therefore we include *number of directors* in the board and the *Full ownership* as control variables. At the parent level, we include the number of patents registered by the parent firm in the last 3 years (*parent-patents*), as parent level FSAs can affect subsidiary performance. In order to control for the product-market dynamics that can affect firm performance, first we include whether the firm is a *diversified* firm or not. We also control for the number of competitors (*competition*) in the industry. To control for any unobserved industry-specific effects that can affect firm profitability, industry fixed effects are included for a total of 77 sectors⁴. As market efficiency can positively affect business performance, we also include the Business Freedom index from Heritage Foundation Economic Freedom Index. We also control for host country's *GDP growth* rate, *GDP per capita*, *infrastructure* and level of *human capital* as these country-level variables can affect firm performance. Finally, we controlled for the *geographic distance* between the host country and the home country. The sources of all variables and their measurements are summarized in Appendix II.

4. Results

Descriptive statistics and correlations are presented in Table 1. We estimate our specification based on a random effects model (Generalized Least Squares (GLS) estimator) in a panel data framework, where we control for host country specific, home country specific, year specific and industry specific fixed effects. Our subsidiary level observations may not be statistically independent as multiple subsidiaries from the same MNC might not be independent. Therefore, we include a robust variance estimate that adjusts for within-cluster

⁴ Industry fixed effects are defined at the two-digit sectoral classification based on the NACE Rev 2 classification.

(subsidiaries of the same parent) correlation (Williams, 2000). This controls for the possibility that subsidiary observations belonging to the same MNC might not be independent.

INSERT TABLE 1 ABOUT HERE

Table 2 presents three sets of results based on the composite institutional distance variables. Model 2.1 and 2.2 reports the results with two constructs of absolute values of institutional variables, either ignoring the directionality of the formal institutional distance. AID in model 2.1 is the absolute value of our composite variable ID. MID in model 2.2 is the institutional distance constructed based on Mahalanobis method. This method accounts for variance of each dimension and co-variance between dimensions by using information in variance–covariance matrix and produces scale-invariant distance measures. Based on each year’s data, we calculate MID on a yearly basis using separate covariance matrices for each year.⁵ Mahalanobis method is an increasingly used method to construct composite distance variables when there is potential overlap among the component dimensions; however, it drops the information on the directionality of the distance in the process. In both models 2.1 and 2.2, formal institutional distance variable is insignificant with a large standard error. In model 2.3, we include our composite variable (ID) with its magnitude as well as its sign. ID varies from -4.67 to +3.61. ID is highly significant with a positive coefficient. This indicates that downward institutional distance has a significant positive affect compared to upward institutional distance, i.e. firms climbing down the institutional ladder perform much better than firms climbing up the ladder, providing support for our hypothesis 1.

INSERT TABLES 2 AND 3 ABOUT HERE

⁵ Please refer to Berry, Guillén, & Zhou (2010) for the detailed methodology of calculating Mahalanobis distance.

Next, we examine the net performance effect of each directional variable (upward institutional distance and downward institutional distance). We do not hypothesise the performance effect the two directional institutional distance variables, as this effect will depend on the net effect of imprinting-based arbitrage advantages and the level of adaptation costs in each direction. Table 3 reports the results with the directional variables. In panel 3.1, downward institutional distance has a positive coefficient and upward institutional distance has a negative coefficient and they are significant. This indicates that subsidiaries of MNCs that climb down the ladder (i.e. go from stronger to weaker institutional environment) perform relatively better and subsidiaries of MNCs that climb up the ladder (i.e. go from weaker to stronger institutional environment) perform relatively poorer. Our results for the directional variables also provide a strong support for our hypothesis 1; as downward institutional distance is positive and upward institutional distance is negative, we can clearly see that firms climbing down the institutional ladder perform much better than firms climbing up the ladder. We performed a t test for the above two differences, and the test results provide support for H1.

