



Added Psychic Distance Stimuli and MNE Performance Performance Effects of Added Cultural, Governance, Geographic, and Economic Distance in MNEs' International Expansion

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ARTICLE INFO

Article history:

Received 30 January 2012

Received in revised form 31 January 2013

Accepted 14 February 2013

Available online 17 March 2013

Keywords:

Psychic distance stimuli

Added distance

Internationalization

Firm performance

Cultural distance

Governance distance

Economic distance

Geographic distance

ABSTRACT

Distance has long been recognized as a major impediment in MNEs' international expansion. However, it still remains unclear: (1) If different psychic distance stimuli (PDS) constitute different sources of complexity and (2) how PDS affect MNE performance during international expansion. That is, the unconditioned argument that distance increases complexity needs further development, specifically, with regard to the *nature* of distance. In this study we distinguish between different PDS and provide crucial insights about the degree of complexity and the associated performance effects. In particular, acknowledging that the underlying constructs vary across different PDS, we theorize and empirically demonstrate that different PDS have a significant effect on firm performance and, as a result, constitute *distinct* sources of complexity within firms' international expansion. Applying the CAGE-framework on a unique panel dataset of 91 German MNEs and relying on the concept of added distance, the results reveal that added governance, cultural, and geographic distances all have a negative effect on firm performance. In addition, added governance distance seems to explain the largest part of variation in firm performance, followed by added cultural distance. In conjunction with research on the relationship between perceived psychic distance and PDS, we are able to conclude that MNEs' awareness of PDS may constitute a major determinant of the performance effects. Thus, the effect on firm performance may depend on the degree to which MNEs are aware of inter-country differences and therefore proactively take measures to mitigate potential negative effects of added PDS on performance.

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1. Introduction

Over the past 30 years the concept of distance has become one of the cornerstones of international business (IB) research. Basically, distance refers to the inverse of the degree of closeness between two entities with regard to one or several dimensions (Deza and Deza, 2006). In the IB context, the concept of distance has usually been defined as the difference between two countries (Håkanson and Ambos, 2010) and has been applied to a variety of IB phenomena. Amongst others, it has been used in research on entry mode choices (e.g. Kogut and Singh, 1988), characteristics and performance of international joint ventures (e.g. Håkanson and Nobel, 2001), foreign market selection (Benito and Gripsrud, 1992), capability transfer (Bjorkman et al., 2007), subsidiary performance (e.g. Dikova, 2009), multinational enterprise (MNE) performance (e.g. Gómez-Mejía and Palich, 1997), and MNE knowledge transfer (e.g. Ambos and Ambos, 2009). The basic tenet of most of this research has been that an increase in distance is

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associated with increasing difficulties in collecting, analyzing, and interpreting information about the foreign market and, as a logical extension, of doing business abroad (Håkanson and Ambos, 2010).

Given the impressive body of literature addressing the concept of distance and the seemingly straightforward reasoning on which most of it is based, it is striking that we still lack clear and consistent evidence for the effect of distance on a variety of organizational outcomes (Drogendijk and Zander, 2010; Tihanyi et al., 2005). This lack has sparked a critical discussion on the conceptual and methodological flaws associated with the concept of distance and its use in IB research (Au, 1999; Shenkar, 2001; Shenkar et al., 2008; Stöttinger and Schlegelmilch, 1998). Notwithstanding the progress the concept of distance has made in the past, three main issues still deserve more research attention.

First, ever since Kogut and Singh (1988: 430) reasoned that “cultural distance is, in most respects, similar to the ‘psychic distance’” it has been customary in IB research to approximate psychic distance with *objective country-level factors*, such as the cultural distance index proposed by Kogut and Singh (1988). This is all the more surprising, given that “it is not demonstrated that culture is the central or even the most important element of psychic distance” (Brewer, 2007: 47). Indeed, only recently Håkanson and Ambos (2010) provided for the first time a comprehensive empirical analysis of the relationship between psychic distance stimuli (PDS) and perceived psychic distance (PPD). Their results indicate that although cultural distance influences perceptions about distance, it is by no means the strongest determinant of such perceptions. Similarly, Ghemawat (2001) more than a decade ago reasoned that the distance between two countries may manifest itself along four basic dimensions: cultural, administrative/governance, geographic, and economic. Though Ghemawat's (2001) CAGE-framework has gained wide acceptance in the IB literature, PDS apart from cultural distance have rarely been employed in empirical investigations. Even less work is available that has analyzed the effects of multiple PDS in a single study (for notable exceptions see, for example, Berry et al., 2010; Brewer, 2007; Dow and Karunaratna, 2006).

In addition, although it is commonly argued that distance in general leads to higher complexity, we offer a more differentiated theory and examination of the impact of different dimensions of distance by acknowledging that the underlying constructs vary across different PDS. While the *extent* of distance in general – irrespective of the dimension – increases complexity, we argue that the challenges faced by MNEs due to the specific *nature* of the respective stimulus may be quite distinct and, hence, lead to separate performance implications. As such, this study provides a unique and comprehensive empirical analysis of the performance impact of different PDS – as proposed by Ghemawat (2001) – in the context of MNEs' international expansion.

Second, since the publication of the Uppsala model (Johanson and Vahlne, 1977) MNEs' international expansion has received considerable research attention. Interestingly, however, though it has always been recognized that firms face constraints during international expansion, little research has empirically investigated the relationship between international expansion and performance (Vermeulen and Barkema, 2002; Wagner, 2004). Even less researchers have specifically focused on the role of distance in MNEs' international expansion (Hutzschenreuter and Voll, 2008). However, the understanding of how decisions concerning MNEs' geographic scope affect firm performance is a central focus of IB-research (Wiersema and Bowen, 2011). Therefore, more studies are needed that investigate the performance consequences of the challenges MNEs face during international expansion.

Third, typically relying on the distance between an MNE's home country and the foreign country, IB research has assumed a homogenous impact of distance, irrespective of firm characteristics. However, as Tung and Verbeke (2010: 1268–1269) have reasoned, what “matters in the case of a new entry is not so much the distance between the home country A and the host country B, but between the newly entered host country B and the host country C, where the firm already has substantial experience and that shows the lowest distance to the newly entered country B.” Relying on the home country is therefore likely to result in an overestimation of the distance the MNE faces upon entering a new country. Accordingly, the effect of distance on performance is likely to be overestimated. Thus, in order to acknowledge that international experience is one means by which MNEs alleviate distance challenges in IB, we employ the concept of *added distance* that has recently been introduced into the literature (Hashai, 2011; Hutzschenreuter and Voll, 2008; Hutzschenreuter et al., 2011).

Using a unique panel data set of 91 German MNEs we explore the performance effects of *added cultural, governance, geographic, and economic* PDS within MNEs' international expansion paths. Additionally, by splitting these aggregate measures into their constituents, we are also able to compare the effects of individual PDS. In line with our theoretical reasoning, our results show that added cultural, governance, and geographic distance have a negative effect on MNE performance. Interestingly, our results also reveal that the strongest negative effect on performance seems to emanate from added governance distance, while added geographic distance has only a limited effect on MNE performance.

Combining our results with those of Håkanson and Ambos (2010) we are able to conclude that the performance effects of differences in PDS may reflect the degree to which the firm is aware of inter-country differences. Awareness of distance may enable the firm to proactively take counter-measures in order to mitigate negative effects on performance. This may be the case with, for example, geographic distance. However, distances that are fuzzy and covert in nature may prevent the firm from proactively taking counter-measures as the firm is simply not aware of the respective distance. This, in turn, may be the case with governance distance. The unawareness of such differences is likely to severely impact an MNE's performance.

The paper is organized as follows. In Section 2 we elaborate on the distinction between PPD and PDS. A brief discussion on multinationality vs. international expansion, distance, and performance follows in Section 3. Afterwards, we derive our hypotheses concerning the relationship between added PDS and MNE performance in Section 4. In Section 5, we describe the methodology employed and present the results in Section 6. Finally, we discuss our findings, paying special attention to the relationship between PDS and PPD.

