

# A Mediating Model of Psychic Distance and FDI Market Selection

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## Abstract

In developing and testing a mediating model of psychic distance, this paper bridges the gap between two distinct approaches to the concept of psychic distance – defining and measuring the construct in terms of exogenous national level differences, and defining and measuring it in terms of decision-makers' perceptions. The paper confirms five distinct types of national level differences (or distances) to be significant antecedents of perceptions of psychic distance. Two asymmetric 'distance-bridging' factors are also found to be significant antecedents of psychic distance. Psychic distance perceptions are shown to be significant predictors of foreign direct investment flows. Subsequent tests confirm that in all but one case, the national level distance variables represent complete mediation relationships. Overall, the model confirms both the criterion validity of perceptions of psychic distance and the construct validity of its antecedents.

**Key Words:** Psychic distance, cultural distance, Hofstede, market selection, FDI.

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## 1. Introduction

Within the realm of international business research, the related constructs of psychic distance (Johanson & Wiedersheim-Paul, 1975) and national cultural distance (Kogut & Singh, 1988), along with other forms of national differences such as institutional distance (Kostova, 1997; Kostova & Zaheer, 1999; Xu & Shenkar, 2002), socio-cultural distance (Agarwal, 1994) and country distance (Martin & Drogendijk, 2008), have been cited as potential predictor variables for a broad array of management decisions. It essentially began with Johanson and Wiedersheim-Paul (1975) proposing that psychic distance was a key antecedent of both market selection and entry mode choice. Building on similar underlying concepts and arguments, Kogut and Singh (1988) then proposed that national 'culture distance' is a key antecedent of both entry mode choice and establishment mode choice. Since that time, papers have linked various forms of distance to the decision of firms to begin exporting (Gripsrud, 1990), export market selection (Ellis, 2008), FDI market selection (W. Davidson, 1980), international performance (e.g. Evans & Mavondo, 2002; O'Grady & Lane, 1996), human resource management issues (Boyacigiller, 1990), and even communication in R&D joint ventures (Tushman, 1978).

Yet, despite (or possibly due to) this notoriety and wide range of applications, substantial differences of opinion remain concerning how best to operationalize and measure these constructs (Brewer, 2007; Dow & Karunaratna, 2006; Evans et al., 2008; Håkanson & Ambos, 2007; Sousa & Bradley, 2006). At the core of most of these debates is the issue of whether distance should be defined and measured in terms of exogenous and observable differences amongst countries, as it was initially operationalised by Vahlne and Wiedersheim-Paul (1973), or in terms of the perceptions of individuals (e.g. Håkanson & Ambos, 2007; Sousa & Bradley, 2006). This paper provides a bridge between these two perspectives by proposing and testing a model where perceptions of psychic distance mediate the relationship between national level differences (or distances) and a key international business decision – the location of foreign direct investment (FDI). Testing and validating such a mediating model is critical for confirming the construct validity of previous studies which have adopted one or more measures of national distance, claimed they are indicators of psychic distance. This paper incorporates a dramatically broader range of antecedents of psychic distance, including both Dow and Karunaranta's (2006) psychic distance stimuli and some 'information asymmetry' factors suggested by Håkanson and Ambos (2007); and it thereby represents by

far the most comprehensive study to date investigating the factors which shape managers' perceptions of psychic distance.

The next section of the paper outlines our working definition of the central construct in our model – psychic distance. It briefly reviews past efforts to measure and incorporate distance into empirical international business research, before summarizing the main contributions of the study. A series of hypotheses concerning the antecedents of psychic distance are then developed, and finally a criterion-related hypothesis is developed. The third and fourth sections of the paper describe the research methodology and report the emerging results of the statistical analyses. The fifth and final section discusses and summarizes the findings, contributions and limitations of the research.

## **2. Literature Review & Hypotheses Development**

### *2.1. A Working Definition of Psychic Distance*

For the purposes of this study we have adopted, as a starting point, the Johanson and Vahlne (1977, p24) definition of psychic distance:

*“the sum of factors preventing the flow of information from and to the market. Examples include differences in language, education, business practices, culture, and industrial development.”*

This definition is useful because it clearly identifies the unifying theme, or criterion by which to determine whether a factor can be considered to influence psychic distance – the disruption of the flow of information between markets. It also provides a specific though not exhaustive list of factors which fall into that category. Following the lead of the early Uppsala studies, most subsequent empirical research focussed on exogenous national differences, such as Kogut and Singh's (1988) national cultural distance index, based on Hofstede's (1980) dimensions of national culture. Indeed, in the past two decades since its publication, the Kogut and Singh index has become almost the paradigmatic measurement of national distances in entry mode and establishment mode research (Harzing, 2003). Unfortunately, this focus on a single secondary source scale may have contributed to a continuing string of weak and ambiguous results (Kirkman & Lowe, 2006; Tihanyi et al., 2005), causing many commentators to question the usefulness of the construct (Stöttinger & Schlegelmilch, 1998).

In response, a growing stream of researchers and commentators have argued that since international business decisions are made based by individual managers, psychic distance should be defined and measured in terms of managers' perceptions of the distance between countries (Evans & Mavondo, 2002; Sousa & Bradley, 2006; Stöttinger & Schlegelmilch, 1998). This approach has the obvious merit of directly measuring a individuals' perceptions, rather than relying on secondary, and possibly weak, indicators of those perceptions. As a result, a modest stream of empirical research has embraced this approach over the past decade (Dow, 2000; Ellis, 2007, 2008; Evans & Mavondo, 2002; Evans et al., 2008; Håkanson & Ambos, 2007). However, the perceptual approach to defining and measuring psychic distance also has its limitations. Most international business decisions are infrequent and it is difficult to predict in advance their timing. As a result, most empirical studies utilizing perceptions of psychic distance have either measured those perceptions post hoc (e. g. Evans & Mavondo, 2002), which raises concerns about the direction of causality between the decisions and the perceptions; or have utilized the perceptions of independent panels of experts (e.g. Ellis, 2007). A second limitation of the perceptual approach raised by Evans and Mavondo (2002) is that while it potentially results in stronger predictor variables, unless further investigation is undertaken to understand the factors that shape those perceptions, the field of knowledge will not advance in terms of understanding the underlying mechanisms.

