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Factors Moderating the Impact of Psychic Distance: Empirical Tests on Bi-Lateral Trade Flows

ABSTRACT

This paper is the second in a series developing and testing a new set of multidimensional scales for measuring psychic distance. In addition to the traditional measure of culture, these scales include differences in language, religion, education levels and political ideologies. The scales are tested for their predictive power on bilateral trade flows across broad set of industries and countries. This model is then used as a benchmark for testing three sets of moderating hypotheses.

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INTRODUCTION

Psychic distance is arguable one of the most fundamental constructs within the field of international business. Across the past four decades, it has been cited as an important predictor variable for market selection decisions - for both exporting (Johanson and Vahlne, 1977) and FDI (Davidson, 1980), entry mode choices (Kogut and Singh, 1988), international performance (O'Grady and Lane, 1996), and a variety of other international phenomena (Boyacigiller, 1990; Gong, *et al.*, 2005; Manev and Stevenson, 2001). Within the last five years alone, 37 articles referring to psychic distance, or the closely associated concept - cultural distance[1], were published in the Journal of International Business Studies. In vast majority of these cases, researchers have included other control variables; however the explicit and formal use of moderating variables (Sharma, *et al.*, 1981) has been notably rare[2]. That is one of the two primary research objectives of this paper – to identify and empirically test a variety of factors which may moderate the impact of psychic distance on international business decisions. Within the bounds of this paper, we explore moderating relationships with respect to the impact of psychic distance on export market selection.

The other major objective of this paper is related to the fact that this is the second in a series of papers. This paper serves the purpose of extending the generalisability of a multidimensional set of psychic distance indicators, developed in the first paper (Dow and Karunaratna, 2004), to a broader set of industries and countries. As was discussed in the preceding paper, it has been a widespread practice within the international business literature to use a composite indicator of Hofstede's four dimensions of national culture (Hofstede, 1980; Kogut and Singh, 1988) as the sole indicator of psychic distance. We argue that the psychic distance construct is actually much broader than just cultural distance (Shenkar, 2001). In response to this issue, our first paper (Dow and Karunaratna, 2004) constructed and tested a set eight of factors, including differences in language, religion, education levels, and political ideology to represent the various aspects of psychic distance. This paper extends that work by testing those factors on

a much broader set of countries and industries, encompassing 93% of the world's GDP and almost three quarters of all traded goods.

LITERATURE REVIEW & MODERATING HYPOTHESES

In order to develop the moderating hypotheses, this paper briefly reviews the history of the psychic distance construct and establishes a working definition.

As is widely acknowledged, the term psychic distance was first established by Beckerman (1956). In his paper on bilateral trade within Europe, Beckerman comments that much of his unexplained variance may be due to what he coins as 'psychic distance'.

> *'… a special problem is posed by the existence of "psychic" distance. It is probable that the manner in which the purchases of raw materials by a firm are distributed geographically will depend partly on the extent to which foreign sources have been personally contacted and cultivated. While the transportation costs paid by an Italian entrepreneur on a raw material supplied by Turkey may be no greater than the same material supplied by Switzerland, he is more likely to have contacts with Swiss suppliers, since Switzerland will be "nearer" to him in a psychic evaluation (fewer language difficulties, and so on), as well as in the economic sense that air travel will absorb less of his time.' (Beckerman, 1956, p.38)*

The concept essentially lay dormant for a further two decades until it was refined and brought to prominence by researchers at the University of Uppsala (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975). While the 'Uppsala school' is most often remembered for their somewhat contentious 'internationalisation process model' (Andersen, 1993), possibly their most enduring contribution to the international business literature is the development of the psychic distance construct. Johanson and Vahlne (1977, p.24), established a formal definition of psychic distance: '**the sum of factors preventing the flow of information to and from the market**'. This definition has been

subsequently modified numerous times (Evans, *et al.*, 2000; Nordstrom and Vahlne, 1994; O'Grady and Lane, 1996); but while each refinement has had its merits in emphasizing specific issues, the overall message has remained the same. Psychic distance is a collection of factors which disrupt the flow of information amongst markets, thus inhibiting a firm's ability to learn about foreign markets, and creating a greater level of uncertainty about those markets in the minds of the firm's managers. Moreover, while psychic distance most certainly has a perceptual aspect, there is a host of real and substantive differences amongst markets, most notably differences in language, culture, political systems, level of education, level of industrial development, etc, which contribute to those perceptions.