2. Perceived psychic distance and psychic distance stimuli

Introduced by Beckerman (1956) and popularized by researchers at the University of Uppsala (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975) psychic distance has become one of the most studied concepts in IB research. The Uppsala model considers psychic distance as a core determinant of firms' internationalization processes (Johanson and Vahlne, 1977). Initially, the concept was defined as "factors preventing or disturbing the flows of information between firm and market. Examples of such factors are differences in language, culture, political system, level of education, level of industrial development, etc." (Johanson and Wiedersheim-Paul, 1975: 308). The rather broad and unspecific definition has introduced ambiguity concerning the meaning of psychic distance. This still offers considerable leeway for its interpretation and usage (Håkanson and Ambos, 2010; Sousa and Bradley, 2006, 2008). Though great efforts have been put forward to further develop and refine the concept, a common agreement on the definition and operationalization of psychic distance is still missing.

According to Dow and colleagues (Dow and Karunaratna, 2006; Dow and Larimo, 2009), the objective country-level 'factors preventing or disturbing the flows of information between firm and market' can be regarded as PDS. These stimuli are related but distinct from the PPD of managers. In particular, PPD can be considered as a function of PDS (Dichtl et al., 1990; Dow and Karunaratna, 2006). Therefore, recent research has suggested to desist from the belief that direct measurement of PPD is indispensable in IB research (Evans and Mavondo, 2002). As Dow and Larimo (2009) have argued by relying on PDS rather than on PPD problems associated with the measurement of the latter may be circumvented. Moreover it has been argued, that it is valuable to examine the stimuli of managers' perceptions, as these may be more stable, tangible, and, as a result, better applicable in large-scale empirical research involving firm performance (Håkanson and Ambos, 2010). We follow these arguments and, therefore, subsequently focus on PDS and its effects on firm performance. In the following, we briefly elaborate on the distinction between the static multinationality-performance (MP) and the dynamic internationalization-performance relationship to highlight the value of investigating PDS in the *path* of international expansion.

3. Multinationality versus international expansion, distance, and performance

A central focus of IB-research is to gain a better understanding of how decisions regarding an MNE's geographic scope affect performance. In this context two closely related but distinct issues have to be distinguished: first, the relationship between *multinationality* and performance and second, the relationship between *international expansion* and performance.

The term multinationality refers to the circumstance that a firm's activities involve business beyond the borders of its domestic market. Following Thomas and Eden (2004: 92) this encompasses both the depth, that is, the degree of MNE's involvement in foreign business and the breadth, that is, the number of foreign countries the MNE operates in. It is obvious that while depth and breadth address significantly different aspects of an MNE's involvement in foreign business, both are *static* in nature and address the question how a specific *status* – at a certain point in time – affects firm performance.

International expansion, in contrast, refers to the movements of a firm's international activities (Johanson and Vahlne, 1977; Melin, 1992). Accordingly, per definition, international expansion or internationalization is a *dynamic* process that addresses the question of how a *change* – over a certain time period – affects firm performance (Vermeulen and Barkema, 2002). Thus, the relationship between international expansion and multinationality may best be conceptualized as a 'means–end' relationship where international expansion is the 'means' and a certain degree of multinationality the 'end' (Hashai, 2011).

A great deal of empirical research has investigated the relationship between multinationality and firm performance (Cardinal et al., 2011; Kirca et al., 2011). Though findings on the MP-relationship have been inconsistent (Cardinal et al., 2011; Verbeke et al., 2009), the general assumption in the literature is that MNEs benefit from higher levels of multinationality (Hennart, 2007, 2011). As Hennart (2011) has summarized, scale and arbitrage benefits associated with multinationality are typically expected to overcompensate the offsetting costs that arise from both internal and external factors – including distance. However, while the MP-literature acknowledges the downside of distance, it has also argued that distance may be treated as opportunity. As Ghemawat (2007: 169) has reasoned, one strategy for "dealing with distances and crossing borders successfully is arbitrage. Arbitrage is a way of exploiting differences. [...] It treats differences across borders as opportunities, not as constraints." Similarly, exploitation of differences between countries is at the heart of Kogut's (Kogut, 1985a,b, 1989) operating flexibility theory according to which having operations in different countries enables MNEs to profitably arbitrage institutional restrictions, to capture information externalities, and to save costs through joint production and marketing efforts. In this context, Allen and Pantzalis (1996) as well as Tang and Tikoo (1999) have shown that multinationality – in particular, country scope – is beneficial for MNEs' performance.

Conversely, the international expansion literature has stressed the potential constraints arising from differences in countries (Hutzschenreuter and Voll, 2008; Hutzschenreuter et al., 2011; Vermeulen and Barkema, 2002). At first sight, the conceptualization of distance as opportunity within the MP-literature and as constraint within the international expansion literature may seem contradictory. But, a closer consideration of the two literatures reveals that managing distance in the context of international expansion may substantially differ from managing distance in the context of multinationality (Mishina et al., 2004).

The focus of the MP-literature is on the management of an *existing level* of distance. Thus, the MNE may have adapted to the respective level of distance over time and may also have identified and implement means to turn the constraints associated with distance into opportunities. The international expansion literature, in turn, addresses a different question: How does a *spasmodic increase* in distance affect MNEs performance. Hence, the focus is about MNEs ability to manage a *change in distance* rather than

managing a level of distance or multinationality. As such, the international expansion perspective emphasizes the initial effects of distance. Since the IB field is concerned with problems for which timing, sequence, and change are key elements (Melin, 1992), the present study explicitly focuses on the performance impact of various PDS added during a period of international expansion.

4. Hypotheses development: added psychic distance stimuli and performance

The prevailing view in the literature emphasizes that PDS introduce one or another form of friction into IB-transactions (Håkanson and Ambos, 2010; Shenkar et al., 2008). Accordingly, it is generally assumed that the greater the distance – regardless of its dimension – the higher the complexity the MNE has to cope with and, hence, the greater the challenges to achieving and sustaining successful operations abroad (Vermeulen and Barkema, 2002; Wagner, 2004). While each step into a new country adds complexity due to PDS, the complexity MNEs have to cope with in a certain period of time generally depends upon the extent of added PDS. Thereby the extent is composed of the amount of steps and the magnitude of distance for each step. However, it is important to note, that not only the extent but also the nature of PDS may determine the complexity the MNE faces in international expansion. Therefore, we subsequently elaborate on both – the extent and the nature of added distance – and develop our hypotheses on the relationship between added PDS and performance.

4.1. Extent of added psychic distance stimuli

According to Daft (2009) the complexity with which an MNE has to deal increases as it enters new countries. That is, the extent of added PDS is one determinant of complexity. On the one hand, the increase in complexity is due to the increase in number of organizational entities that are established in the course of international expansion (Fredrickson, 1986). On the other hand, the increase in complexity stems from the magnitude to which the new host country's context differs from the contexts in which the MNE is already active in. This is because the MNE has to adapt its structures, systems, and processes to the new environment. In this context Hutzschenreuter et al. (2011) have argued that the adaptation incurs substantial adjustment costs for two reasons: First, in order to become insider in local networks (Johanson and Vahlne, 2009) MNEs must recombine their existing resource bases with resources needed in the new foreign countries. Overcoming the liability of outsidership, however, is a difficult and time-consuming process (Vahlne et al., 2012). Second, MNEs must also increase their existing resource base and develop new organizational capabilities to manage the internal and external network, both of which have become more complex as a result of the MNE's international expansion (Hutzschenreuter et al., 2011; Meyer et al., 2011; Tan and Mahoney, 2006).

Finally, MNEs are characterized by limited absorptive capacity (Cohen and Levinthal, 1990; Dierickx and Cool, 1989; Vermeulen and Barkema, 2002). Consequently, the amount of complexity MNEs can handle per unit of time is also limited. However, the amount of complexity MNEs face during the course of their international expansion paths is a direct function of the extent of the difference in PDS between some known and new countries MNEs enter. Therefore, it is obvious that the adaptation requirements concerning time and resources increase with the distance to the new countries. From this, however, it also directly follows that MNEs adding too much distance per period of time – regardless of the dimension – will overstretch their resources. In sum then, we are able to conclude that in general adding too much distance per period of time should negatively affect MNEs' performance.