It is at this point, the contributions of this paper begin to take shape. Building on the schema and terminology suggested by Dow and Larimo (2009, p76) , we propose a mediating model (Figure 1) which essentially builds a bridge between these two competing views of psychic distance. The mediating construct in the middle of the model is 'perceived psychic distance', as proposed by Evans and Mavondo (2002) and Sousa and Bradley (2008). A wide range of psychic distance stimuli can then be added to the model (on the left side of figure 1) as potential antecedents of perceived psychic distance. These potential antecedents essentially represent the classic approach of measuring national distance in terms of secondary indicators, such as Kogut and Singh (1988)'s index of national cultural distance. To date only a very limited number of empirical studies have actually investigated the antecedents of perceived psychic distance (Håkanson & Ambos, 2007; Sousa & Bradley, 2006), and each of those studies only explored a limited number of antecedents; however, one only needs to turn to the original Johanson and Vahlne (1977) definition of psychic distance and to recent efforts by Dow and Karunaratna (2006) to uncover a much broader array of

potential factors. More detailed discussions of these antecedents can be found in Section 2.2 with the development of the specific hypotheses.

The other critical aspect of the mediating model is the incorporation of a criterion variable (Kerlinger, 1986). In this instance, we have chosen to focus on how perceptions of psychic distance influence FDI market selection, be it for market seeking motives or resource seeking motives. Not only is the relationship between perceptions of psychic distance and FDI market selection under-explored and of interest in its own right, but its inclusion in the model allows us to test the validity of a broad range of potential psychic distance stimuli. For example, some researchers have used differences in industrial development as an indicator of psychic distance (Dow & Karunaratna, 2006; Kobrin, 1976; Vahlne & Wiedersheim-Paul, 1973); yet differences in economic development may be an indicator of other factors as well, such as differences in demand preferences (Linder, 1961). A proper mediating model allows one to test the construct validity of the secondary indicators (Kerlinger, 1986). The final benefit of including FDI market selection in the model is to permit the testing of the criterion-related validity of the perceptual instrument itself.

The antecedents of perceived psychic distance discussed above (and in section 2.2) can be characterized as distance creating factors. They are the differences amongst countries which may disrupt the flow and accurate interpretation of information, or at least the perception that there may be communication problems. However, a number of commentators (Brewer, 2007; Child et al., 2002; Nordstrom & Vahlne, 1994) have highlighted that there may also be distance bridging factors, that is, factors which assist in the flow of information between countries. Håkanson and Ambos (2007) identify and test two such factors which are shown to have an asymmetric but positive impact on the flow of information. Hypotheses for these factors are developed in Section 2.3.

In summary, the research agenda proposed here is, to our knowledge, the first effort to create and test a mediating model of psychic distance. In doing so, it allows us to build a bridge between the two competing approaches to defining and measuring psychic distance; and in particular, allows us to test the construct validity of the various psychic distance stimuli commonly used in international business research. The remainder of this section of the paper is dedicated to developing the specific hypotheses for each aspect of the model.

## 2.2. Distance Creating Factors

Without a doubt, the most commonly employed secondary source indicator of national differences (or distances) amongst countries in IB research is Kogut and Singh's (1988) index of national cultural distance. While excessive reliance on this index is often cited as a reason for weak and ambiguous results (e.g. Harzing, 2003; Kirkman & Lowe, 2006; Tihanyi et al., 2005), the underlying rationale for believing that national cultural distance may disrupt the flow of information; and thus being considered an antecedent of perceived psychic distance, is quite strong. Stretching right back to Johanson and Vahlne (1977), culture is considered to have a critical influence on how people interpret information; as such, large differences have the potential to distort the flow of information, particularly in a complex buyer-seller or employer-employee relationship. As a result, our first hypothesis concerning the antecedents of perceived psychic distance is as follows:

**H1.** *National cultural distances between countries will be positively correlated with perceptions of psychic distance.*

In the early development of the concept of psychic distance, Johanson and Vahlne (1977) proposed that differences in industrial development, political systems and education systems all have the potential to disrupt the flow of information.

- In the case of differences in education, the linkage may be relatively evident. The level of education of individuals will influence both the amount and the complexity of the information they can process, as well as the manner in which they process it. As a result, people with dramatically different education levels may have a greater difficulty communicating with each other.
- A similar, but slightly more obscure process may arise with respect to differences in industrial development. The level of industrial development of a nation will affect the nature of the employment opportunities of most of its citizens. Just as our education in our formative years shapes how we communicate and interpret information, the nature of our subsequent employment will also influence how we communicate. As a result, dramatic differences in the level of industrial development amongst countries may disrupt the flow of information.
- Differences in the degree of democracy may at first appear to be quite a distinct concept from the previous two (education and industrial development). However, the

degree of democracy is a strong indicator of the nature of much of a country's institutional infrastructure. As such, dramatic differences in the degree of democracy and political freedom amongst countries may not only increase the potential for misunderstanding amongst individuals, but also increase the potential for misunderstanding between foreign firms and the host nation's institutions, be they legal, political, or administrative.

To some extent, the three preceding constructs are quite distinct; however at another level, there are both theoretical and empirical arguments that they coexist to such a strong extent, and that in general one cannot separate them. Empirically, this has been demonstrated by several studies (Dow & Karunaratna, 2006; Dow & Larimo, 2009; Drogendijk & Martin, 2008). Differences in the degree of education, industrial development and degree of democracy amongst nations are so highly correlated that they cannot be assessed in the same model without severe multicollinearity problems. Drogendijk and Martin (2008) provide a potential solution by merging the three constructs into a single factor they label 'socio-economic distance'.

At a theoretical level, the correlation should not be surprising. Not only are high levels of education necessary to sustain a high level of industrial development, but a high level of industrial development is often necessary in order to afford high levels of education. As a result, the two factors may be reinforcing each other. The theoretical link with degrees of democracy and political freedom is a more politically contentious debate, but arguments can be made that higher levels of education tend to cause people to place greater value on political freedoms, and higher levels of political freedom may in fact be a necessary condition for higher levels of industrial development and economic growth

As a result of the co-alignment of these three factors, we have chosen to adopt Drogendijk and Martin's (2008) approach and phrase our second 'distance creating' hypothesis as follows:

**H2.** *Socio-economic differences between countries (i.e. the combination of differences in industrial development, education levels and degree of democracy) will be positively correlated with perceptions of psychic distance.*

The idea that differences in languages amongst countries may represent a potential barrier to communication may not initially appear controversial (e.g. Boyacigiller, 1990; Johanson &

Vahlne, 1977). While it may not be insurmountable to learn a new language or hire an interpreter, the difficulties of negotiating a complex business deal in a second language, or through a third party who is less familiar with the nuances of the business, are quite substantial. However, with the exception of a few rare instances (Arora & Fosfuri, 2000; W. H. Davidson & McFetridge, 1985; Dow & Karunaratna, 2006; Geraci & Prewo, 1977; Srivastava & Green, 1986; Vahlne & Wiedersheim-Paul, 1973), the inclusion of differences in language as a psychic distance stimulus is rare. Nevertheless, we argue that the critical barrier here is in adequately measuring such a complex construct, rather than the appropriateness of the construct. Thus, our third ‘distance creating’ hypothesis is as follows:

**H3.** *Differences in the dominant languages between countries will be positively correlated with perceptions of psychic distance.*

Differences in religions amongst countries may represent a more subtle, but arguably just as important, barrier to communication as differences in languages. Religions shape and influence the underlying belief sets of a very large portion of the world’s population. This in turn affects the manner in which people filter and interpret information; and thus differences in religion may severely disrupt the flow of information between individuals and organizations. Once again, while the number of empirical studies that have included religion as a potential source of psychic distance is very modest, we argue this is due to the difficulty in measuring the construct, rather than to the relevance of the construct. As a result, our fourth ‘distance creating’ hypothesis is as follows:

**H4.** *Differences in the dominant religions between countries will be positively correlated with perceptions of psychic distance.*

Stretching back to the seminal work by Johanson and Vahlne (1977), differences in political systems have been regularly cited as an underlying dimension within the psychic distance construct. Differences in political systems have the potential to disrupt communications between firms, governments and regulation authorities. To a certain degree, our second hypothesis already captures one aspect of political systems (the degree of democracy); however, over the past centuries a second aspect of political systems – the tension between socialism versus capitalism may be equally important. In particular, this dimension reflects governments' beliefs about their role within markets, and large differences

in this aspect may seriously disrupt the flow and interpretation of information between a foreign firm and the host government. We frame our fifth ‘distance creating’ hypothesis as follows:

**H5.** *Differences in political ideologies (i.e. socialism versus capitalism) between countries will be positively correlated with perceptions of psychic distance.*

Our final ‘distance creating’ hypothesis concerns the one potential factor that was not mentioned in the early efforts of defining psychic distance (Johanson & Vahlne, 1977) – geographic distance. To some extent this factor may have been overlooked because Beckerman’s (1956) original motive for coining the term psychic distance, was that geographic distance did not seem to adequately explain the patterns of intra-European trades. Nevertheless, there are both sound theoretical and empirical reasons that geographic distance may be an antecedent of perceptions of psychic distance. In particular, when face-to-face communication is an important part of a transaction, both the cost and time aspects of geographic distance may disrupt the flow of information and therefore influence psychic distance perceptions (Dikova et al., 2009; Håkanson & Ambos, 2007). We frame our sixth and final ‘distance creating’ hypothesis as follows:

**H6.** *Geographic distances between countries will be positively correlated with perceptions of psychic distance.*

### **2.3. Asymmetric Distance Bridging Factors**

The preceding six hypotheses all concern national level differences that may be characterized as distance creating factors. However, as pointed out by several commentators (Brewer, 2007; Child et al., 2002); perceptions of psychic distance may also be influenced by what might be characterised as distance-bridging factors – factors which may facilitate the flow of information. In particular, the degree of sophistication of a country’s infrastructure may facilitate the collection, analysis and dissemination of information concerning that country. For that reason, Håkanson and Ambos (2007), following Vahlne and Wiedersheim-Paul (1973), proposed that the level of economic development of a country may allow foreign managers to be better informed about that country’s economic situation and about specific market opportunities within that country. An important aspect of this proposition should be

noted here. The more highly developed communication infrastructure within the USA may allow a manager from a Polish company to be better aware of market opportunities in the U.S.; however, it will not necessarily allow an American manager to be better aware of market opportunities in Poland. Unlike the previous distance creating factors, this distance bridging factor will have an asymmetric impact on psychic distance. As a result, we frame our first ‘asymmetric distance bridging’ hypothesis as follows:

**H7.** *The economic development of a ‘foreign’ country will be negatively correlated with people’s perceptions of the psychic distance to it.*

A second potential ‘asymmetric distance bridging’ factor is the size of the host country’s economy (Håkanson & Ambos, 2007). One might argue that there may be economies of scale within a country’s communication infrastructure; and thus, a larger economy will tend to have lower cost, more diverse and/or more specialised information sources. However, we believe there may also be network effects influencing the availability of information concerning particular economies. The providers of information services will tend to focus on the information of greatest interest to the largest number of potential customers. Information providers in a large country will tend to focus more heavily on their own domestic market than on smaller neighbouring countries, whereas information providers in a smaller country will tend to focus less exclusively on their domestic market and provide better coverage of larger and influential neighbouring countries. This effect can be seen with respect to the degree to which the Austrian media focuses on German news items compared to the degree to which the German media focuses on Austrian news items. Similar contrasts can be made with respect to Canada and the U.S., or indeed, between the U.S. and the rest of the world. As a result, we frame our second ‘asymmetric distance bridging’ hypothesis as follows:

**H8.** *The size of a ‘foreign’ country will be negatively correlated with people’s perceptions of the psychic distance to it.*

#### **2.4. Testing the Criterion-Related Validity of Psychic Distance**

Our final hypothesis identifies a criterion variable with which to test our mediating variable. As discussed in section 2.1, it is only once a criterion variable is added to the model, that we can properly test a mediating relationship, and confirm the construct validity of the proposed antecedents and the criterion-related validity of the mediating construct. We have chosen the location choice of FDI, as measured by the stock of FDI, as our criterion variable

for several reasons. First of all, market selection of FDI is a critical business decision, and has long been linked to psychic distance (Johanson & Vahlne, 1977). Moreover, FDI location choice is one of the few major business decisions for which consistent multi-home country and multi-host country data is available. Such a dataset is necessary to simultaneously test and distinguish between host country effects and national differences. Consistent with Johanson's and Vahlne's (1977) internationalisation process model, our final hypothesis is expressed as follows:

**H9.**        *Perceptions of the psychic distance of a country will be negatively correlated with the propensity for direct foreign investment in that country.*

### 3. Research Methodology

#### 3.1. Data and Unit of Analysis

The data for this investigation is based on a sample of 25 countries (See Table 1); however, the actual unit of analysis for the models is the country pairs within that sample. It is important to note that the order of the countries within each pair is critical. For example, the perception of China by people from France is distinct from the perception of France by people from China. Similarly the quantity of FDI from France into China is different from the FDI from China into France. As a result, the sample of 25 countries yields a total of 600 distinct country pairs (25 x 24). Unfortunately, limitations in the availability of the criterion variables have reduced the usable sample to 563 country pairs. Where appropriate, the subscripts  $i$  and  $j$ , respectively, indicate the home market (i.e. the investing country) and the host market (i.e. the country in which the investment is being made).