The Uppsala school also expanded the potential applications of the construct, arguing that it would influence the choice of entry mode, as well as the choice of market; and that it applied as much to FDI as to exporting (Johanson and Wiedersheim-Paul, 1975). From there on, the practical application of the psychic distance construct grew quite rapidly. Davidson (1980) was one of the first, but by no means the only one (Benito and Gripsrud, 1992; Erramilli, 1991; Grosse and Goldberg, 1991; Grosse and Trevino, 1996; Habib and Zurawicki, 2002) to incorporate the concept in empirical research on the factors determining the location of FDI. A similar flood of empirical research also began to appear incorporating psychic distance as a predictor variable in entry mode choice decisions (Anand and Delios, 1997; Erramilli, 1991; Gatignon and Anderson, 1988; Hennart and Larimo, 1998; Kogut and Singh, 1988). More recently, the potential linkage between psychic distance and performance has become a focus of attention (Brouthers, 2002; Evans and Mavondo, 2002; Hennart and Zeng, 2002; Li, *et al.*, 2001; Luo, 2001). Within the realm of exporting, the number of empirical studies has been less numerous, though just as varied (Dichtl, *et al.*, 1990; Dow, 2000; Gripsrud, 1990; Holzmuller and Kasper, 1990; Holzmuller and Stottinger, 1996; Klein and Roth, 1990; Kwon and Konopa, 1993; Wiedersheim-Paul, *et al.*, 1978). In the more economics-oriented bi-lateral trade literature, the term psychic distance is rarely cited, but numerable studies (Linnemann, 1966; Geraci and Prewo, 1977; Rauch, 2001; Rose, 2002; Srivastava and

Green, 1986; Subramanian and Wei, 2003) include aspects of the psychic distance construct, such as differences in languages.

As mentioned earlier, a notable common aspect to all of the studies cited above is that while they all include some measure of psychic distance, and frequently include control variables; they rarely include any factors explicitly moderating the impact of psychic distance. In light of the preceding definition of psychic distance, we feel that is a serious omission in the literature. While Johanson and Vahlne's (1977) collection of factors are largely exogenous variables, there is a potentially wide range of moderating factors which may magnify or diminish the ensuing linkages to learning, perceptions of uncertainty, and the resulting managerial decisions.

Before proceeding to any formal statement of moderating hypotheses, one final issue needs to be resolved – in which context and application of psychic distance do we develop the moderating hypotheses? In terms of sheer number of publications, the choice of entry mode for FDI might appear most appropriate; however, there are two mitigating factors. As will be developed in a moment, one of our potential moderating factors is Hofstede's uncertainty avoidance (UAI) for the home market. Unfortunately, this factor is also commonly cited as a direct component of psychic distance. If a study is limited to a single host market, or home market, as is commonly done in entry mode studies, then it becomes impossible to separate out the two effects. One needs a multiple home market and multiple host market research design to resolve the situation. Due to the nature of foreign direct investment, such data sets are extremely rare, and expensive to create. For that reason, we have chosen to explore the moderating factors in the context of export market selection (specifically bi-lateral trade flows), where such a research design is feasible. A secondary benefit of this choice is that we are also able to extend the generalisability of the new psychic distance indicators to across a much broader set of countries and industries.

Commodities vs Differentiated Goods

In light of the preceding discussions, a number of factors can be put forward which might moderate the impact of psychic distance on export market selection. As per Johanson and Vahlne's (1977) initial definition, psychic distance is relevant to a firm's choice of export market because it potentially disrupts the flow of information between markets. However, the complexity of the messages which need to flow between buyers and sellers is likely to vary by industry. If one is selling a commodity such as iron ore, the necessary flow of information is relatively simple; and thus, the impact of psychic distance on the transaction should be relatively small. Conversely, if one is selling a highly differentiated piece of specialised machinery, the necessary flow of information is quite complex; and thus, the impact of psychic distance on the transaction might be quite high.

H1. The negative impact of psychic distance on export market selection, and thus the volume of bi-lateral trade, will be greater for differentiated goods than for commodity goods.

In light of the arguments put forward by Shenkar (2001), and our earlier empirical findings (Dow and Karunaratna, 2004), it is appropriate that this hypothesis be tested separately for each of the dimensions of psychic distance. As a result, our main hypothesis is repeated seven times, once for each dimension of psychic distance [3]:

H1a. The negative impact of **differences in culture** on export market selection ...

H1b. The negative impact of **differences in the major languages** on export market selection ...

H1c. The negative impact of **differences in the major religions** on export market selection ...

H1d. The negative impact of **differences in political ideology** on export market selection ...

H1e. The negative impact of **differences in education systems** on export market selection ...

H1f. The negative impact of **differences in degree of democracy** on export market selection ...

H1g. The negative impact of **differences in time zones** on export market selection ...