4.2. Nature of added psychic distance stimuli

The rationale outlined above implies that added distance leads to higher complexity which may reduce firm performance if the respective MNE possesses insufficient capabilities and resources to handle this increase in complexity. Though one may argue that this reasoning may apply to all PDS in a similar way, we argue that depending upon the nature of PDS distance may cause varying degrees of complexity. This is because the underlying theoretical constructs vary across different PDS as depicted in Fig. 1. Since different PDS affect different mechanisms and phenomena they may also have distinct effects (see Fig. 1). Therefore, the unconditioned argument that complexity increases with distance needs further development, specifically, with regard to the nature of PDS. The distinction between different PDS may provide crucial insights about the degree of complexity resulting from different PDS as well as the associated performance effects. Since distance between countries manifests on several, quite distinct dimensions, which affect different phenomena and mechanisms, the complexities originating from each dimension need not to be the same. Rather, each PDS constitutes one specific source of complexity within an MNE's international expansion. Accordingly, it is reasonable to assume that PDS have distinct effects on performance. By looking at the nature of PDS a more balanced view on the effect of distance can be achieved. Though the complexity increases with the extent of added PDS, it is theoretically possible that the nature of the stimuli may either foster additional difficulties – enhancing complexity – or creating opportunities that may mitigate the effect of increased complexity. Therefore, we subsequently review each of the four aforementioned PDS separately and develop a distinct hypothesis for each PDS and its effect on performance.

4.2.1. Added cultural distance

According to Hofstede (1980: 7) culture may be defined as “the collective programming of the mind which distinguishes the members of one human group from the other.” This collective programming is important as it forms the basis for shared and oftentimes tacit understandings of context and expectations of behavior (Håkanson and Ambos, 2010). Hence, cultural differences are highly tacit and difficult to grasp as compared to, for example, economic or geographical differences. Therefore,

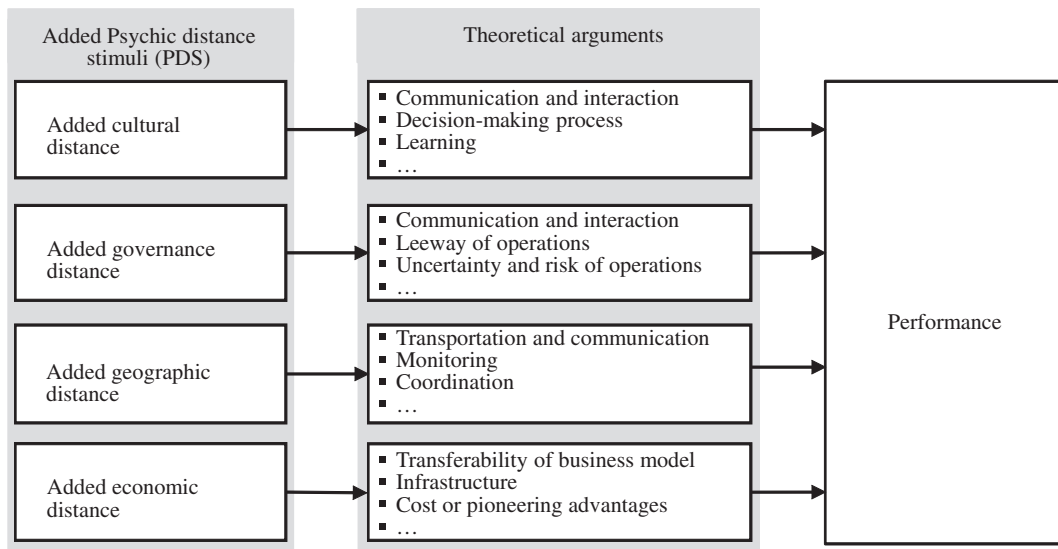


Fig. 1. The relationship between different PDS and MNE performance.

differences in cultural traits such as religion, values, and norms are likely to impede interpersonal communication and interaction and are likely to induce misunderstandings. Hence, to the degree that cultures differ, the frequency of misunderstandings increases and communication becomes more difficult (Adler, 1986; Boyacigiller, 1990). It follows that cultural distance may be understood as an indication of the extent to which interpersonal interaction is hindered (Manev and Stevenson, 2001).

As depict in Fig. 1, cultural distance does not only affect interpersonal interactions but also the context of decision-making for the firm (Boyacigiller, 1990). As Eriksson et al. (2000) have pointed out, cultural distance increases the difficulties for firms to identify and interpret incoming signals (Håkanson and Ambos, 2010; Sousa and Bradley, 2006). However, the costs of misperceiving or even not perceiving signals such as customer preferences or competitors' strategic moves are likely to be substantial.

Finally, it is likely that with an increase in cultural distance less knowledge about the respective foreign country is available within the firm. This, in turn, is likely to considerably affect the firm's ability to learn. As Cohen and Levinthal (1990) have reasoned, learning performance increases with the availability of prior related knowledge. As a result, learning is more difficult and is likely to take longer the more novel the context is (Petersen et al., 2008). Therefore, in line with Hutzschenreuter and Voll (2008) we propose

Hypothesis 1. *There is a negative relationship between the extent of cultural distance added per unit of time and firm performance.*

4.2.2. Added governance distance

Recently, a research stream has emerged that focuses on institutional factors that may be responsible for cross-country differences (see, for example, Delios and Beamish, 2001; Henisz, 2000; Kostova and Roth, 2002; Kostova et al., 2008). This research stream is driven by the insight that the concept of cultural distance does not entirely capture the complexity of inter-country differences, in particular with regard to the critical role of regulatory and governance institutions (Xu and Shenkar, 2002). The concept of *governance distance* is derived from institutional theory according to which institutional environments of a firm are considered key determinants for firm structure and firm behavior (DiMaggio and Powell, 1983; Scott, 1995). The regulatory pillar of institutions describes the governance, the existing laws and rules that are present in a country and promote or restrict certain firm behavior (Scott, 1995). Governance distance – also referred to as administrative or political distance – is therefore defined as the extent to which two countries differ with regard to the regulatory and governance system, consisting, for example, of regulations, laws, and government policies (Kostova and Zaheer, 1999; Scott, 1995).

Following Dow and Karunaratna (2006) the effects of differences in the regulatory pillars between two countries are likely to be twofold: First, for most firms, doing business in a country involves communication with suppliers, customers, and competitors and also communication with the government. Thus, differences in regulatory pillars are likely to increase the uncertainty and the cost of the interaction and communication between firm and government. Second, the regulatory pillar plays a key role in governing the interaction of a firm with both its customers and other firms. Hence, being confronted with an unfamiliar regulatory environment is likely to increase the risk of a firm to misjudge governmental reactions. It also increases the likelihood that the firm misjudges how firms react in certain situations such as political interventions (Dow and Karunaratna, 2006; Evans and Mavondo, 2002). However, as Pedersen and Petersen (2004: 103) have reasoned, this “impedes decision making and leads to difficulties in dealing with local governments and partners.” As a result, governance distance is likely to increase both the costs

and the risks of doing business in a foreign country. In addition, differences in the level of corruption or political stability may induce uncertainty concerning the conditions and conventions of doing business within an unfamiliar governance system (Zurawicki and Habib, 2010).