Next, we examine the moderating effect of subsidiary-ownership strategy, i.e. whether full subsidiary-ownership (as opposed to partial ownership) is more beneficial for subsidiary performance when climbing down the institutional ladder than climbing up the institutional ladder. We used the partition approach to differentiate the effect of institutional distance on subsidiary performance between fully owned vs partially owned firms. This approach effectively partitions the effect of an explanatory variable Y (institutional distance) on the dependent variable Z (subsidiary performance) for the two categories of firms (fully owned vs partially owned firms) by employing two multiplicative terms, that are mutually exclusive and exhaustive. Results are reported in panel 3.2 of table 3. Here we have partitioned the *downward institutional distance* into two mutually exclusive multiplicative terms: *Full*

*ownership * Downward institutional distance* and *Partial ownership * Downward institutional distance*. Similarly, *upward institutional distance* is partitioned into *Full ownership * Upward institutional distance* and *Partial ownership * Downward institutional distance*.

Downward institutional distance is positive and significant for both fully owned and partially owned firms. The magnitude of the estimated coefficient is higher for fully owned firms than for partially owned firms. However, the difference in magnitude is not very large, and a t test shows that the difference is not significant at a 10% level. Upward institutional distance is negative and significant for both fully owned and partially owned firms. The estimated coefficient is more negative for fully owned firms than for partially owned firms. Also, its significance is higher for fully owned firms ($p < 0.05$) than for partially owned firms ($p < 0.10$). However, again the difference in magnitude is not very large, and a t test shows that the difference is not significant at a 10% level. In order to test our H2, we performed a t test for the above two differences, however, the t test shows that the difference is not significant at a 10% level ($p = 0.148$) although the difference in the coefficients are in the right direction as per H2. Therefore, our H2 is not supported.

INSERT TABLES 6 AND 7 ABOUT HERE

With regard to the effect of the control variables, our results (table 3) show that *firm size* is positively associated with subsidiary performance, reiterating the importance of subsidiary-level resources. One interesting observation is that the *number of directors* is negatively associated with subsidiary performance. While greater board size is indicative of greater diversity and has been associated with greater competitive advantage, greater reliance on ‘external’ (i.e. nonmarket related) board members has been associated with negative performance in some studies (Zahra and Pearce, 1989). The coefficient of *Diversified* is

positive indicating that diversified firms perform better than firms that focus only on one sector, however, this was insignificant ($p = 0.11$). As expected, the *parent-patents* is positive (but insignificant) indicating the positive effect of parent firms' intellectual properties on subsidiary performance. Interestingly, *patents* registered under the firm is negative (although not significant). This could be due to the fact that MNCs may concentrate their innovation activities in a particular subsidiary (competency creating subsidiaries), and such subsidiaries may not perform better in revenue generation and may incur a large expenditure on innovation activities. *Competition* is negative (although not significant) indicating that firms with larger number of competitors in the sector perform weaker. As expected, *business freedom* is positive and significant. Human capital is positive as expected, but it is not significant. *Religious distance* is associated with positive performance, supporting previous theory that has argued for the potential advantages of operating in culturally distant environments (e.g. Dikova, 2009). As expected, *geographical distance* between the home and host country is negative but insignificant ($p = 0.11$). Other control variables are largely insignificant. Therefore, our control variables perform modestly well.

5. Discussion and Conclusion

Our study was inspired by the increasing importance of asymmetry in formal institutional distance, and its effects on the performance of MNCs' foreign subsidiaries. As the role of asymmetry in institutional distance has been gaining momentum, our study is one of the few recent studies to examine the effects on subsidiary-level performance. We therefore make an important contribution by examining how the direction along with the magnitude of institutional distance poses distinct opportunities and challenges to MNCs' foreign subsidiaries.