Consumer vs Industrial Goods

A second aspect that may magnify the complexity of the communication process between buyers and sellers; and thus magnify the impact of psychic distance, is the sheer number of buyers that a firm needs to communicate with. If a firm is selling a differentiated consumer good; and thus, is attempting to reach a very large number of potential customers, then psychic distance may have a larger impact on market selection. Conversely, if a firm is selling a differentiated industrial good, which will involve a substantially smaller number of customers, then psychic distance may have a much smaller impact on market selection.

H2. The negative impact of psychic distance on export market selection, and thus the volume of bi-lateral trade, will be greater for differentiated consumer goods than for differentiated industrial goods.

Once again, this over-arching hypothesis needs to be tested for each dimension of psychic distance under investigation.

H2a. The negative impact of **differences in culture** on export market selection …

H2b. The negative impact of **differences in the major languages** on export market selection …

H2c. The negative impact of **differences in the major religions** on export market selection …

H2d. The negative impact of **differences in political ideology** on export market selection …

H2e. The negative impact of **differences in education systems** on export market selection …

H2f. The negative impact of **differences in degree of democracy** on export market selection …

H2g. The negative impact of **differences in time zones** on export market selection …

Uncertainty Avoidance of the Firm's Home Market

The third and final set of moderating hypotheses concerns the nature of the firm's home market, rather than the characteristics of the industry. In accordance with our definition of psychic distance, disruptions to the flow of information between markets have the potential to inhibit a firm's learning about a specific market. That in turn, may increase the manager's uncertainty about the market, and ultimately affect the manager's decision about whether to enter the market. However, if managers from a specific market are on average more prone to avoiding uncertainty, that should increase their sensitivity to the uncertainty created by high degrees of psychic distance.

As alluded to earlier, this is where Hofstede's uncertainty avoidance dimension (UAI) potentially plays a dual role. Differences in uncertainty avoidance between countries is one of the four dimensions forming Kogut and Singh's (1988) infamous index – the most commonly used measure of psychic distance. However, what we are proposing here is that the UAI score for the firm's home country will have the additional impact of making a firm more sensitive to all aspects of psychic distance.

H3. The negative impact of psychic distance on export market selection, and thus the volume of bi-lateral trade, will be greater for firms which originate from a country with a high degree of uncertainty avoidance.

Once again, this over-arching hypothesis needs to be tested for each dimension of psychic distance:

H3a. The negative impact of **differences in culture** on export market selection ...

H3b. The negative impact of **differences in the major languages** on export market selection ...

H3c. The negative impact of **differences in the major religions** on export market selection ...

H3d. The negative impact of **differences in political ideologies** on export market selection ...

H3e. The negative impact of **differences in education systems** on export market selection …

H3f. The negative impact of **differences in degree of democracy** on export market selection …

H3g. The negative impact of **differences in time zones** on export market selection …

All three sets of these hypotheses are tested on a data set of bi-lateral trade flows amongst 70 countries between 1993 and 1998. The following section outlines our methodology in more detail.

METHODOLOGY

Sample Population

As noted above, the moderating hypotheses are tested using a series of regression models on a population of 4,830 country pairs (70 countries – see Table 1). For many of our variables, data is actually available for a much broader set of 100 countries, and the generation of factor scores have been based on that broader population; however, the regression analyses presented here are constrained to the 70 countries for which there is a complete set of all the predictor variables.

Measuring Psychic Distance

For the purposes of this paper, psychic distance is measured using the seven main dimensions emerging from our earlier research (Dow and Karunaratna, 2004). Summary statistics for these dimensions and their indicators are provided in Table 2. The procedures for calculating these dimensions are provided in the earlier publication[4].

The first dimension - **Hof**, is Kogut and Singh's (1988) modification of Hofstede's (1980) four national culture dimensions. Kogut and Singh's indicator did not prove to be statistically significant in our previous research, but has been retained to maintain comparability with past research, and to guard against the possibility that its non-significance was an artefact of our initial choice of industries and countries.

The second dimension of psychic distance is the difference in languages between countries - **Lang** ^{F}. This dimension is a factor score of three indicators. The first indicator is a five point scale measuring the degree of difference between the major languages of each country. This scale is based on the Ethnologue

(Gordon, 2005) hierarchical classification of 7,299 languages. The other two language indicators are five point scales measuring of the incidence of one country's major language in the other country.

The third dimension of psychic distance is the difference in religions between countries - **Relig** ^{F}. This dimension is also a factor score of three indicators. The first indicator is a five point scale measuring the degree of difference between the major religions of the two countries. This scale is based on a hierarchical classification of religions drawn from a range of sources (Barrett, 1982; Harris, *et al.*, 1992; O'Brien and Palmer, 1993; Whaling, 1987). The other two indicators are five point scales measuring of the incidence of one country's major religion in the other country.