#### 3.2. Analytical Techniques

The hypotheses are tested using structural equation modelling (AMOS 7.0). Structural equation modelling (SEM) is particularly useful for models using complex constructs based on multiple indicators. Similarly, SEM is ideally suited for modelling mediating relationships (Venkatraman, 1989). The base model, including the hypotheses, is presented in Figure 1. The various national level difference and distance variables (on the left hand side of Figure 1), plus the two host market variables ( $GDP_j$  and  $GDP_{pcj}$ ) form the antecedents of perceptions of psychic distance. Correlations amongst these exogenous constructs have been allowed in the model, but are omitted from Figure 1 for clarity. These antecedents predict the mediating

construct – perceived psychic distance (**PD<sub>Perc</sub>**) which in turn, with the control variable (**GDP<sub>ij</sub>**), predicts the criterion variable – the amount of direct foreign investment (**FDI**). Correlations with the mediating construct and the criterion variable have not been allowed, as they are reflected in the structural paths. It should also be recorded that in a limited number of instances, some indicators were sufficiently highly correlated that it was necessary to fix some path loadings in order to avoid negative error variances. These modifications did not materially influence the structural path loading of the model.

One unusual feature of the structural model is that geographic distance (**GDist**) has been included as an indicator of the second order socio-economic distance construct (**Soc-Eco**); however, a structural path from the error term for the geographic distance construct (**err\_GDist**) to the perceptions of psychic distance construct (**PD<sub>Perc</sub>**) has also been included. This extra structural path allows us to test for whether geographic distance has any relationship with perceptions of psychic distance, over and above its correlation with socio-economic distance. In essence it allows a test of hypothesis H6, independent of hypothesis H2, despite the two antecedents being moderately correlated.

### 3.3. *Measuring the Variables*

#### 3.3.1. *The Antecedents of Psychic Distance*

As discussed in the development of the hypotheses, the main antecedents of psychic distance in the model tested here reflect the various forms of national differences or distances as described by Johanson and Wiedersheim-Paul (1975) and others (Boyacigiller, 1990; Dow & Karunaratna, 2006; Evans & Mavondo, 2002; Harzing, 2003). These dimensions include national cultural distance (**Hof**) and differences in language (**Lang**), religion (**Relig**), industrial development (**Ind**), education (**Edu**) and political systems (**Dem** and **Social**).

- National cultural distance (**Hof**) is measured using the four original Hofstede dimensions (1980) combined into a single index (Kogut & Singh, 1988). Subsidiary analyses have been carried out including the fifth Hofstede and Bond dimension (1988), and with the each dimension modelled separately; however, the results are effectively the same. For comparability with previous research, we have chosen to present the model using index incorporating the four original dimensions. Unfortunately multiple indicators and/or estimates of construct reliability (at the national level) are not available for national cultural distance; thus, it has been left it as an observed exogenous variable.

- The specific scales with which to measure the other six forms of national differences are all drawn from Dow and Karunaratna (2006); however, for differences in industrial development (**Ind**), the number of indicators has been reduced from Dow and Karunaratna's (2006) original ten, down to the six highest loading indicators. It is also important to note that for four of these six distance constructs (**Ind**, **Edu**, **Dem** and **Social**), it is recommended that the absolute value of the differences be used (Dow & Karunaratna, 2006). Unfortunately, SEM cannot handle absolute values. Thus, it is necessary to estimate these distance constructs in a separate measurement model, and then manually insert their absolute values, along with appropriate estimates of their reliabilities, into the main structural model.
- One limitation of the earlier applications of these distance measures (e.g. Dow & Karunaratna, 2006; Dow & Larimo, 2009) is the high degree of multicollinearity amongst three of the constructs (**Ind**, **Edu** and **Dem**). Drogendijk and Martin (2008) provide an approach for dealing with this problem by introducing a second order factor they labelled socio-economic distance (**Soc-Eco**). This second order construct is included in the main structural model (Figure 1).
- Geographic distance (**GDist**) is measured as the natural logarithm of great circle distance between each country's largest economic centre; however, in the case of the USA and Canada, two major centres (one east coast and west coast) were incorporated. Given the high correlation between geographic distance and the three socio-economic constructs mentioned above, geographic distance has been included as an indicator of the second order construct (**Soc-Eco**). However, as discussed earlier, an error term (**err\_GDist**) representing the component of geographic distance which is independent of the socio-economic distance has also been included. This error term allows us to test for any independent relationship which geographic distance may have with perceptions of psychic distance and/or FDI stock.

In addition to the various 'distance' measures cited above, hypotheses H7 and H8 propose two other antecedents of perceived psychic distance which relate to potential asymmetries in the general flow of the information: the level of economic development within the host market and the size of the host market.

- The economic development of the host market is measured as GDP per capita (**GDP\_pc<sub>j</sub>**). This data is denominated in current US\$ and represents the average value

across the period of 2003 to 2005. The data is sourced from the United National Statistical Division (World\_Bank, 2008).

- The size of the host market is measured in terms of the natural logarithm of the country's GDP ( $GDP_j$ ) and is drawn from the same source as the standard of living data (World\_Bank, 2008). This data is also denominated in millions of current US\$ and is the average value across the period of 2003 to 2005.

### 3.3.2. *The Mediating Construct – Perceived Psychic Distance*

Perceptions of the psychic distance amongst the 25 countries were collected via a web-based survey conducted between autumn 2003 and spring 2007. Collaborators in each of the 25 countries were identified to assist with the data collection process. The target respondents were academically trained managers with four or more years of business experience. Prospective respondents were invited to participate via a customised email, containing a link to the survey. A total of 1,052 usable responses were received. On average the respondents had 18 years of formal education and 12 years of work experience (see Table 1 for details by country).

Each respondent was provided with a definition of psychic distance and then asked to rank the psychic distance of the remaining 24 countries from their home country. The scale provided ranged from 0 to 100 with their home country acting as the anchor at the lower end of the scale. Respondent were asked to rate the most distant country as 100. This approach, or mild variations, have been used by several researchers (Dow, 2001; Ellis, 2007; Nordstrom, 1991) for estimating perceptions of psychic distance. After assigning the country scores, a sorted list was displayed back to the respondents, allowing them to make corrections where necessary. Further methodological details and a full matrix of these psychic distance estimates for each country pair is available in a separate paper (Håkanson & Ambos, 2007). For the analyses presented in this paper, the mean score for each country pair has been employed as the indicator of the perceived psychic distance ( $PD_{HA}$ ). While this approach only yields a single indicator of perceived psychic distance, it does provide an estimate of the reliability of that indicator (0.983). As a result, psychic distance ( $PD_{perc}$ ) is modelled in our analyses as a single indicator construct with an externally imposed reliability (Bentler & Chou, 1987).