In this regard, first, we theoretically examine the asymmetric effect of institutional distance on the performance of MNCs' foreign affiliates when climbing up vs down the 'institutional ladder'. Consistent with recent studies (Contractor et al., 2016; Trąpczyński and Banalieva, 2016) by accounting for this directionality with respect to the effect of regulative institutional distance on subsidiary performance, we challenge the traditional assumption that the effect of institutional distance on subsidiary performance is the same for a firm regardless of whether it operates in a country with a stronger or weaker formal institutional environment than its origin. We contribute to this discussion by theoretically synthesising the arguments on institutional arbitrage and adaptability found in the prior literature on institutional distance, and by integrating them with organisational imprinting (Stinchcombe, 1965) and learning (Barkema and Vermeulen, 1998; Zahra et al., 2000) and unlearning perspectives (Tsang and Zahra, 2008; Zahra et al., 2011). By integrating these different yet interrelated perspectives, we contribute by developing a robust framework to understand the effect of the direction of institutional distance and subsidiary performance. We argue that the extent of *institutional arbitrage* and *institutional adaptation* vary depending on the direction of institutional distance, and therefore institutional distance has an asymmetrical effect on subsidiary performance depending on the direction. We argue that there is considerable potential for institutional arbitrage due to greater positive home-imprinting effects with greater distance down the institutional ladder but such a potential is smaller when climbing up the ladder. We show that institutional adaptability is quite a challenge in both directions; however, this is likely to be more arduous with greater distance climbing up the ladder, due to greater pressures on unlearning the negative home-institutional-imprinting effects on MNCs' subsidiaries.

Our results show that downward institutional distance has a significant positive effect on subsidiary performance compared to upward institutional distance, thus supporting our

hypothesis 1. We also empirically examine the net effect of imprinting-based arbitrage advantages and the level of adaptation costs on subsidiary performance in each direction. By doing so, we reveal that subsidiary performance improves with greater institutional distance down the institutional ladder. This is consistent with Dikova (2009), who had found a positive association between institutional distance and subsidiary performance among Western MNCs' subsidiaries in Central and Eastern Europe. In contrast, for MNCs climbing up the institutional ladder, our results show that subsidiary performance weakens with increasing distance in this direction. Our study is the first to find this, although Gaur and Lu (2007) had found that greater regulative distance (regardless of direction) reduces the chances of subsidiary survival among Japanese firms. Our study thus argues and finds that only with greater distance in the upward direction, MNCs' subsidiaries suffer from a greater negative imprinting effect of weak-home-institutions, while bearing costs of adapting to the host country institutions at the same time. Overall, we thus contribute to the paradoxical findings of prior studies on the institutional distance – subsidiary performance link (Dikova, 2009; Gaur and Lu, 2007) by accounting for the directionality of this distance. We also contribute to theories of organisational learning and unlearning (de Holan et al., 2004; Tsang and Zahra, 2008; Zahra et al., 2011) by examining the extent to which learning and unlearning is affected by the direction in which MNCs invest overseas. We also contribute to imprinting perspectives by examining the extent to which knowledge embedded within firms affect subsidiary performance in MNCs overseas investments (Kriauciunas and Kale, 2006; Stinchcombe, 1965).

From a methodological perspective, we also contribute to an important gap among prior empirical studies related to the issue of sampling firms from a single (often developed) home country by providing generalizable evidence on the effects of institutional distance on subsidiary performance. Recent studies suggest that sampling firms from a single home

country creates a potential conflation between ‘institutional distance’ and ‘institutional profile’ effects (Van Hoorn and Maseland, 2016). Since institutional distance is calculated as the difference between home and host countries’ institutional profile scores (e.g. differences between Worldwide Governance Indicator scores), the use of a single developed home-country makes a low institutional profile score for the host country (e.g. developing countries) correspond to a high institutional distance. This makes it difficult to tell whether the observed effects are due to weaker institutions in the host country or due to the dissimilarity of the institutions between the host and the home country (Van Hoorn and Maseland, 2016). It is therefore suggested that by including a diverse group of home and host countries, scholars can measure the effect of institutional distance more accurately. In our study, upon analysing the performance of 1936 MNC-subidiaries over the 12-year period: 2002 – 2013, representing 70 host countries and 66 home countries, we empirically contribute to this discussion by focusing on MNCs from a wider variety of home and host countries. We also use the Mahalanobis method that facilitates recognizing multiple, partially overlapping dimensions of institutions (Nebus and Chai, 2014; Yildiz, 2014). Thus overall we add robustness to the existing research related to institutional distance that has been limited to subsidiaries of firms from a specific home-country such as Japan and Poland (Gaur and Lu, 2007; Trapczyński and Banalieva, 2016), particular type of MNCs such as infant multinationals (Trapczyński and Banalieva, 2016), subsidiaries in specific emerging-market regions such as Central and Eastern Europe (Dikova, 2009) and those operating in specific industries such as retail (Evans and Mavondo, 2002).