The fourth dimension of psychic distance is the absolute value of the difference in political ideology between countries - **Social (abs)**. This is a singe item difference score based on Beck et al's (2001) measure of "the policy preferences or ideological leanings of [a county's] decision makers". A high positive score indicates a government with a preference for 'socialist' or 'left wing' policies.

The fifth dimension of psychic distance is the absolute value of the difference in education levels between countries - **Edu** ^{F}. This dimension is again a factor score of three indicators. The first indicator is based on a measure of the degree of adult literacy in each country. The remaining two indicators are based on the participation rates in 2nd and 3rd level education in each country. It should be noted that this dimension is highly correlated with one other dimension reported in our earlier study (Dow and Karunaratna, 2004) – differences in industrial development. This latter dimension was initially included in this study, but was subsequently dropped due to a high degree of collinearity with the education dimension.

The sixth dimension of psychic distance is the absolute value of the difference in the degree of democracy between countries – **Dem** ^{F}. This dimension is a factor score based on four indicators: Heinsz's (2000) POLCON scale, the POLITY IV instrument (Gleditsch, 2003), and the Freedom House's (2000) indicators of political rights and civil liberties.

The seventh and final dimension of psychic distance is the most unusual – differences in time zones. As argued in Dow and Karunaratna (2004), recent advances in telecommunications may have dramatically reduced the cost of communicating across large distances, but one difficult that still remains is large differences in time zones. As per Dow and Karunaratna (2004), this dimension is measured by a single item – $\mathbf{Time}_{\mathbf{resid}}$. This item is the remaining residual once the impact of geographic distance is removed from the actual time zone difference. This approach is employed in order to eliminate the high degree of collinearity between time zone differences and geographic distance, though it has the disadvantage of understating the strength of the actual impact of time zone differences. Nevertheless, time zone differences, as measured in this manner, has been proven to be a statistically predictor of trade flows (Dow and Karunaratna, 2004).

Uncertainty Avoidance as a Moderator

As proposed in hypothesis H3, a predisposition to uncertainty avoidance amongst home county managers may act as a moderating factor, magnifying the impact of the various psychic distance factors on market selection decisions. For the purposes of this paper, uncertainty avoidance is measured using the Hofstede's (1980) dimension by the same name - $\mathbf{UAI}_{\mathbf{i}}$. As recommended by Aiken and West (1991), interaction terms are created by centering $\mathbf{UAI}_{\mathbf{i}}$ and each dimension of psychic distance, and then calculating the product of each pair.

The Dependent Variables & Other Control Variables

The regression models reported in this paper use one of four dependent variables – the bilateral trade flows of commodity goods - $\mathbf{X}_{\mathbf{ij}}^{\mathbf{COM}}$, of differentiated goods - $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DIFF}}$, of differentiated industrial goods - $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DIG}}$, and of differentiated consumer goods - $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DCG}}$. It should be noted that $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DIFF}}$ is the sum of $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DIG}}$ and $\mathbf{X}_{\mathbf{ij}}^{\mathbf{DCG}}$. In each case, the natural logarithm of the US dollar value of exports between each pair of countries is utilised. This form of dependent variable is part of the classic gravity model (Anderson and Wincoop, 2003; Rauch and Trindade, 2002) and maintains the comparability of the results with previous

Deleted: (Anderson & Wincoop, 2003, Rauch & Trindade, 2002)

research. In order to identify which three digit SITC codes to include in each industry type, an expert panel was employed. Three experts in the fields of international business and marketing were asked to classify all of the three digit SITC codes in terms of whether they were primarily commodity goods or differentiated goods, and whether they were primarily consumer goods or industrial goods. The inter-rater reliabilities were tested (0.879 for commodities versus differentiated goods, and 0.942 for consumer versus industrial goods), and industry codes for which the experts could not agree were withheld from the study[5].

For the regression analyses, a selection of control variables have been included which are consistent with the classic gravity model used by Rauch & Trindade (2002) and Rauch (1999). The natural logarithm of the product of each country's gross domestic product – **GDP_i*GDP_j (ln)**, and the natural logarithm of the distance between the two countries – **Dist (ln)**, form the basis of this gravity model. The GDP variable controls for the size of the exporting and importing countries, while the distance variable acts as a surrogate for transportation costs. Additional trade enhancement variables (the presence of free trade agreements – **FTA**, and the presence of a shared land border between countries – **Adjacent**) are also added to the model; however the **FTA** variable was ultimately dropped due to collinearity with the distance variable.