### 3.3.3. *The Gravity Model Control Variable*

When modelling either the volume of international trade (e.g. Bergstrand, 1989; Rauch & Trindade, 2002), or foreign direct investment (e.g. Bevan & Estrin, 2004; Razin et al., 2005), the size of both the host and home countries are critical control variables. Indeed, when combined with measures of distance, this ‘gravity model’ (as it is commonly referred to) is “one of the most empirically successful [models] in economics” (Anderson & Wincoop, 2003, p170). For this reason, we have included the product of the host and home market sizes as a control variable (**GDP<sub>ij</sub>**). As with the GDP of the host market (**GDP<sub>j</sub>**), the size of each country is measured in terms of the natural logarithm of the country’s GDP. This data is denominated in millions of current US\$ and is the average value across the period of 2003 to 2005. The data is sourced from the United National Statistical Division (World\_Bank, 2008). For obvious reasons, the **GDP<sub>j</sub>** and **GDP<sub>ij</sub>** variables are significantly correlated. For that reason, the measurement model allows **GDP<sub>ij</sub>** to be correlated directly with **GDP<sub>j</sub>** and several other of the antecedent constructs. The critical difference is that **GDP<sub>ij</sub>** is the only construct which is allowed a direct structural path to our main criterion variable. All of the other aforementioned constructs can only interact with the criterion variable through the mediating construct – perceived psychic distance.

### 3.3.4. *The Criterion Variable*

The main criterion variable for our model is the stock of foreign direct investment in country *j* by firms originating from country *i*. The stock of FDI for each of three years (2003, 2004 and 2005) are included as separate indicators (**s3**, **s4** and **s5**) in order to provide an estimate of the reliability of the overall construct (**FDI Stock**). The FDI stock estimates are measured in terms of the natural logarithm of the current US\$ value (billions) of the investments and are sourced from the OECD (2005). Given that the antecedents under consideration are relatively stable factors which are slow to change, we have chosen to focus on FDI stock, rather than FDI flows. FDI flows are substantially more volatile, and are arguably more influenced by short-term factors, such as economic cycles and currency exchange rates, which are not under investigation here.

Descriptive statistics for all of indicators are available in Table 2 and a correlation matrix including the main constructs is provided in Table 3.

## 4. Results

### 4.1. Overall model fit

Overall, the model has a modest but acceptable fit (see Tables 4 & 5). With a Chi Squared ( $\chi^2$ ) of 775.68 and 109 degrees of freedom ( $p < .001$ ), the resulting ratio ( $\chi^2_{/d.f.}$ ) of 7.12 is moderately high compared to the range of 1 to 5 recommended by Hair et al (1992); however the most comprehensive measure of overall (CFI = 0.933) is well above the normally recommended minimum of 0.900 (Bagozzi & Yi, 1988). Given both the complexity of the model (Gerbing & Anderson, 1993), and the fact the indicators are drawn from diverse secondary sources these result should not be surprising.

### 4.2. Measurement Model

At the measurement model level, the results appear quite reliable and robust. The regression weights for each of the latent construct indicators (Table 5) are statistically significant, and the standardized loadings are all above 0.750. Similarly, the resulting construct reliabilities are high, ranging from 0.830 to 0.995. The various constructs also have statistically significant discriminant validity (Bagozzi & Yi, 1988).

It is an unfortunate but unavoidable fact that there are only single indicators for some of the antecedent variables, such as geographic distance. However, with the exception of two of the constructs, specifically national cultural distance (**Hof**) and differences in political ideology (**Social**), these single indicator variables are relatively unambiguous constructs, and as such a single indicator should be sufficient.

### 4.3. Structural Model

As shown in Table 5, all but one of the structural paths between perceived psychic distance and its antecedents have highly significant regression weights; and overall a very high proportion of the perceived psychic distance variance is explained. The squared multiple correlation for the construct, an indicator of its explained variance, equals 0.824. As a result, hypotheses H1, H2, H3, and H4 are all confirmed. National cultural distance, socio-economic distance, and differences in language and religion are all highly significant predictors ( $p < 0.001$ ) of perceptions of psychic distance. Differences in political ideologies (**Social**) proved to be the only exception; thus H5 is not supported. However, this non-significant result should not be surprising. In previous research utilizing these scales, differences in political ideology was consistently a non-significant predictor variable (Dow & Karunaratna, 2006;

Dow & Larimo, 2009). The other somewhat surprising result is the degree to which geographic distance is a significant predictor of perceived psychic distance. Even when testing hypothesis H6 using the residual component of geographic distance (**err\_GDist**), that particular path proved to have the most statistically significant loading ( $CR = 27.07$ ,  $p < 0.001$ ).

In addition to the various measures of distance, the regression weights for the two ‘information asymmetry’ variables – the economic development and the size of the host market - are also both highly significant in the predicted direction ( $CR = 11.43$ ,  $p < 0.001$  and  $CR = 5.29$ ,  $p < 0.001$  respectively). These results confirm hypotheses H7 and H8. The level of economic development and size of the host market both appear to increase the flow of information, and as a result reduce the perceived psychic distance of the market.

The final structural path of interest links the perceptions of psychic distance to the stock of FDI. This path is highly significant ( $CR = 3.33$ ,  $p < 0.001$ ), and in combination with the gravity model control variable (**GDP<sub>ij</sub>**) explains a substantial proportion of the variance in FDI stock (a squared multiple correlation of 0.127). As a result, hypothesis H9 is confirmed.

When the preceding results (i.e. the strong support for 8 of the 9 earlier hypotheses) are taken in combination, they provide strong support for the view that perceived psychic distance acts as a mediator between the various forms of national distance and FDI choices. However, as Venkatraman (1989) argues, a mediating model cannot be fully confirmed until a direct link between the antecedent and the criterion variable has been tested.

- If this direct link is non-significant, then a complete mediating model is confirmed.
- If this direct link is statistically significant, but the links to the mediator also remain significant, then a partial mediating model is confirmed.
- If the direct link causes either of the links to the mediating variable to fall to non-significance, then a mediating relationship is refuted.

This final test was performed for each of the seven significant antecedents of psychic distance, and in all but one instance a complete mediating model was confirmed. For the one exception, socio-economic distance, there was a significant structural path directly to the FDI Stock ( $CR = -2.621$ ,  $p < .01$ ); however, the mediating paths remained significant as well. As a result, there appears to be a partial mediating relationship with respect to socio-economic distance.