It follows that the differences between regulatory and governance systems may cause difficulties for the MNE that are related, but distinct from the ones associated with culture (see Fig. 1). The governance dimension of distance may be considered as less tacit than the cultural dimension. Nonetheless, the MNE is likely to face great difficulties in overlooking an enormous body of unfamiliar rules and regulations. Also, a weak regulatory body and an instable governance system may create considerable risk and substantially increase the level of uncertainty associated with doing business in the respective country. Thus, MNEs face an increasing demand of resources to build the necessary capabilities to get acquainted with the unfamiliar regulatory and governance systems as well as to be able to adapt their business practices accordingly (Kaufmann and O'Neill, 2007). Therefore, we propose

Hypothesis 2. *There is a negative relationship between the extent of governance distance added per unit of time and firm performance.*

4.2.3. Added geographic distance

Geographic distance refers to the physical separation between two countries. In the international trade literature, geographic distance has been argued to be an indicator of trade resistance mainly because of the associated transportation and communication costs (Beckerman, 1956; Leamer, 1974). However, over the past decades transportation and communication costs have dramatically decreased. For example, according to Kuemmerle (2005: 48), “a three-minute telephone call from New York City to London costs \$717.70 in 1927 and 84 cents in 1999 (all in 1999 U.S. dollars). Shipping a 150-pound parcel by air from New York City to Hong Kong cost \$2,188 in 1960 and \$389 in 1999 (in 1999 U.S. dollars). Even more dramatic, transporting a container via ship from Los Angeles to Hong Kong cost \$10,268 in 1970 and a mere \$1,900 in 1999 (in 1999 U.S. dollars).” Thus, significant developments in transportation and communication technologies have helped – and will help in the future – to reduce the costs associated with geographic distance (Hummels, 2007; Nachum and Zaheer, 2005). Nevertheless, cross-border business is associated with transportation and communication costs that are directly related to geographic distance.

Beyond that, Gruber and Vernon (1970: 260) have argued that geographic distance may also capture the effect of other ‘frictions’ such as “limitations on businessmen’s knowledge about sources and market.” Also, there is considerable evidence that monitoring difficulties are associated with geographic distance. In particular, it has been argued and shown that monitoring costs increase with geographic distance (Carr et al., 2001; Malhotra et al., 2009). Finally, geographic distance is also associated with coordination difficulties. More specifically, time differences, which are likely to occur due to geographic distance increase coordination demands in business activities. Hence, notwithstanding technological developments that help reducing effects of ‘frictions’ such as transportation and communication costs, absolute geographic distance continues to be a substantial hurdle in international business (Håkanson and Ambos, 2010; Zaheer and Hernandez, 2011). Therefore, the complexity arising with added geographic distance mainly manifests itself in the difficulty to coordinate and manage an increasing number of dispersed organizational units (see Fig. 1). We therefore conjecture that added geographic distance will have a negative effect on MNE performance and propose:

Hypothesis 3. *There is a negative relationship between the extent of geographical distance added per unit of time and firm performance.*

4.2.4. Economic distance

The economic development of countries has traditionally been considered to reflect the market potential of the respective country (Evans and Mavondo, 2002). More recently, however, a small stream of research has focused on *economic distance* capturing the differences in the economic development between two countries (Malhotra et al., 2009). As such, the concept of economic distance acknowledges important factors in IB such as discrepancies in customer preferences, differences in purchasing power, or differences in transportation and communication infrastructure. These important factors, however, are not captured by the preceding distance concepts.

On the one hand, research has shown that business models can more easily be transferred to countries with similar economic development (Ghemawat, 2001; Mitra and Golder, 2002). These countries may have similar demand structures, consumption patterns, and distribution channels, which foster inter-country trade (Linder, 1961). Moreover, Dow and Karunaratna (2006) have argued that the economic development of a country influences the communication and interaction norms of firms within the respective country. Hence, differences in economic development may imply differences with regard to business-to-business communication and interaction norms. These differences introduce additional costs and uncertainty into MNEs’ international business transactions. Given the costs and coordination demands associated with economic distance, it is likely that economic distance negatively affects MNEs’ performance during international expansion. However, economic distance may still be more transparent and easier to catch up than differences in culture and governance. Hence, we suppose that the effect of economic distance on MNE performance is weaker as compared to the effects of cultural and governance distance.

On the other hand, it may be argued that differences in economic development may provide opportunities to seize advantages (Evans and Mavondo, 2002). For example, MNEs may achieve cost advantages or pioneering advantages due to differences in countries’ economic development. The resulting benefits may then outweigh the costs associated with the increased complexity

resulting from a greater number of organizational units that the firm has to manage in different economic systems. In such a case, economic distance may even have a positive effect on MNE performance (Evans and Mavondo, 2002).

As we have outlined, economic distance is associated with different and at times even counteracting phenomena and mechanisms as compared to the other dimensions of distance (see Fig. 1). Conversely to the effects of the remaining distance dimensions, the effect of economic distance is ambiguous. Therefore, we propose two competing hypotheses

Hypothesis 4a. *There is a negative relationship between the extent of economic distance added per unit of time and firm performance.*

Hypothesis 4b. *There is a positive relationship between the extent of economic distance added per unit of time and firm performance.*

5. Method

Subsequently, we present the data collection procedure and the sample used to test our hypotheses. Furthermore, we describe our dependent and independent variables and provide information about the model specification.

5.1. Data collection and sample

The performance effects of the different PDS in MNEs' international expansion are tested on an unbalanced sample of 91 German firms listed in the HDAX of the German stock exchange between 1985 and 2007. Initially, we recorded 195 firms that have been listed in the HDAX since its establishment. In accordance with Vermeulen and Barkema (2002) we excluded from this list of firms cross-listed non German firms, financial institutions, real estate firms, retailers, and purely financial holdings – a total of 60 firms. Subsequently, we started to collect data on the international expansion steps made by the remaining 135 firms between 1985 and 2007. To be able to analyze the international expansion of these firms, data on a minimum of seven consecutive firm-year observations is required.

Firms' annual reports and the corresponding list of investment holdings (Anteilsbesitzlisten) constitute the basis for the data collection on the portfolio of subsidiaries for each firm-year (Barkema et al., 1996; Vermeulen and Barkema, 2002). To make sure that the portfolio for each firm-year was accurately captured, we checked the quality of our database by comparing it with information in several other databases such as Bureau van Dijk's AMADEUS, Thomson One Banker Deals, and LexisNexis. Additionally, we randomly selected twenty firms which we directly contacted to cross-check if we had captured the entire portfolio for each firm-year. Eight of the contacted firms were willing to do so. This procedure revealed that we had gathered the entire portfolio of investments into majority-owned entities.

With this very elaborated and time-consuming procedure we were able to gather sufficient data on the complete list of subsidiaries for each firm during the first year it was included in our panel and on investments and divestments of subsidiaries in subsequent years for a final sample of 91 firms. This way we were able to track the portfolio of subsidiaries and its changes for each firm in each year. In order to exclude purely financial holdings, we incorporated in the sample only subsidiaries in which the parent company held more than 50% stake after the investment and had no, or a minority stake prior to the investment. We chose this data collection approach because no commercial database in Germany provides such detailed information on firms' expansion steps needed for our analysis.

The final unbalanced panel of 91 firms between 1985 and 2007 comprises both, surviving and non-surviving firms. That is, we also included firms which entered the HDAX after 1985 and firms which exited before 2007, for example, due to bankruptcy or takeover. This way we avoided a potential survivor bias in our data. Additionally, we extracted financial and non-financial variables from Thomson Reuters Datastream for firms which we unfortunately had to exclude from our analysis to test whether or not these firms are significantly different from the firms in our sample (Carpenter and Fredrickson, 2001). The results of this test indicate that the firms in our sample do not significantly differ from the firms we had to exclude with respect to various financial and non-financial variables. Hence, the sample is selected independently of the dependent variable in our analysis. This indicates that our data does neither seem to suffer from a survivor bias nor from a sample selection bias (Allison, 2002; Jensen and Zajac, 2004; Little and Rubin, 2002).

Finally, we gathered data on country characteristics from several sources. For the governance and economic environment we used data from the Worldwide Governance Indicators and the World Development Indicators of the World Bank. National cultural characteristics were taken from Hofstede (1980) (for robustness checks also from the GLOBE Project (House et al., 2004)), and for the calculation of geographic distance we drew on the data provided by the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII).

5.2. Dependent variable

In line with prior research, firm performance is estimated by the firms' three-year moving average in return on assets (ROA) one year after the respective expansion period (Hitt et al., 1997; Venkatraman and Ramanujam, 1986). A three-year moving average is preferred to reduce distortions in ROA due to changes in accounting practices (Carpenter and Sanders, 2002). We control for possible autocorrelation in the dependent variable by using an appropriate conservative estimator which we introduce in the analysis section.