While not typically included in most gravity models, the nominal form (as opposed to the absolute value) of the difference in industrial development factor – Ind Dev ^{F} has been included in order to control for the Heckscher-Ohlin effect. As Bergstrand (1989) notes, GDP per capita (which is one of the main indicators for the industrial development factor) is frequently used as a proxy for the capital-labour endowment ratio. Thus, the difference in industrial development factor may be acting as a surrogate for the Hechscher-Ohlin effect, as well as being a potential dimension of psychic distance. Fortunately, the Heckscher-Ohlin effect should be strongest for the nominal form of the difference score and should be positive in direction; whereas the psychic distance effect should yield a negative relationship, and be most evident with the absolute value form of the difference score. As a result, the two effects can be

distinguished by the form and direction of the relationship. This approach to controlling for the Heckscher-Ohlin effect was employed in Dow and Karunaratna (2004) and found to be highly significant for trade in industrial goods.

An additional enhancement that has made to this model is the inclusion of 'country fixed effect' dummy variables, D_h and D_k, as recommended by Anderson & Wincoop (2003). D_h takes the value of one when $h = i$, and zero otherwise (i.e. the exporting nation dummy variables). D_k takes the value of one when $k = j$, and zero otherwise (i.e. the importing nation dummy variables). Anderson argues that such dummy variables, acting as fixed effects for each exporting and importing nation, are essential to control for 'multilateral resistance variables' such as import barriers. 'Omitted variables' are a potentially serious problem in such complex models, and Subramanian & Wei (2003) show how neglecting such control variables can distort regression results.

In summary, our basic regression model, excluding the psychic distance variables and moderating factors, is presented below.

$$\ln (X_{ij}) = a_0 + a_1 \ln(GDP_i * GDP_j) + a_2 \ln(Dist) + a_3 \text{ Adjacent} + a_4 \text{ Ind Dev}^{F} + a_5 D_h + a_6 D_k$$

Analysis Techniques

The variables were screened for outliers, which may have excessive influence on the regression results. Outliers greater than three standard deviations from the population mean were adjusted using the method recommended by Winer (1971). Descriptive statistics for all variables can be found in Table 2.

In order to produce a composite variable for each dimension, factor analysis was applied to each set of language and religion indicators, and to the difference scores for education, industrial development, degree of democracy. The factor scores were derived using data for 100 countries (i.e. 9,900 pairs). The factor loadings and Cronbach Alpha reliabilities are provided in Table 3. All of the indicators have high factor loadings (>.750) and all three constructs enjoy high reliability (greater than 0.85). It should be noted that while factor analysis was applied to the difference scores for the education, industrial

development and democracy variables, both the original indicators and the resulting factor scores are distributed around a mean of zero; thus a negative factor score has the same meaning and intuition as a negative difference score.

The resulting five factors, along with the single indicator independent variables were then checked for collinearity (Table 4). The geographic distance and free trade agreement variables are highly correlated (r = -0.59), as are the absolute value forms of the industrial development and education factors (r = +0.60). In light of this, the free trade agreement variable, **FTA**, and the industrial development factor, **Ind Dev ^{F} (abs),** were both dropped from subsequent analyses.

In order to test the first two sets of hypotheses, subgroup analysis (Venkatraman, 1989) was employed. For hypotheses H1a to H1g, the same basic regression model, including seven dimensions of psychic distance, was run for both trade in commodity goods and differentiated goods. Analysis of variance was then used to identify significant differences in the psychic distance variable coefficients between the two models. For hypotheses H2 a to H2g, the same procedure was applied but contrasting differentiated *industrial* goods and differentiated *consumer* goods.

In order to test the third set of hypotheses (H3a to H3g), moderated regression analysis was employed (Sharma, *et al.*, 1981). A series of regression models were run using trade flows in differentiated consumer goods as the dependent variable. The first regression introduced the moderating variable – **UAI_i**, to determine if it had a direct effect on the dependent variable. The subsequent regressions sequentially introduced interaction terms for each dimension of psychic distance to determine if there were any moderating relationships. Each interaction term is a cross product of the independent variable under investigation (e.g.. differences in language) and the moderating variable. Each variable was 'centred' before the cross-product was calculated.

For all of these regressions, it was necessary to omit some of the country fixed effect dummy variables in order to bring multicollinearity within acceptable levels. Based on the collinearity

diagnostics, dummy variables for a total of nine countries were omitted from the regressions reported in Tables 5 and 6. It was necessary to remove a further four dummy variables for the regressions in Table 7.[6]

RESULTS

The multiple regressions in Tables 5 & 6 provide the basis for assessing the first and second sets of hypotheses. For all four types of goods, the regression results are broadly similar to the results in the original study incorporating these variables (Dow and Karunaratna, 2004) despite being applied to quite different sets of industries. The GDP and distance variables are all highly significant, confirming the classic gravity model. The nominal form of the industrial development factor is positive in all cases, but only statistically significant for the differentiated goods regressions, as one might expect given that it is acting as a surrogate for human capital intensity. The language, political ideology (Social), education and democracy dimensions are all negative and statistically significant in at least three of the four regressions. Also consistent with previous results, the Hofstede dimension appears to be a poor indicator of the psychic distance phenomena, retaining a positive regression coefficient in all cases. The two areas where the psychic distance regression coefficients deviate substantially from previous results are with the time zone difference and religion dimensions. These unusual results are addressed in our Discussion and Conclusions section.