## 5. Discussion & Conclusions

### 5.1. *Summary of Contributions for Researchers*

This paper is the first published study to explore, and the first study to confirm, the mediating role that psychic distance plays between national level differences and FDI market selection. Confirming this relationship is important for several reasons.

1. Numerous researchers in the past have used national level differences, or distances, as surrogate measures of psychic distance when exploring various foreign market entry decisions (e.g. Dow & Karunaratna, 2006; Erramilli & Rao, 1993; Harzing, 2002; Kogut & Singh, 1988). This paper strengthens the construct validity (Kerlinger, 1986) of that stream of research. Particularly with respect to FDI market selection, our ‘complete mediation’ results indicate that when one employs a measure of national distance such as the Kogut and Singh index (1988), it is indeed acting as a surrogate for perceptions of psychic distance.
2. However, the results presented here also provide a criticism of that same stream of research. As already discussed earlier in this paper, the vast majority of researchers have relied on an extremely narrow range of national level distances. The strong support for hypotheses 1 through 4 indicate that perceptions of psychic distance are driven by a much broader range of national level differences; and the most commonly employed measure of national distance, national cultural distance, is indeed one of the weakest antecedents of psychic distance. Measured at the national level, the set of antecedents included in our model explains more than 80% of the variance; thus we are reasonably confident that we have incorporated most of the major antecedents.
3. While a few recent papers have also begun a more extensive exploration of the antecedents of perceived psychic distance (Dow, 2008; Håkanson & Ambos, 2007); an additional benefit of a mediating model is in providing a measure of criterion related validity.

One of the other notable contributions of this research is the inclusion of two national ‘asymmetric distance bridging’ variables, specifically the size and the economic development of the host country. It should be noted that within the confines of this paper, we are partly replicating the earlier results of Håkanson and Ambos (2007); however, the present study includes a much broader range of national distance measures and a criterion variable – the volume of FDI. It is particularly interesting to note that even after including a potential direct

effect between the size of the host market and the volume of FDI, the mediating relationship still remained significant.

Another notable contribution of this research is the surprising degree to which geographic distance is a direct antecedent of perceptions of psychic distance, even after controlling for correlations with other variables. This is particularly notable since Beckerman (1956) initially coined the term psychic distance to explain the variations in trade not otherwise explained by transportation costs (commonly approximated by geographic distance). Fortunately, FDI market selection is an ideal setting for discriminating between geographic distance as an indicator of transportation costs and as an indicator of psychic distance, since FDI is typically utilized as an entry mode in order to avoid or minimize transportation costs (Dunning, 1977).

A final and slightly unexpected contribution of this research is the partial mediating role of socio-economic distance. As discussed by Dow and Karunaratna (2006), one of the limitations in using differences in industrial development as an indicator of psychic distance is that it could also be an indication of differences in customer preferences (Linder, 1961). Our results indicating a partial mediating model with respect to socio-economic distance imply that the construct is probably acting as an indicator of both effect (psychic distance and similarities in demand). Thus, when utilising socio-economic distance as a predictor variable, researchers need to be cautious about attributing observed relationship solely to either effect.

## *5.2. Summary of Contributions for Practitioners*

Given that this research is descriptive in nature, as opposed to prescriptive, one might expect that our results would not be surprising to practitioners; however, given the complexity of the relationships, many practitioners may not be explicitly aware of the interactions. Thus, we believe our results may be a timely reminder of the extremely broad range of factors which may impact on the (perceived) flow of information between markets, and in particular, how the size, distance and level of economic development of a potential host market can influence the availability of critical information. Our result would indicate that geographic distance in particular, not only increases transportation costs, it also has an extremely large impact of the flow of information between markets.

### *5.3. Limitations and Future Research*

One major limitation of this research is that all of the variables are measured at the national level. From a methodological point of view that is appropriate; however, it does mean that our analyses do not incorporate any individual level variance in both perceptions and international experiences. As reported in the Results section, our model predicts more than 80% of the variance in perceived psychic distance; however, that is variance in the national average. When one is attempting to predict the perceptions of an individual decision maker, or a small group of people (e.g. the top management team), then a variety of individual level factors may come in to play. This is an important avenue for future research as FDI decisions are ultimately made by individuals, or small groups of individuals. Thus more research on the individual level factors which may influence perceptions of psychic distance is critical.

A second limitation of our study is its bias towards large developed countries. Unfortunately, given the cost and complexity in collecting perceptual data, such a bias is often difficult to avoid; however, researchers do need to aware of it. In particular, this selection bias may understate the importance of dimensions such as degree of democracy, for which the variance of this dimension is artificially constrained by the nature of the sample. Nevertheless, the vast majority of FDI is both initiated by and targeted at the 25 countries included in this study; and thus it can be consider representative of most FDI decisions.

One final limitation, and an avenue for further work, is the one non-significant antecedent – differences in political ideology (Social). The non-significance of this dimension may be in part due to the available instrument with which it is measured. Unlike most other national distance dimensions, there is, at the moment, only one single indicator of ‘differences in political ideology’, and that indicator is based on a relatively crude binary scale. Thus, rather than abandoning the political ideology dimension as irrelevant, it may appropriate to explore other more sophisticated methods for measuring this construct.

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**Table 1. Countries Selected for the Data Set**

	<b>n</b>	<b>Mean Age (yrs)</b>	<b>Percentage Male</b>	<b>Business Experience (yrs)</b>	<b>Time Abroad (yrs)</b>	<b>Formal Education (yrs)</b>
Australia	91	36	86	10.2	3.08	19.5
Austria	63	39	83	14.3	7.65	17.8
Argentina	56	38	62	10.9	3.73	16.8
Belgium	19	38	79	13.0	2.74	19.1
Brazil	39	38	69	13.5	0.69	20.8
Canada	24	36	67	9.7	8.21	18.4
China	29	35	52	9.0	4.86	16.2
Denmark	52	39	79	13.0	1.96	16.7
France	15	43	80	16.1	6.60	15.1
Germany	32	36	75	6.1	2.78	18.9
India	40	33	100	4.5	2.05	18.5
Italy	26	32	69	5.0	8.9	18.2
Japan	21	33	62	9.7	9.29	15.9
Mexico	88	37	59	10.9	3.03	19.2
Korea, Republic of	20	41	90	7.9	4.85	17.2
Netherlands	21	40	86	10.5	6.76	18.7
Norway	17	40	76	12.4	5.71	14.9
Poland	26	37	58	10.0	1.15	16.9
Russia	57	38	51	10.7	1.95	17.8
Spain	18	38	78	9.6	2.22	20.4
Sweden	61	44	76	15.4	4.11	17.5
Switzerland	71	43	94	16.2	4.04	18.6
Turkey	45	37	80	10.8	19.6	17.8
United Kingdom	72	40	78	13.4	5.06	18.1
United States	41	38	61	11.5	3.20	17.4