Our study has implications for managers involved in international business. MNC managers have to often make decisions on new market entry by analysing the economic opportunities and risks of various foreign locations. In this context, while the challenges associated with ‘distance’ are well-known (Ghemawat, 2001), our study suggests that the

'direction' of distance also plays an important role. Our study implies that for MNCs establishing subsidiaries in countries with weaker regulatory institutions relative to their home country (downward direction), despite the challenges, distance will be relatively beneficial for host subsidiaries than if the MNC were to establish a subsidiary in a host country with relatively stronger institutions (upward direction). This is because, with downward distance, managers would be better able to transfer their existing capabilities from their parent to subsidiary levels and would spend lesser on 'learning' about the host market. However, when investing in the upward direction, they would not be able to gain these benefits, since the costs of learning and unlearning is higher and the potential to transfer parent capabilities would be lesser. This is a particularly important implication for firms from emerging economies investing in developed countries.

Despite the contributions made by our study, we understand that our study has some limitations that provide avenues for further research. First, we do not account for some factors that pose further complex effects on the relationship between institutional distance and subsidiary performance. In this context, host country and international experience could be an important variable that could moderate the effects of institutional distance in both directions (Delios and Beamish, 2001a; Delios and Henisz, 2003). Experience could have implications on both imprinting effects and the extent to which adaptation costs would reduce, eventually affecting subsidiary performance (Luo and Peng, 1999; Shaver et al., 1997). However, due to our data limitations, we are unable to examine the complex effects of experience. Another limitation is that we only focus on the objective aspects of subsidiary performance i.e. the return on equity, and do not include subjective factors such as improvements in product development and managerial perceptions about critical success factors being achieved. However there is consensus that the objective aspects reflect the subjective aspects (Lumpkin and Dess, 2001). Future research could include survey-methods to combine both subjective

and objective aspects of subsidiary performance. Finally, while our theory presupposes that the mechanisms of imprinting, costs of adaptation, and mechanisms of learning and unlearning are the reason for the different implications of upward and downward distance on subsidiary performance; these mechanisms are not captured or measured in our empirical analysis. We suggest that future research could examine these mechanisms at a more micro level, probably through a qualitative approach, to provide deeper insights into how these mechanisms interact to explain why the performance impact is different when going down the institutional ladder vs. up the ladder.

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Appendix I: List of countries used in the study

Host Countries (70)		Home Countries (66)	
Host Country	No of subsidiaries	Home Country	No of parent firms
Africa		Africa	
Egypt	42	Egypt	3
Ghana	6	Kenya	1
Kenya	15	Nigeria	1
Morocco	7	South Africa	10
Nigeria	22	Sudan	1
South africa	29		
Tanzania	5	Americas	
Uganda	1	Argentina	4
		Brazil	1
Americas		Canada	49
Argentina	11	Chile	5
Canada	190	Costa rica	1
Chile	12	Ecuador	1
Costa rica	1	Mexico	5
Ecuador	3	Panama	11
Mexico	14	Portugal	3
Panama	2	United states	229
Peru	9	Uruguay	1
Portugal	19		
United states	162	Asia	
Uruguay	2	China	34
		Hong Kong	93
Asia		India	18
Bangladesh	6	Indonesia	4
China	52	Japan	83
Hong kong	10	Korea, republic of	12
India	148	Malaysia	23
Indonesia	64	Philippines	4
Kazakhstan	12	Singapore	125
Korea, republic of	2	Thailand	5
Malaysia	62		
Nepal	1	Europe	
Pakistan	29	Austria	43
Sri lanka	20	Belgium	38
Thailand	43	Croatia	1
		Czech Republic	6
Europe		Denmark	18
Austria	14	Estonia	1
Belgium	35	Finland	9
Bulgaria	8	France	65
Croatia	7	Germany	77
Czech Republic	8	Greece	2
Denmark	11	Hungary	1
Estonia	9	Iceland	1
Finland	13	Ireland	19
France	78	Italy	23
Germany	86	Latvia	2
Greece	22	Luxembourg	111
Hungary	11	Malta	7
Ireland	10	Netherlands	177