Overall, the moderating hypotheses concerning commodity goods versus differentiated goods receive modest support (Table 5). The hypotheses for the language and education dimensions (H1b and H1e) are supported, and the differences in regression coefficients for the political ideology (**Social**) and degree of democracy dimensions are consistent with the hypotheses, but fail to achieve statistical significance. In contrast, the hypotheses concerning the culture and religion dimensions of psychic distance (H1a and H1c) and time zone differentials (H1g) are clearly not supported, but this is not surprising given that the main effect for these three variables are also non-significant, and for the two former variables, atheoretic.

The support for the second set of hypotheses, concerning the differences between consumer and industrial goods, is slightly weaker again. The difference in the regression coefficients is only statistically significant for one of the psychic distance dimensions – differences in language (H2b). The difference in regression coefficients for political ideology (Social) and differences in the degree of democracy are consistent with the hypotheses, but fail to achieve statistical significance.

Table 7 provides the results for the third set of hypotheses concerning the moderating effect of the exporting country's tendency towards 'uncertainty avoidance' as measured by Hofstede (1980). Regressions 1 tests the direct effect of the moderating variable; and it is found to be non-significant in all cases. In contrast, five of the seven interaction terms are statistically significant. Thus, the third set of hypotheses appears to be strongly supported.

DISCUSSION & CONCLUSIONS

As noted in the introduction, one of the two primary intentions of this paper was to extend the generalisability of a new and more comprehensive set of psychic distance indicators. These scales were initially validated on a relatively narrow set of countries and R&D intensive industries (38 countries and 7 two digit SITC codes - Dow and Karunaratna, 2004). The results in Tables 5 & 6 summarize these same indicators when applied to a much broader sample of 70 countries and 181 three digit SITC industry codes (53 two digit codes). Overall, their generalisability is broadly confirmed.[7] The various psychic distance indicators continue to be reliable predictors of trade flows across a wide spectrum of countries and industries. In particular, differences in language, education, degree of democracy, and political ideology all appear to be highly significant dimensions of psychic distance, as they were in Dow & Karunaratna (2004). The only major variation from the previous results is the 'differences in religion' factor, which appears to reverse direction in some circumstances. This anomaly will be discussed further in the 'Limitations' section.

Possibly most controversial result of this paper is the continued non-significance of the composite index of Hofstede dimensions as a surrogate for psychic distance. Across the analyses presented in this paper not one regression model found Kogut and Singh's index of Hofstede dimensions as a significant (and negative) predictor of export market selection. There appears to be no support for the use of such an index as a primary indicator of psychic distance in the field of export market selection. In fact, consistent with earlier findings (Dow & Karunaratna, 2004), the Hofstede index frequently yields a statistically significant, but positive regression coefficient. As with the anomolous result for the differences in religion factor, this aspect of the Hofstede dimension is discussed further in the 'Limitations' section.

When these results are paired with the fact that a substantial proportion of researchers use Kogut & Singh's composite index of Hofstede's scales as their sole indicator of psychic distance, it is not surprising that Tihanyi, et al (2005), and others frequently find small or non-significant effects with respect to psychic distance and most international business decisions. In a call, echoed numerous times (Triandis, 1994; Shenkar, 2001; Tihanyi, et al, 2005), researchers need to include a much broader range of indicators when measuring psychic distance.

Despite the preceding claims concerning the generalisability of the psychic distance indicators presented in this paper, their application is not without some caveats. One of main caveats pertains to the second major contribution of this paper – factors which moderate the psychic distance - market selection relationship. This paper provides an initial, but obviously not exhaustive, exploration of factors which moderate the impact of psychic distance on export market selection. Given the plethora of empirical research incorporating some aspect of psychic distance, it is quite startling that very few papers (regardless of whether they are addressing exporting or FDI, and market selection, entry mode or performance) have empirically explored the issue of factors moderating the impact of psychic distance. This is doubly surprising given that the existing research has produced weak and conflicting results (Tihanya, *et al.*, 2005). Not compensating for moderating factors is one of the possible causes of these conflicting results.