**Table 2 Descriptive Statistics (n = 563)**

<b>Variables &amp; Indicators</b>	<b>Label</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std Dev</b>
<b>National Cultural Distance</b>	Hof	0.02	9.11	2.33	1.66
<b>Indicators of Differences in Languages</b>					
Distance Between Major Languages	L <sub>1</sub>	1	5	3.60	1.29
Incidence of Home Country's Major Language in Host	L <sub>2</sub>	1	5	4.75	0.75
Incidence of Host Country's Major Language in Home	L <sub>3</sub>	1	5	4.75	0.75
<b>Indicators of Differences in Religions</b>					
Distance Between Major Religions	R <sub>1</sub>	1	5	2.64	1.54
Incidence of Home Country's Major Religion in Host	R <sub>2</sub>	1	5	2.50	1.40
Incidence of Host Country's Major Religion in Home	R <sub>3</sub>	1	5	2.50	1.39
<b>Indicators of Differences in Industrial Development</b>					
Energy Consumption (kg of coal equiv) p.c.	I <sub>2</sub>	-10.93	10.93	0.08	4.05
Passenger cars per 1000 People	I <sub>3</sub>	-51.7	51.7	0.8	24.4
Non-Agricultural Labour (%)	I <sub>4</sub>	-72.2	72.2	0.5	27.0
Radios per 1000 People	I <sub>8</sub>	-2,041	2,041	20	646
Phones per 1000 People	I <sub>9</sub>	-66.8	66.8	1.1	29.4
TV per 1000 People	I <sub>10</sub>	-777	777	6	261
<b>Indicators of Differences in Education Levels</b>					
Literacy (%)	E <sub>1</sub>	-47.6	47.6	0.2	14.0
Proportion in 2nd Level Education (%)	E <sub>2</sub>	-65.3	65.3	0.3	21.2
Proportion in 3rd Level Education (%)	E <sub>3</sub>	-32.2	32.2	0.2	11.2
<b>Indicators of Differences in Degree of Democracy</b>					
POLCON	D <sub>1</sub>	-0.89	0.89	0.01	0.27
Modif POLITY IV	D <sub>2</sub>	-17.00	17.00	0.12	4.96
Political Rights	D <sub>3</sub>	-6.00	6.00	0.05	2.03
Civil Liberties	D <sub>4</sub>	-5.83	5.83	0.07	2.11
<b>Differences in the Degree of Socialism</b>	Social	0	1	0.42	0.29
<b>Geographic Distance (km)</b>	GDist	170	19,386	6,352	4,735
<b>Standard of Living in Host Country (2003-2005, US\$)</b>	GDP <sub>pcj</sub>	638	56,010	25,350	15,964
<b>Size of Host Country Economy (2003-2005, US\$ million)</b>	GDP <sub>j</sub>	155,307	11,671,402	1,426,555	2,293,135
<b>Perceived Psychic Distance of the Host Country</b>	PD <sub>HA</sub>	6.4	92.9	47.8	21.2
<b>Stock of FDI by Country <i>i</i> in Country <i>j</i></b>					
FDI Stock in 2003 (US\$ billions)	S <sub>3</sub>	0	14,890	63.2	663.2
FDI Stock in 2004 (US\$ billions)	S <sub>4</sub>	0	14,768	67.6	665.7
FDI Stock in 2005 (US\$ billions)	S <sub>5</sub>	0	17,640	78.7	787.9

**Table 3. Correlation matrix for main constructs (n =563)**

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Hof	1.00												
2 Ind	0.16 **	1.00											
3 Edu	0.01	0.77 **	1.00										
4 Dem	0.32 **	0.59 **	0.49 **	1.00									
5 Lang	0.32 **	0.08	0.02	0.21 **	1.00								
6 Relig	0.19 **	0.38 **	0.41 **	0.41 **	0.31 **	1.00							
7 Social	0.06	0.05	0.07	0.13 **	-0.04	0.09 *	1.00						
8 GDist	0.01	0.38 **	0.32 **	0.27 **	0.09 *	0.25 **	-0.03	1.00					
9 GDP <sub>pcj</sub>	0.08	-0.29 **	-0.35 **	-0.34 **	-0.11 **	-0.23 **	-0.13 **	-0.28 **	1.00				
10 GDP <sub>j</sub>	-0.06	0.13 **	0.01	0.07	-0.06	0.14 **	-0.07	0.10 *	0.11 **	1.00			
11 GDP <sub>ij</sub>	-0.08 *	0.18 **	-0.01	0.09 *	-0.09 *	0.19 **	-0.10 *	0.15 **	0.08	0.69 **	1.00		
12 PD <sub>HA</sub>	0.21 **	0.39 **	0.33 **	0.39 **	0.38 **	0.49 **	0.06	0.73 **	-0.51 **	-0.07	-0.04	1.00	
13 FDI <sup>#</sup>	0.02	-0.11 *	-0.14 **	-0.10 *	-0.00	0.15 **	-0.07	-0.03	0.09 *	0.15 **	0.33 **	-0.16 **	1.00

# - These are correlation coefficients for estimates of latent variables. Correlation coefficients for the actual indicators of each construct are available on request from the authors.

\*  $p < .05$ , \*\*  $p < .01$  (two tailed significance)