In general, the use of ROA as indicator of firm performance is widely accepted in the IB literature (Gómez-Mejía and Palich, 1997), which warrants a comparison with prior research. In addition, our study is concerned with actual performance and the firms' ability to align their different business operations. In this context, ROA is particularly well suited because it indicates the relative efficiency and synergies gained from business operations (Kim et al., 1989). In contrast to other accounting-based performance measures, ROA accounts for differences in financial structure and reflects realized performance rather than shareholder expectations, which are not of interest in our analysis.

5.3. Independent variables

It may be argued that it is the manager who is ultimately responsible for IB-related decisions, and therefore the study of PPD should be preferred over the study of objective differences in the external environment. However, it is also true that for longitudinal research encompassing historical data, like the one at hand, an accurate assessment of PPD is virtually impossible. Moreover, it has been argued that managers' perceptions may neither be stable over time nor homogeneous across managers within a firm, and much less across firms and countries (Ellis, 2008; Shenkar, 2001; Stöttinger and Schlegelmilch, 1998). From this, however, it directly follows that to investigate the effect of PPD accurately, perceptions would have to be captured from the 'right' managers – the ones involved in decision making – at the 'right' point in time – the time shortly before the decision is made. Otherwise, it is difficult to know "whether the 'perceptions' influenced the 'decision' or whether the 'post-decision experience' influenced the 'perceptions'" (Dow and Karunaratna, 2006: 580). Due to these arguments we use objective country differences and focus on PDS and its effect on performance.

The measurement of PDS is based on a thorough analysis of prior research which uses different dimensions of distances. While prior research predominantly uses the MNE's home country as reference point from which to assess distance, we followed the approach of Hutzschenreuter and Voll (2008) who introduced the concept of 'added distance' to the IB literature (also see Hashai, 2011; Hutzschenreuter et al., 2011). The rationale to do so is to account for possible learning effects and path-dependencies during the MNE's international expansion, which is not considered when using the home country reference point (Tung and Verbeke, 2010). The added distance measure is based on the assumption that knowledge and experience gained in the closest neighbor country is most relevant and thoroughly accessible for the new subsidiary in the new country. Additionally, as we investigate firms' paths of expansion, we calculated all distance variables for an expansion period of three years.

5.3.1. Added cultural distance

We used the method employed by Kogut and Singh (1988) to calculate the composite measures of cultural distance between any two countries. The Kogut and Singh index is based on Hofstede's (1980) four cultural dimensions: *power distance*, *individualism/collectivism*, *masculinity/femininity*, and *uncertainty avoidance*. Despite of the criticism directed to both, Hofstede's dimensions and the Kogut-Singh index, we use this measure in order to afford comparability with prior work (Lee et al., 2008). After all, the index is the most widely used measure in distance-related IB research. However, in order to ensure the robustness of the results obtained with Hofstede's dimensions, we re-ran the analysis with data provided by the GLOBE project (House et al., 2004).

Following Kogut and Singh (1988) the cultural distance (CD_{jp}) between a new country j entered and any other country p in a firm's portfolio is calculated as the average of the differences in the scores I of Hofstede's four cultural dimensions adjusted by the variance (V_i) of the respective dimension i :

$$CD_{jp} = \sum_{i=1}^4 \left[\frac{(I_{ij} - I_{ip})^2}{V_i} \right] / 4$$

To determine the cultural distance to the closest neighbor country we calculate the distances of a new foreign country to *all* already existing countries in the MNE's portfolio P . The country with the smallest distance to the new foreign country j is the added cultural distance (AddedCD _{j}) with respect to the corresponding expansion step undertaken into country j :

$$AddedCD_j = \min(CD_{jp}; \dots; CD_{jp})$$

Subsequently, to determine the *added cultural distance per period of time* we summed the added cultural distances of all expansion steps in the defined period of analysis and divided this sum by the corresponding years. This reflects the level of added cultural distance a firm has to deal with in that period. Additionally, following suggestions in the literature (Shenkar, 2001), we decomposed the Kogut and Singh (1988) index. We applied the above described procedure to calculate the added distances per unit of time with respect to each individual cultural dimension.

5.3.2. Added governance distance

To measure added governance distance we used the six Worldwide Governance Indicators from the World Bank (Kaufmann et al., 2009): *voice and accountability*, *political stability and absence of violence/terrorism*, *government effectiveness*, *regulatory quality*, *rule of law*, and *control of corruption*. We use these indicators because they comprise the broadest and most comprehensive range

of governance characteristics for a large number of countries. In addition, these dimensions have been widely used in the IB literature to capture the part of the governance environment (Dikova, 2009; Globberman and Shapiro, 2003; Håkanson and Ambos, 2010; Malhotra et al., 2009; Rao et al., 2005; Slangen and Beugelsdijk, 2010; Slangen and van Tulder, 2009). Each dimension ranges from -2.5 to 2.5 ; higher scores indicate higher advancement in the governance system. To calculate the governance distance between any pair of countries, we used the formula for the Kogut and Singh index; however, this time we employed the six governance dimensions. In a similar manner, we thus obtained composite measures of these dimensions for each new expansion step into a new country to all other countries in the firm's portfolio and select the smallest distance. To examine the effect of added governance distance per unit of time we used both, the composite measure of the Worldwide Governance Indicators as described above as well as the individual indicators. Following Malhotra et al. (2009) and Dikova and van Witteloostuijn (2007) we used the values of the different indicators of 1996 for any expansion steps undertaken before 1996. There have been substantially less expansion steps into new countries in this period compared to the years after 1996.

5.3.3. Added geographic distance

To calculate the geographic distance between country pairs we followed previous research such as Håkanson and Ambos (2010) and Zaheer and Hernandez (2011) and used the geographical coordinates – latitude and longitude of the major city of each country – available in the database on distances from CEPII (Mayer and Zignago, 2011). We then calculated the geographic distance of each new expansion step into a new country to all other countries in the firm's portfolio using the great circle formula and select the smallest distance.

5.3.4. Added economic distance

The economic distance between country pairs is based on two variables *GDP per capita* and *trade*. We obtained the data for these variables from the World Development Indicator database provided by the World Bank. In IB research, *GDP per capita* is the most commonly applied and usually the only measure used to approximate countries' economic development and economic distance between countries, respectively (Chan et al., 2008; Dow and Karunaratna, 2006; Håkanson and Ambos, 2010; Kobrin, 1976; Malhotra et al., 2009; Tsang and Yip, 2007). We employ an additional measure, namely *trade*, which is calculated as an average of exports per capita and imports per capita. Imports and exports have been previously used to assess economic distance as well (Berry et al., 2010; Brewer, 2007). The calculation of *added economic distance per unit of time* was done in accordance with the calculation of the dimensions described above. For this dimension we also estimated the added distance per unit of time for each of the two individual components.

5.4. Control variables

Firms' sales at the beginning of the expansion period were used as an approximation for their size to control for the effect of *firm size* on performance. In addition, we controlled for firms' *capital structure* prior to a period of expansion, which we operationalized as total liabilities over total assets. The variable *product diversity* was included to account for an effect of product diversity at the beginning of the period on performance (Chatterjee and Wernerfelt, 1991; Palich et al., 2000). Since greater product diversity implies higher complexity which the respective firm has to manage, product diversity may have an influence on firm performance. We employed an entropy measure similar to the one described by Berry (1971) based on the number of subsidiaries within different industry codes to measure firms' product diversity at a given point in time. In addition, the number of different industries entered during the period of analysis influences the degree of complexity firms have to handle and hence, may have an effect on performance. Therefore, we included in the models the variable *number of industries entered*, representing the number of four-digit industry codes the firm entered in the period of analysis. To control for possible effects resulting from the mode of investment we included the variable *acquisitions*. This variable denotes the percentage of expansion steps undertaken by means of an acquisition. To calculate this variable we divided the number of acquisitions by all expansion steps undertaken in the period of analysis. To account for a possible effect of a minority stake which a firm held before it acquired a majority stake in a subsidiary we included the variable *prior minority*. We computed this variable as number of expansion steps undertaken with prior minority stake divided by the total number of steps in the period of analysis. Furthermore, performance may differ with respect to the percentage of ownership in the new subsidiary. Hence, we controlled for this effect by including the variable *total ownership*. It is calculated as the percentage of expansion steps undertaken with full ownership.