Italy	24	Norway	9
Latvia	5	Poland	8
Lithuania	7	Romania	2
Luxembourg	15	Russian federation	9
Malta	2	Spain	43
Norway	13	Sweden	39
Poland	45	Switzerland	62
Romania	6	Turkey	2
Russia	33	United Kingdom	168
Slovakia	6		
Slovenia	3	Middle-East	
Spain	10	Bahrain	5
Sweden	18	Israel	13
Switzerland	20	Kuwait	14
Turkey	35	Lebanon	2
Ukraine	1	Oman	4
United Kingdom	169	Qatar	5
		Saudi Arabia	25
Middle-East		Syrian Arab republic	1
Bahrain	2	United Arab Emirates	32
Israel	30		
Jordan	28	Oceania	
Kuwait	2	Australia	19
Oman	17	New Zealand	10
Saudi Arabia	2	Samoa	1
		Vanuatu	1
Oceania			
Australia	120		
New Zealand	9		
Papua New Guinea	1		

Total	1,936	Total	1,802
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Notes: Countries were classified into regions based on the classification of Central Intelligence Agency (CIA)'s World Factbook

Appendix II: Variable description, measurement, and sources

Variable	Description/Measurement	Data Source
ROE	Return on Equity	Bureau van Dijk's OSIRIS database
Size	Log value of firm's total assets	
Age	Firm age	
No of Directors	Number of directors	
Full ownership	A binary variable which takes the value of one if the firm is a wholly owned subsidiary and zero if the firm is partially owned with at least a 10% stake.	
R&D intensity	RND intensity (RND expenditure as a proportion of sales)	
Diversified	A dummy variable which takes the value of one if the firm has more than one industry (defined at the 2-digit level of NACE rev 2 classification) and zero if only one industry.	
Competition	Total number of firms (both local and foreign) in the industry (defined at the 2-digit level of NACE rev 2 classification)	Bureau van Dijk's ORBIS database
Patents	No of patents registered by the firm in the last 3 years	
Parent patents	No of patents registered by the parent firm in the last 3 years	Worldwide Governance Indicators
ID	Composite measure of institutional distance on worldwide governance indicators (based on factor analysis)	
AID	Absolute value of ID	
MID	Composite measure of institutional distance on worldwide governance indicators (based on mahalonobis method)	
Downward institutional distance (ID _d)	Directional vectors of the institutional distance as constructed in the methodology	
Upward institutional distance (ID _u)		
GDP growth	GDP growth rate of the host country	World Development Indicators
GDP per capita	GDP per capita of the host country	
Infrastructure	Mobile connections per 100 people in the host country	
Human capital	Secondary School enrolment (% gross) of the host country	
Business Freedom	Business Freedom dimension from Heritage Foundation Economic Freedom Index (http://www.heritage.org/index/)	Heritage Foundation Economic Freedom Index
Geographical distance	Geographical distance between the home and the host country	(Rose and Spiegel, 2011)
Language distance	5 point scale based on the incidence (p) of home country's dominant language(s) in host country. 5 = $p < 1\%$; 4 = $1\% \leq p < 5\%$; 3 = $5\% \leq p < 50\%$; 2 = $50\% \leq p < 90\%$; 1 = $p \geq 90\%$	Dow and Karunaratna (2006)
Religious distance	5 point scale based on the incidence (p) of home country's dominant religion(s) in host country 5 = $p < 1\%$; 4 = $1\% \leq p < 5\%$; 3 = $5\% \leq p < 50\%$; 2 = $50\% \leq p < 90\%$; 1 = $p > 90\%$	