The moderating impact of industry characteristics (i.e. the first and second sets of hypotheses) are obvious examples of caveats on the generalisability of the psychic distance indicators. It is quite apparent from Table 5 that both the relative and absolute importance of the various trade resistance factors do vary as one moves from the trade of differentiated goods to commodity goods. In particular, the negative impact of differences in language and education levels both decline significantly for commodity goods, as predicted by hypotheses H1b and H1e. The contrary result for the time zone factor, where the strongest negative effect is for commodity goods, is one of the interesting anomalies. The underlying logic of our first set of hypotheses is that when a more complex message needs to be communicated between buyers and sellers (i.e. differentiated goods versus commodities), factors which have the potential to disrupt or distort the flow of information will play a stronger role in market selection decisions. However, time zone differences are a subtly different form of trade distortion. Whereas factors such as differences in language have the potential to **distort** the message, time zone differences intervene by **delaying** the message. Moreover, there is no reason to believe that the delay will be magnified by the complexity of the message. However, this line of argument only explains why the difference between commodity goods and differentiated goods may be negligible. It does not explain why the time zone effect is substantially stronger for commodity goods! The explanation may lie in the fact that a buyer of commodity goods has fewer dimensions to discriminate amongst various potential suppliers. Once all suppliers have matched each other on price, which is not uncommon in commodity industries, then the ease of rapid communication becomes a more critical factor by default, and time zone differences become more critical.

The very modest support for the second set of hypotheses, concerning consumer versus industrial goods, was an initial surprise; but subsequent discussions with selected industrial goods exporters have provided some potential clues. The original hypotheses were predicated on the assumption that the increase in the sheer number of customers would complicate the communication process; thus increasing the sensitivity to psychic distance. However, the large number customers may also tend to force

consumer goods sellers into standardizing their message. In contrast, many industrial goods suppliers, given the relative concentration of their customer base, can afford to customize their message in order to maximize their potential sales. Thus, the tendency of industrial goods suppliers to customise the message, which increases the complexity of the communication process, may be offsetting the original hypothesized moderating effect.

In contrast to the first two sets of moderating hypotheses, the third set of hypotheses, concerning the moderating affect of home market uncertainly avoidance, appears to be consistently supported. Five of the seven moderating interaction terms prove to be statistically significant. This is particularly important given that the selection of countries in most research is rarely random. For example, the initial testing of these psychic distance indicators (Dow & Karunaratna, 2004) was constrained to 38 countries due to the availability of data. That sample of countries was heavily skewed to the OECD, and the mean uncertainty avoidance score for them was significantly lower than for the subsequent 32 countries investigated ($t = 16.80$, $p < .001$). Thus, the 'small or non-significant effects' so commonly found with respect to psychic distance research, may be partially due to sample bias. With few researchers having the luxury of easily increasing the national coverage of their sample populations, the identification and inclusion of moderating factors becomes all the more critical.

In summary, while the overall structure of the psychic distance dimensions is relatively stable across broad populations of countries and industries (i.e. the direction and significance of the factors remain the same), there is also substantial evidence that both the choice of industry and the selection of countries significantly moderate the relationships between the psychic distance indicators and market selection. Researchers need to be particularly careful that systematic sample bias is not distorting or obscuring the relationships under investigation

Limitations and Implications for Future Research

As with all empirical studies, there are a number of limitations to the research which need to be taken into consideration. First of all, there is the generalisability of the results. While relative to the first paper

(Dow and Karunaratna, 2004), the application of the psychic distance indicators has been expanded to a much broader set of countries and industries, psychic distance has applications in areas other than export market selection. These scales, the presence of any moderating relationships, and the non-significance of the Hofstede scales need to be tested in other settings, such as FDI market selection, entry mode choice, and as a potential determinant of firm performance. This is undoubtably the highest priority with respect to this research agenda.

Another major limitation of our study is the range of potential moderating variables. At the moment, only three such variables have been explored: commodities vs differentiated goods, industrial vs consumer goods, and the uncertainty avoidance of the home market. In particular, there are a number of potential moderating variables which relate to the characteristics of the individual firm. Prior international experience is one such factor which has frequently been included as a covariate, but may also act as a moderating variable. This issue will of course require a substantially different approach to data collection. Surveys of individual firms will improve the richness of the data set, but it will also limit coverage of nations, and thus generalisability of the findings.