5.5. Analysis

Prior to the statistical analysis we conducted a Hausman test to be able to specify the regression model (Wooldridge, 2002). The result suggested using a fixed firm effects regression model. This way we were able to control not only for unobserved heterogeneity across firms but also for time-invariant characteristics (e.g. industry membership) of the firms in the sample. Furthermore, we tested for possible heteroscedasticity in the residuals with a modified Wald statistic (Greene, 2008). The test reveals that heteroscedasticity does seem to affect our results. In addition, the presence of some form of spatial and temporal dependence is not unlikely between the firms in our panel (Hoechle, 2007). That is we cannot completely rule out that the residuals from our different cross-sectional units are uncorrelated (Driscoll and Kraay, 1998). To ensure the validity of our statistical inference we therefore control not only for heteroscedasticity and autocorrelation, but also for cross-sectional

dependence (Driscoll and Kraay, 1998; Hausman, 1978; White, 1980) by specifying a fixed effect model with Driscoll and Kraay (1998) robust standard errors.

Additionally, we had to resolve two issues associated with our dependent variable: First, to select the most appropriate time lag between our independent and dependent variables, and second, to choose an adequate operationalization of the dependent variable, that is, either a moving average of ROA or ROA in a single year. We performed several tests to resolve these issues. In particular, we calculated the Akaike Information Criterion (AIC) (Akaike, 1974) as well as the Schwarz Information Criterion (SIC) (Schwarz, 1978) for varying time lags of our dependent variable and for both potential operationalizations. Though the results obtained were virtually identical across different models with regard to our variables of interest, the AIC and SIC suggest the best model to be the one measuring the impact of our respective independent variable, that is the average of $(X(t-2), X(t-1), X(t))$, on the average of $(Y(t), Y(t+1), Y(t+2))$. This way, the center of our corresponding independent variable is at $X(t-1)$, while the focal point of the dependent variable resides at $Y(t+1)$, implying that there is actually one year gap between independent and dependent variable.

We analyzed the correlation coefficients to detect potential multicollinearity among the variables in our model. Since we used fixed effects models we calculated the within firm correlation coefficients (McCann and Vroom, 2010). Table 1 shows mean and standard deviation of the variables under investigation and depicts the correlations among them.

Several researchers suggest that a correlation coefficient greater than 0.6 is critical with regard to multicollinearity (Foo et al., 2006; Kennedy, 2008; Tsui et al., 1995). Only one of the correlation coefficients is close to this critical threshold. The correlation coefficient between added geographical distance and added institutional distance per unit of time is 0.54. Despite relatively low variance inflation factors and condition indexes (Hair et al., 1995) for all variables in the model, we closely examined several models including different combinations of the four added distance measures to see if direction and strength of the coefficients change considerably. The effects of added cultural, governance, and economic distance are virtually the same throughout different models. However, the effect of added geographical distance is considerably different when added governance distance is included in the model. After a thorough analysis we concluded that the correlation between the two independent variables added geographical distance and added governance distance does affect our model. Hence, we did not include both variables simultaneously in one model.

6. Results

In the following we present the results of our analysis on the performance effects of PDS. Additionally, a separate section is dedicated to robustness tests which we employed to check the validity of our inference.

6.1. Hypotheses testing

The main regression outputs are presented in Table 2. Model 1 depicts the output of a regression of firm performance on the control variables only. This control model is significant, implying that the set of control variables is appropriate to predict firm performance. It serves as baseline for comparison with the subsequent models. In model 2 to 5 we include each distance dimension in a separate model.

The effect of *added cultural distance* per unit of time on performance is investigated in model 2. In line with our hypothesis (H1) this variable is highly significant and has a negative effect on firm performance (-0.059 ; $p < 0.05$). We also hypothesized that *added governance distance* within a period of expansion will have a negative effect on performance in the subsequent period. Model 4 confirms this hypothesis (H2). The coefficient of added governance distance has the expected negative sign and is highly

Table 1
Mean, standard deviations, and correlation coefficients.

Variables	Mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Return on assets	0.075	0.072	1.00											
2. Added cultural distance	0.467	0.937	-0.11	1.00										
3. Added economic distance	0.684	7.469	-0.01	0.06	1.00									
4. Added governance distance	0.170	0.299	-0.12	0.28	0.14	1.00								
5. Added geographic distance ¹	1.024	1.546	-0.09	0.41	0.06	0.54	1.00							
6. Firm size ²	6.716	12.300	-0.02	-0.03	-0.07	-0.09	-0.03	1.00						
7. Capital structure	0.161	0.135	0.06	-0.04	-0.03	0.00	-0.01	0.25	1.00					
8. Product diversity	0.661	0.223	-0.03	-0.06	0.07	0.03	-0.04	0.10	0.00	1.00				
9. Number of Industries entered	0.576	1.022	-0.02	0.04	0.01	0.06	0.05	-0.18	-0.08	-0.12	1.00			
10. Acquisitions	0.441	0.290	-0.12	0.04	0.00	-0.04	0.00	0.04	-0.10	-0.03	0.15	1.00		
11. Prior minority	0.003	0.020	0.01	0.01	0.03	0.06	0.12	0.02	0.03	0.04	-0.03	0.00	1.00	
12. Total ownership	0.148	0.267	-0.04	0.16	0.02	0.16	0.24	0.00	0.00	0.07	-0.01	0.04	0.02	1.00

N = 1077.

Correlation coefficients with an absolute value of 0.06 or above are significant at the level of $p < 0.05$.

Correlation coefficients are centered on the firm mean.

¹ Add geographic distance in 1.000 km.

² Firm size in bn €.

Table 2
Effect of psychic distance stimuli on performance.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Added cultural distance			−0.059	(0.027)*							−0.044	(0.023) [†]	−0.044	(0.023) [†]	−0.050	(0.025) [†]	−0.050	(0.025) [†]
Added economic distance					0.002	(0.004)							0.010	(0.006) [†]			0.006	(0.004)
Added governance distance							−0.068	(0.020)**			−0.057	(0.016)**	−0.058	(0.016)**				
Added geographic distance									−0.047	(0.012)**					−0.027	(0.007)**	−0.027	(0.007)**
Firm size	−0.034	(0.022)	−0.036	(0.025)	−0.034	(0.023)	−0.048	(0.024) [†]	−0.036	(0.023)	−0.047	(0.026) [†]	−0.045	(0.026) [†]	−0.037	(0.025)	−0.036	(0.025)
Capital structure	0.051	(0.023)*	0.048	(0.023)*	0.051	(0.024)*	0.053	(0.023)*	0.051	(0.022)*	0.050	(0.023)*	0.051	(0.023)*	0.048	(0.022)*	0.048	(0.023)*
Product diversity	−0.190	(0.075)*	−0.205	(0.077)*	−0.191	(0.074)*	−0.179	(0.078)*	−0.198	(0.070)*	−0.192	(0.080)*	−0.196	(0.081)*	−0.207	(0.075)*	−0.210	(0.075)*
Industries entered	−0.010	(0.012)	−0.008	(0.012)	−0.010	(0.012)	−0.005	(0.013)	−0.008	(0.012)	−0.005	(0.013)	−0.005	(0.013)	−0.007	(0.012)	−0.007	(0.012)
Acquisitions	−0.074	(0.021)**	−0.073	(0.021)**	−0.074	(0.021)**	−0.079	(0.020)**	−0.075	(0.021)**	−0.077	(0.019)**	−0.077	(0.019)**	−0.073	(0.021)**	−0.073	(0.021)**
Prior minority	0.000	(0.007)	0.000	(0.008)	0.000	(0.007)	0.005	(0.007)	0.006	(0.006)	0.005	(0.008)	0.004	(0.008)	0.004	(0.007)	0.004	(0.007)
Total ownership	−0.010	(0.018)	−0.001	(0.017)	−0.010	(0.018)	0.000	(0.018)	0.000	(0.017)	0.005	(0.017)	0.005	(0.017)	0.004	(0.017)	0.004	(0.017)
F		33.82***		43.30***		30.72***		46.74***		29.76***		45.35***		39.85***		48.29***		48.50***
Adjusted R-squared		0.021		0.030		0.021		0.035		0.026		0.039		0.039		0.031		0.030
Δ Adjusted R-squared				0.009***		0.000		0.014***		0.005***		0.018***		0.018***		0.010***		0.009***

N = 1077.