TABLES

Table 1: Descriptive statistics and correlation matrix

Variable	Mean	S.D.	Min	Max	Correlation coefficients																					
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 Return on Equity	-12.01	605.27	-41205.1	28963.33																						
2 AID	1.08	0.89	0	4.67	0.02																					
3 MID	2.64	1.16	0.33	6.56	0.02	0.66																				
4 FID	0.33	1.36	-4.67	3.61	0.02	0.19	0.37																			
5 ID _d	0.71	0.88	0	3.61	0.03	0.65	0.62	0.87																		
6 ID _a	0.37	0.74	0	4.67	-0.01	0.43	0.06	-0.8	-0.4																	
7 Size	11.93	2.03	-2.12	20.23	0.04	-0.01	-0.05	-0.02	-0.02	0.01																
8 Age	31.01	31.67	0	341	0.02	0.04	-0.02	0.08	0.08	-0.05	0.21															
9 Full ownership	0.23	0.42	0	1	0	-0.15	-0.15	-0.17	-0.21	0.06	-0.03	-0.07														
10 R&D intensity	0.24	5.26	0	426.16	-0.01	-0.03	-0.04	-0.02	-0.03	0	-0.03	-0.03	0													
11 Subsidiary Patents	0.17	0.7	0	6.18	0	-0.08	-0.11	-0.07	-0.1	0.02	0.12	-0.02	0.03	0.03												
12 No of Directors	0.47	1.54	0	9.55	0.01	0.06	0.03	0.1	0.11	-0.06	0.02	0.04	-0.01	0	0.11											
13 Diversified	17.39	16.31	0	354	0.01	-0.01	-0.01	-0.04	-0.04	0.03	0.37	0.1	0.04	-0.01	-0.01	0										
14 Parent Patents	0.29	0.45	0	1	0.02	-0.05	-0.05	-0.06	-0.07	0.02	0.09	0.08	0.08	0.01	0.07	0	0									
15 Competition	3.4	1.87	0	7.3	-0.02	-0.09	-0.07	-0.16	-0.17	0.09	-0.13	-0.17	0.03	0.05	0.15	0.07	-0.13	0.09								
16 GDP growth	3.56	3.62	-17.95	33.74	0.02	0.33	0.36	0.39	0.47	-0.15	-0.12	-0.02	-0.11	-0.02	-0.07	0.09	-0.1	-0.04	0							
17 GDP per capita	22081.28	17744.11	306.03	87716.73	-0.03	-0.49	-0.56	-0.66	-0.76	0.31	0.09	-0.06	0.23	0.05	0.16	-0.13	0.05	0.1	0.28	-0.52						
18 Human capital	91.75	22.73	21.78	159.15	-0.02	-0.45	-0.47	-0.57	-0.67	0.25	0.09	-0.05	0.21	0.01	0.07	-0.17	0.07	0.08	0.06	-0.45	0.67					
19 Infrastructure	82.74	36.59	0.33	229.24	0	-0.26	-0.32	-0.39	-0.43	0.2	0.25	0.01	0.12	-0.01	0.07	-0.08	0.16	0	-0.19	-0.42	0.45	0.55				
20 Business Freedom	74.61	15.69	36.3	100	-0.03	-0.43	-0.52	-0.64	-0.71	0.33	0.08	-0.08	0.18	0.04	0.13	-0.13	0.03	0.08	0.16	-0.57	0.79	0.61	0.47			
21 Geographical distance	2985.45	2577.71	62.36	12003.92	-0.02	0.19	0.1	-0.02	0.08	0.13	-0.08	-0.04	-0.03	0.01	0.04	0.13	-0.06	0.01	0.26	0.11	-0.06	-0.06	-0.22	0		
22 Religious distance	2.73	1.24	1	5	0.03	0.41	0.53	0.27	0.42	-0.01	-0.09	-0.03	-0.11	-0.02	-0.02	0.16	-0.03	-0.02	0.17	0.32	-0.41	-0.36	-0.3	-0.38	0.25	
23 Language distance	2.02	1.3	1	5	-0.01	-0.2	-0.23	-0.17	-0.23	0.04	-0.13	-0.04	0.02	0.03	0	-0.12	-0.09	0	0.13	-0.03	0.12	0.12	-0.05	0.18	0.05	-0.25