**Table 4 Measurement Model Loadings and Reliabilities (n = 563)**

Latent Constructs & Indicators	Construct Reliability	Standardized Regression Weight
<b>Differences in Language (Lang)</b>	<b>.826</b>	
Distance Between Major Languages (L <sub>1</sub> )		.770 ***
Incidence of i's Major Language in j (L <sub>2</sub> )		.791 ***
Incidence of j's Major Language in i (L <sub>3</sub> )		.786 ***
<b>Differences in Religion (Relig)</b>	<b>.918</b>	
Distance Between Major Religions (R <sub>1</sub> )		.878 ***
Incidence of i's Major Religion in j (R <sub>2</sub> )		.895 ***
Incidence of j's Major Religion in i (R <sub>3</sub> )		.891 ***
<b>Differences in Industrial Development (Ind)</b>	<b>.957</b>	
Energy Consumption (kg of coal equiv) p.c. (I <sub>2</sub> )		.838 ***
Passenger cars per 1000 People (I <sub>3</sub> )		.938 ***
% non-Agricultural Labour (I <sub>4</sub> )		.869 ***
Radios per 1000 People (I <sub>8</sub> )		.839 ***
Phones per 1000 People (I <sub>9</sub> )		.921 ***
TV per 1000 People (I <sub>10</sub> )		.912 ***
<b>Differences in Education Levels (Edu)</b>	<b>.830</b>	
Literacy (E <sub>1</sub> )		.836 ***
Proportion in 2nd Level Education (E <sub>2</sub> )		.753 ***
Proportion in 3rd Level Education (E <sub>3</sub> )		.771 ***
<b>Differences in Degree of Democracy (Dem)</b>	<b>.955</b>	
POLCON (D <sub>1</sub> )		.928 ***
Modif POLITY IV (D <sub>2</sub> )		.995 ***
Political Rights (D <sub>3</sub> )		.909 ***
Civil Liberties (D <sub>4</sub> )		.829 ***
<b>FDI Stock (FDI)</b>	<b>.995</b>	
FDI Stock in 2003 (S <sub>1</sub> )		.997 ***
FDI Stock in 2004 (S <sub>2</sub> )		.998 ***
FDI Stock in 2005 (S <sub>3</sub> )		.983 ***

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\* p < .05, \*\* p < .01, \*\*\* p < .001 (two tailed significance)

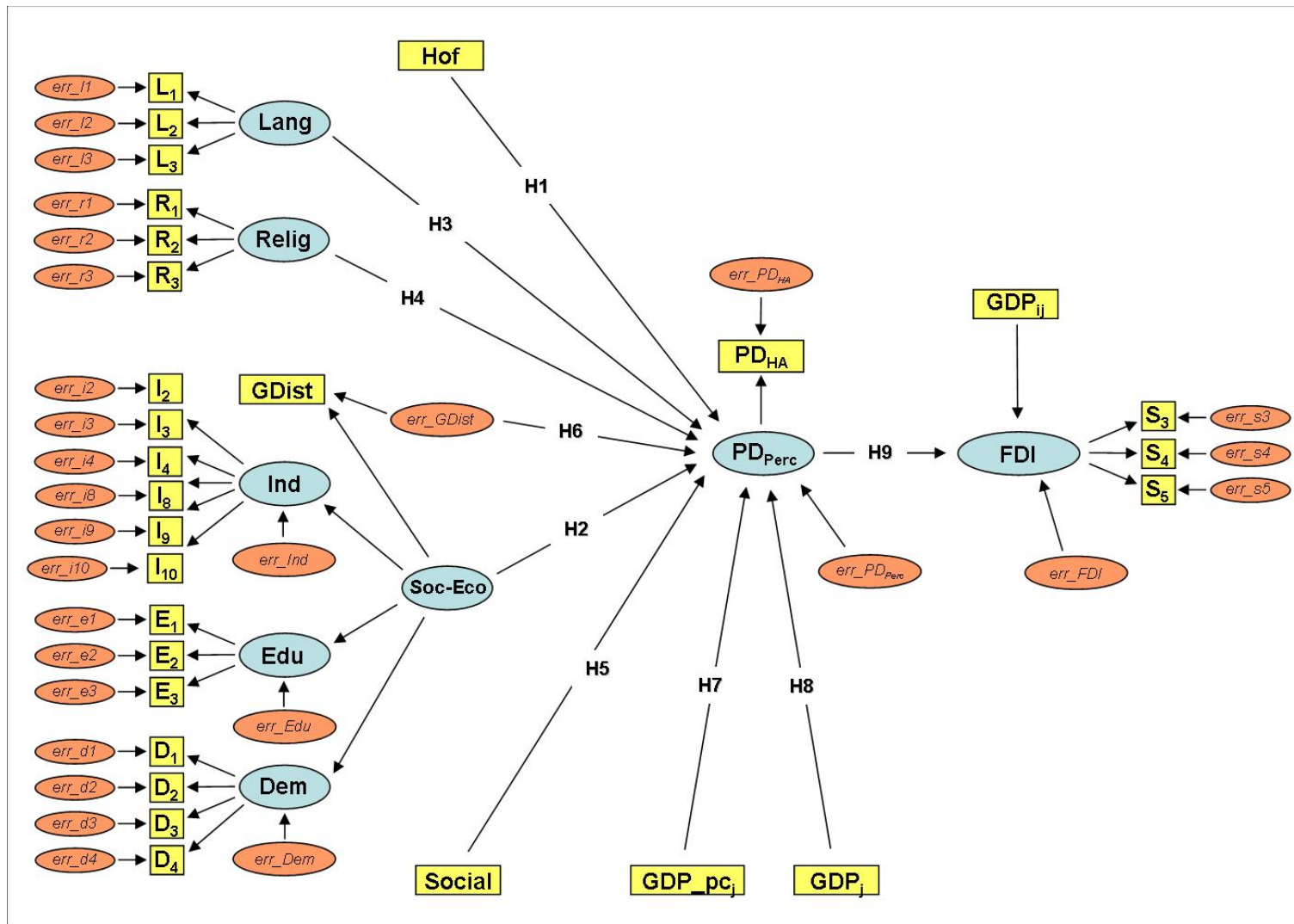
**Table 5. Structural Model Path Loadings and Overall Model Fit (n=563)**

Path		Estimated Regression Weight	Standard Error	Critical Ratio	Signif.
Hof - PD <sub>Perc</sub>	H1	1.224	.301	4.072	***
Soc-Eco - PD <sub>Perc</sub>	H2	7.796	1.416	5.506	***
Lang - PD <sub>Perc</sub>	H3	4.830	.649	7.446	***
Relig - PD <sub>Perc</sub>	H4	3.515	.482	7.294	***
Social - PD <sub>Perc</sub>	H5	1.672	1.503	1.113	
err_GDist - PD <sub>Perc</sub>	H6	12.396	.458	27.069	***
GDP <sub>pcj</sub> - PD <sub>Perc</sub>	H7	-0.348	.030	-11.431	***
GDP <sub>j</sub> - PD <sub>Perc</sub>	H8	-2.285	.432	-5.292	***
PD <sub>Perc</sub> - FDI	H9	-.581	.175	-3.330	***
GDP <sub>ij</sub> - FDI	-	20.748	2.60	7.981	***
<b><u>OVERALL MODEL FIT</u></b>					
Chi Sq		775.68			
degrees of freedom		109			
$\chi^2 / df$		7.12			
p		< .001			
CFI		0.933			
RMSEA		.104			

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\* p < .05, \*\* p < .01, \*\*\* p < .001 (two tailed significance)

**Figure 1 Structural Model with Hypotheses \***



\* correlations amongst the exogenous national differences/distance constructs have been omitted for clarity