Coefficients are standardized.

Driscoll & Kraay (1998) robust standard errors in parentheses.

Note: *** p < 0.001, ** p < 0.01, * p < 0.05, [†] p < 0.1.

significant (-0.068 ; $p < 0.01$). The coefficient of *added geographic distance* in model 5 is negative and highly significant (-0.047 ; $p < 0.01$). Hence, support is given for the hypothesis that added geographical distance per unit of time has a negative effect on performance in subsequent periods (H3). In addition, these results support our conjecture that added geographic distance may have the weakest effect on performance. With model 4 the effect of *added economic distance* is investigated. Contrary to our hypotheses (H4a and H4b), the coefficient of this variable is not significant at all. That is, economic distance does not seem to have an influence on firm performance in our sample.

In addition to the individual treatment of added distances we calculated model 6 to 7. Due to problems of multicollinearity we did not include added geographic distance and added institutional distance in the same model. Hence, model 6 shows the results of a regression including added cultural distance and added governance distance, while in model 7 economic distance is added. The coefficients of added cultural distance (-0.044 ; $p < 0.1$) and added governance distance (-0.058 ; $p < 0.01$) remain negative and significant, while the coefficient of added economic distance becomes significant and is positive (0.010 ; $p < 0.1$). Model 8 present the results of a regression including added cultural and added geographic distance. In the last model economic distance is added. While the coefficients of both added cultural distance (-0.050 ; $p < 0.1$) and added geographic distance (-0.027 ; $p < 0.01$) are negative and significant, added economic distance is insignificant. The four models provide additional support for H1, H2, and H3 and indicate that geographic distance has the weakest negative effect on performance. Furthermore, model 7 provides some indication for a positive effect of added economic distance (H4a). In sum, with the exception of added economic distance – to which we will return in the discussion section – we find consistent support for our hypotheses.

6.2. Additional analyses

Since we propose that the performance effect may vary depending on the *nature* of distance we conducted some additional analyses to find out more about the relative strength and the relative importance of the individual dimensions of distance.

First of all, since standardized regression coefficients are reported in all models we may compare the *relative strength* of the effects of the individual added distance variables (Slangen and van Tulder, 2009). Such a comparison of standardized coefficients reveals that the coefficients of added governance distance ($\beta: -0.068$; $\beta: -0.058$) and added cultural distance ($\beta: -0.059$; $\beta: -0.044$) are greater than the coefficients of added geographic ($\beta: -0.047$; $\beta: -0.027$) and added economic distance ($\beta: -0.002$; $\beta: +0.010$). This may indicate that added governance distance and added cultural distance have a greater negative impact on performance as compared to added economic distance and added geographic distance. To test this hypothesis we conducted Wald tests in order to check if the coefficients across the regressions 2 to 5 as well as the coefficients within model 6 and 7 are significantly different from each other. The tests reveal no significant differences between the coefficients of added governance, cultural, and geographic distance. Therefore, we are not able to conclude that the different stimuli vary significantly with respect to the strength of their effect on firm performance.

However, given concerns about comparing coefficients directly, we also examined improvements in fit; that is we looked at the increase in adjusted- R^2 across the models in order to find out more about the *relative importance* of the different stimuli. A comparison of models 2 to 5 with regard to the control model 1 reveals that the greatest significant increase in adjusted- R^2 can be observed when added governance distance is included in model 5 (from 0.021 to 0.035). The inclusion of added cultural distance in model 2 increases the adjusted- R^2 from 0.021 to 0.030 while the inclusion of added geographic distance entails an even smaller increase (from 0.021 to 0.026). Furthermore, the additional increase in adjusted- R^2 when added cultural distance is included together with added governance distance in model 6 is much smaller (0.004) than the increase in adjusted- R^2 when added governance distance is added to the control model (0.014). The same can be concluded when geographic distance is added to cultural distance in model 8. In addition, models 6 and 7 which include, both added cultural and added governance distance have the greatest adjusted- R^2 of all models. These comparisons suggest that the magnitude of explained variation in firm performance varies depending on the *nature* of the respective PDS. More specifically, added governance distance, followed by added cultural distance, seem to explain a higher proportion of the variation in firm performance as compared to added geographic and economic distance.

Furthermore, to back up these findings we conducted an analysis of variance based on models 7 and 9. This analysis provides similar results. We compared the relative importance of the different stimuli in model 7 by examining the additional sum of squares when we add the three distance measures to the model. The greatest part (25%) of the model's total explained variation in firm performance (excluding the explained variation of the fixed firm effects) is captured by added governance distance as compared to added cultural distance (13.4%). With regard to model 9 added cultural distance (5.3%) accounts for a greater proportion of explained variation in firm performance as compared to added geographic distance (3.7%). Added economic distance is not significant. Note, however, the results of the analysis of variance have to be interpreted with caution because they strongly depend on the order in which the variables are added to the model. Nevertheless, in combination with the analysis of the adjusted- R^2 these results indicate that the added governance distance, followed by added cultural distance explain a greater part of the variation in firm performance as compared to added geographic and economic distance. We will refer to these findings on the relative importance of different PDS in the discussion.

6.3. Robustness tests

We conducted several alternative analyses to test the robustness of our results, using different operationalizations for our dependent, independent, and control variables. We also tested the robustness by applying alternative expansion periods, different

time horizons to measure the dependent variable, and by including different time lags between expansion period and performance.

First, we applied an alternative performance measure to check the validity of our results. In particular, we used return on sales (ROS) as dependent variable, which led to results that were virtually identical to the ones reported here. Second, we used different operationalizations of our independent variables. As an alternative to the Hofstede (1980) dimensions, we repeated the analysis using the GLOBE data (House et al., 2004). With regard to governance PDS we alternatively used a composite measure of the political constraint (POLCON) scale developed by Henisz (2000), the freedom index – an average of the variables ‘political rights’ and ‘civil liberties’ – from Freedom House, and the ‘size of government’ index from the Economic Freedom of the World database provided by the Fraser Institute (Gwartney et al., 2011). To assure the robustness of our added geographic distance variable, we used the three additional distances provided by CEPII (Mayer and Zignago, 2011). Finally, we used an alternative composite measure for added economic distance, consisting of GDP per capita, trade per capita, and consumer price index, which was taken from the database provided by the World Bank. All robustness tests of our independent variables yielded results that strongly corroborate the results reported here. Third, we applied assets instead of sales as a proxy for firm size and used a Jacquemin and Berry (1979) entropy measure as an alternative to the Berry measure to gauge product diversity. Again, the results obtained were consistent with the ones reported here.

Furthermore, we varied the expansion period from two to four years and also included a two-year time lag between the expansion period and the performance measure. The results we obtained were largely consistent to the reported results with a three-year expansion period and a one-year time lag between expansion and performance. Furthermore, we checked if our results changed when no moving-average of the dependent variable is taken. That is we ran the regression with ROA one and two years after the expansion period, which yield similar results.

Finally, our measures of cultural and governance distance are composite measures. As such, they are subject to the critique raised by Shenkar (2001) according to which composite measures based on the formula employed by Kogut and Singh (1988) make an invalid assumption of equivalence. Thus, to learn more about the effects of the individual dimensions we decomposed the composite measures into their constituents. The results of the additional analyses show that a more fine-grained examination of distance yields further interesting insights on the performance effects of inter-country differences. Disaggregating cultural and governance distance, we found that each of the four and six constituents, respectively, is negative and statistically significant.

7. Discussion and conclusion

This study set out to further our understanding of the effects of PDS on performance in the context of MNEs’ international expansions. Previous research has argued that PDS induce some form of friction in international business transactions (Shenkar et al., 2008). Accordingly, we have reasoned that PDS constitute a distinct source of complexity within MNEs’ international expansions and, as such, negatively affect firm performance. While most extant research has focused on the effect of one specific psychic distance stimulus, this study provides a comprehensive empirical analysis of the performance effects of cultural, governance, geographic, and economic PDS. As such, the study provides indications for the performance effects of different PDS and can potentially contribute to the current debates in a number of domains.