Notes: 1. The number of observations for all variables is 11922

Table 2: Estimations with composite institutional distance variables

	(2.1)	(2.2)	(2.3)
AID	-0.219 (11.18)		
MID		2.544 (7.769)	
ID			77.72** (34.51)
Size	14.10*** (2.760)	14.09*** (2.777)	14.27*** (2.800)
Age	0.0914 (0.156)	0.0919 (0.159)	0.0886 (0.159)
Full ownership	-3.898 (17.75)	-3.772 (17.72)	-3.914 (17.71)
R&D intensity	-1.016 (0.961)	-1.013 (0.961)	-1.013 (0.965)
Subsidiary Patents	-4.797 (3.901)	-4.752 (3.901)	-5.326 (3.890)
No of Directors	1.624 (1.935)	1.636 (1.932)	1.176 (1.900)
Diversified	-0.524** (0.252)	-0.526** (0.250)	-0.531** (0.253)
Parent Patents	14.75 (9.637)	14.73 (9.795)	15.02 (9.781)
Competition	-7.703 (8.149)	-7.665 (8.209)	-7.702 (8.179)
GDP growth	0.249 (1.640)	0.267 (1.648)	0.680 (1.625)
GDP per capita	-0.00518 (0.00920)	-0.00526 (0.00910)	-0.00451 (0.00907)
Human capital	1.579 (1.230)	1.577 (1.222)	1.598 (1.226)
Infrastructure	1.313 (0.848)	1.312 (0.849)	1.281 (0.839)
Business Freedom	2.595* (1.454)	2.607* (1.459)	2.639* (1.466)
Geographical distance	-0.00616 (0.00395)	-0.00619 (0.00388)	-0.00630 (0.00391)
Religious distance	26.45** (13.19)	25.87* (13.23)	26.69** (12.81)
Language distance	4.007 (5.712)	4.518 (5.867)	3.989 (5.556)
Constant	-566.4*** (168.4)	-583.5*** (194.3)	-495.1*** (169.0)
N	11,922	11,922	11,922
Firms	1,936	1,936	1,936
R2	0.0261	0.0261	0.0264

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Notes:

1. Country-specific, year specific and industry specific fixed effects are included but not reported for brevity.

Table 3: Estimations with directional institutional distance variables

	(3.1)	(3.2)
Downward institutional distance (ID _d)	76.53** (34.04)	
Upward institutional distance (ID _u)	-79.54** (39.39)	
Full ownership * Downward institutional distance		85.63** (40.28)
Partial ownership * Downward institutional distance		75.07** (33.49)
Full ownership * Upward institutional distance		-89.00** (38.28)
Partial ownership * Upward institutional distance		-74.55* (40.86)
Size	14.28*** (2.785)	14.31*** (2.774)
Age	0.0893 (0.156)	0.0889 (0.157)
Full ownership	-3.924 (17.76)	-2.130 (28.30)
R&D intensity	-1.013 (0.965)	-1.016 (0.966)
Subsidiary Patents	-5.335 (3.890)	-5.523 (3.881)
No of Directors	-0.530** (0.254)	-0.521** (0.251)
Diversified	15.08 (9.614)	14.64 (9.663)
Parent Patents	1.177 (1.900)	1.310 (1.911)
Competition	-7.679 (8.147)	-7.646 (8.141)
GDP growth	0.681 (1.626)	0.659 (1.620)
GDP per capita	-0.00450 (0.00909)	-0.00452 (0.00911)
Human capital	1.599 (1.234)	1.633 (1.229)
Infrastructure	1.282 (0.839)	1.285 (0.842)
Business Freedom	2.638* (1.464)	2.635* (1.441)
Geographical distance	-0.00625 (0.00396)	-0.00644 (0.00403)
Religious distance	26.99** (13.29)	27.53** (13.32)
Language distance	3.914 (5.730)	4.109 (5.825)
Constant	-489.6*** (154.3)	-505.3*** (150.3)
N	11,922	11,922
Firms	1,936	1,936
R2	0.0264	0.0265

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Notes:

1. Country-specific, year specific and industry specific fixed effects are included but not reported for brevity.