Overall, our study provides strong evidence that PDS negatively affect firm performance. In particular, we found consistent negative and statistically significant effects of cultural, governance, and geographic PDS. Furthermore, the results indicate that the greatest part of the variation in performance is explained by added governance and added cultural distance. These results are in line with our theoretical arguments that the nature of governance and cultural distance is substantially different from geographic distance. The implications of governance and cultural distance are less predictable and overt. These distances affect, for instance, communication and interaction with internal and external parties. Cultural distance may impede learning and disturb the decision making process, while governance distance may create substantial risk and uncertainty of operations due to an unfamiliarity of rules and regulations. It follows that the mechanisms and phenomena associated with governance and cultural distance induce higher complexity for the firm as compared to the implications of geographic distance, like for instance transportation and communication costs. We will return to this finding in more detail below.

However, we were unable to detect any significant effect originating from an economic psychic distance stimulus. The insignificant results obtained for the economic psychic distance stimulus may be explained as follows. Differences in economic figures provide information on a country’s economic development relative to another country. These differences, however, need not to be disadvantageous. Rather, quite the contrary may be the case. As outlined above, MNEs may seize opportunities to capitalize on economic differences between countries (Evans and Mavondo, 2002). Hence, the economic advantages of large and attractive markets may outweigh the disadvantages of distance (Gripsrud, 1990). At the same time, however, the implications of economic differences are not necessarily easily understood. Differences in consumer behavior, for example, are difficult to determine and hence to prepare for. Thus, the fact that we were unable to detect a statistically significant effect of the economic psychic distance stimulus on firm performance may be the result of these potentially opposing effects of differences in economic development.

7.1. Psychic distance stimuli, perceived psychic distance, and performance effects

Dow and Karunaratna (2006: 580) have reasoned that a “manager’s perception of psychic distance [...] will be a function of the PDS he or she is exposed to, but that perception will also be moderated by the decision-maker’s sensitivity to those stimuli. In

turn, a manager's perception of psychic distance will influence his or her choices." Hence, PDS can affect perceptions only if they are recognized by the manager, which in turn requires PDS to be at least to some degree concrete and overt.

The fact that some PDS are more apparent than others has far reaching consequences. Research on both individual level and organizational level has shown that information processing follows a sequence that involves attention, interpretation, and action (Daft and Weick, 1984; Dutton and Jackson, 1987). This is important as it highlights that issue-specific actions can only be taken to the degree to which the respective issue is perceived. Put differently, the extent to which a manager or a firm is able to deal with an issue is contingent upon the extent to which the manager or the firm pays attention to the issue.

Håkanson and Ambos (2010) provide empirical evidence for the existence of a strong correlation between the geographic psychic distance stimulus and the PPD of managers. Even more, compared with other PDS, the authors report the geographic distance stimulus to have the strongest effect on PPD. Conversely, the cultural distance stimulus based on Hofstede's dimensions of culture turned out to be a weak predictor of PPD. Håkanson and Ambos (2010) explain this finding by arguing that Hofstede's dimensions "disregard for overt and easily recognized cultural expression such as those associated, for example, with religion, architecture, and art" (Håkanson and Ambos, 2010: 205). Due to the fuzzy and tacit nature of these aspects of national culture a firm is unlikely to allocate substantial attention to this issue, making it difficult to grasp the extent of differences between any two countries. Allocating less attention and, as a result, being less aware of such differences is likely to lead the firm to underestimate the differences in such implicit and tacit dimensions like, for example, culture, and its impact on interpersonal interactions (Pedersen and Petersen, 2004). Similarly to culture, it is likely that firms may have difficulties in identifying and interpreting differences in the governance environment. For example, the implicit rules and norms associated with government interaction and communication are not directly apparent for a foreign firm.

As elaborated above, we found that the greatest part of variation in performance is explained by governance distance, followed by cultural distance, and, finally, geographic distance. In the light of Håkanson and Ambos' (2010) findings, our results suggest that the performance effect of PDS may reflect the degree to which a firm is aware of inter-country differences. The more the firm is aware of inter-country differences, the more likely it is that the firm takes appropriate measures to overcome the respective distance. Pro-actively addressing the challenges of distance is then likely to mitigate the negative effect of distance on performance. Given that the firm is well aware of geographic distance, it should be more likely to pro-actively take measures to overcome the friction associated with it. In contrast, less concrete and overt differences such as the ones in the cultural and governance environment, however, may not be addressed pro-actively, simply because the firm is not – or only to a lesser degree – aware of the existence of such differences.

7.2. Limitations

No single study can embrace all aspects of an issue. Therefore, we acknowledge here some limitations that should be kept in mind when interpreting the results. First, the generalizability of our findings may be limited due to the nature of our sample made up of large publicly-owned German MNEs. The availability and quality of data was an overriding consideration. It may be true that the findings obtained in this study may not be unconditionally transferable to small and/or privately-held firms. However, it is also true that we would not have been able to get the same information on the expansion paths of such small and/or privately-held firms. Hence, given the research question at hand, it was inevitable to focus on large publicly-owned MNEs. Second, Dow and Karunaratna (2006) as well as Dikova (2009) have argued that it is important to account for managerial or firm sensitivity to PDS rather than examining direct effects. Though we did not directly measure such sensitivity, our approach to rely on the added distance concept instead of the home country reference point takes into account the MNE's experience and as such accounts for the sensitivity to PDS. Third, it is obvious that the ability to handle the complexity associated with added PDS may differ between firms and even within a single firm over time. Such differences may be the result of specific firm characteristics such as the composition of the top management team (Eisenhardt and Schoonhoven, 1990) or the firm's organizational structure (Van Den Bosch et al., 1999). While our fixed effect approach captures variation across firms of factors that are time-invariant, it does not account for factors that may change within MNEs over time. Such data, however, is not consistently available in sufficient detail from annual reports. Thus, we followed previous research on MNEs' internationalization paths such as Vermeulen and Barkema (2002) or Wagner (2004), who did not include the above aspects in their analysis either.

7.3. Conclusion

There is no doubt that the concept of psychic distance has been and remains to be of utmost importance in IB research as it helps to theoretically and empirically explain a wide array of issues associated with firms' internationalization. Reducing the ambiguity surrounding the concept, the distinction between PDS and PPD introduced by Dow and Karunaratna (2006) is likely to substantially increase our understanding of this important phenomenon. In the present study, we have focused on the performance effect of PDS. Exploring the effects of four PDS, our study represents a substantial advance on previous empirical research on the performance impacts of MNEs' international expansion paths. With our study we contribute to the distance literature by showing that it is not only added culture distance that negatively affects MNE performance, but also added governance and added geographic distance. Moreover, we are able to compare the effect sizes of different distances and are able to conclude that added governance, rather than cultural or geographic distance has the largest effect on MNE performance. While these results are valuable in and of themselves, they become even more informative when considered in the light of research exploring the link between PDS and PPD (Håkanson and Ambos, 2010). Combining the insights suggests that the performance

effects of added PDS may reflect the degree to which the firm is aware of inter-country differences. Awareness of inter-country differences enables the firm to pro-actively take countermeasures to overcome distance, while no countermeasures can be taken for distances that are not or only to a lesser degree perceived. In this sense our study is also a reminder to managers to question their wisdom and a call to managers to be more sensible to distances that are less apparent, originating, for example, from differences in governance or cultures. As we have shown, it is these distances that have the largest effect on MNE performance. Thus, managers should pay particular attention to distances that are not overt and easily comprehensible. In doing so, managers are likely to mitigate the friction of international business activities associated with added distance.

Acknowledgements

The authors would like to thank JIM Guest Editors Björn Ambos and Lars Håkanson for their extremely valuable and constructive comments as well as their excellent guidance throughout this articles's review process. The authors are also grateful for very useful comments and suggestions received from the two anonymous reviewers and would also like to thank WHU assistant professor Jan-Christoph Rülke for his suggestions with regard to methodology.

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