Three further limitations to this research are best illustrated by what we shall label as the 'anomalous' regression coefficients for the culture and religion factors. In four of the five basic regression models presented in this paper, the coefficient for the difference in religion factor is statistically significant (2 tailed) in the opposite direct to a classic psychic distance hypothesis. This can be partly explained by the sample bias. If the same regressions as in Table 6 are repeated for a larger sample of 99 countries (achieved by dropping the **Hof** and **Social** variables) the anomalous regression coefficient decreases substantially magnitude. If the language factor is then removed from the regression (the two factors are moderately correlated at $r = .23$), the regression coefficient for religion drops to zero for differentiated consumer goods and a significantly negative value ($t = -3.55$, $p < .001$) for differentiated industrial goods. Thus, the anomalous regression coefficient for religion appears to be the product of sample bias and mild collinearity amongst the predictor variables. While researchers can control for sample bias by expanding

their sample and/or including moderating factors, the collinearity amongst predictor variables is essentially unavoidable. Differences in factors such as language and religion are often correlated because they are at least partially products of common processes such as migration patterns, colonial empires and shared histories. The challenge for researchers is to constantly be aware of such possibilities. In this particular case, language and religion are undeniably correlated, but differences in language appears to be the substantially stronger predictor variable. Nevertheless, this may not hold true as one moves from one international business decision to another (e.g. from market selection in exporting to say entry mode choice for foreign direct investment). Thus, it would be prudent for future studies to retain both variables until the issue has been examined across a broad range of settings.

The anomalous regression coefficient for the culture dimension is equally persistent, but substantially harder to diagnose. First of all, data limitations prevent quantifying the impact of sample bias; however, it worthwhile noting that the moderating interaction term for the culture variable is substantially smaller than for the religion factor, so moderation due to uncertainty avoidance is unlikely to explain the entire anomalous effect. Similarly, extensive subsidiary analyses have failed to identify any collinearity with other predictor variables which might explain the anomalous results. Once again a mild collinearity with the language variable is evident, but removing it only reduces the positive correlation coefficient by a third. The final possible explanation is that the culture variable (**Hof**) is correlated with a significant but unmeasured predictor variable. In some ways, this would seem relatively unlikely given the low levels of unexplained variance in our models (adj r^2 hover around .800) and the fact that fixed effect country variables are explicitly included to control for such things, but such possibilities can never be completely ruled out. Moreover, the significant statistical power of the data set presented here can make even spurious correlations statistically significant. Nevertheless, what we can confidently conclude is that a composite index of Hofstede dimensions is not a strong indicator of psychic distance for export market selection.

In closing, this paper essentially confirms the generalisability of the psychic distance scales presented here for predicting export market selection. However, the greatest priority for future research emerging from this study is the extension of its investigations to other international business settings, such a predicting FDI market selection, entry mode choice and performance. Do the scales, such as differences in language, education, degree of democracy and political ideology hold up as indicators of psychic distance in all settings? Do the culture and religion factors become significant indicators of psychic distance in other settings, or should they be abandoned entirely? Secondly, this paper confirms that industry characteristics and home market characteristics do appear to moderate the impact of psychic distance. Researchers need to be cautious in their initial research design to control for both possibilities. A great deal of the conflicting result surrounding the psychic distance construct may be due to such factors.

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Table 1. Countries Selected for the Data Set

70 country data set:		
Argentina	Guatemala	Romania
Australia	Hungary	Russian Federation
Austria	India	Serbia
Bangladesh	Ireland	Sierra Leone
Belgium	Israel	Singapore
Brazil	Italy	Slovakia
Bulgaria	Jamaica	Slovenia
Canada	Japan	South Africa
Chile	Korea, Republic of	Spain
China	Lebanon	Sweden
Colombia	Libyan Arab Jamahiriya	Switzerland
Costa Rica	Malta	Taiwan
Croatia	Mexico	Tanzania, United Rep. of
Czech Republic	Morocco	Thailand
Denmark	Netherlands	Trinidad and Tobago
Ecuador	New Zealand	Turkey
El Salvador	Nigeria	United Kingdom
Estonia	Norway	United States of America
Ethiopia	Pakistan	Uruguay
Finland	Panama	Venezuela
France	Peru	Vietnam
Germany	Philippines	Zambia
Ghana	Poland	
Greece	Portugal	
Additional countries in the 100 country data set:		
Algeria	Kenya	Saudi Arabia
Congo, Dem Rep of	Korea, Dem Peo Rep of	Sri Lanka
Cote d'Ivoire	Kuwait	Sudan
Eqypt	Latvia	Suriname
Fiji	Lithuania	Syria
Hong Kong	Luxembourg	Uganda
Iceland	Malaysia	Ukraine
Indonesia	Mozambique	United Arab Emirates
Iran	Myanmar	Uzbeckistan
Iraq	Nepal	Yemen

Table 2. Descriptive Statistics for the Variables (n = 4,830)

Variable	Description	Min	Max	Mean	Std Dev
GDP_i	GDP of country i in US$ billions	0.1	7,073	367	1,043
Dist	Distance between countries i and j (km)	56	19,718	7,546	4,673
FTA	= 1, if i and j are in a common Free Trade Association	0	1	0.10	0.29
Adjacent	= 1, if i and j share a common land border	0	1	0.03	0.17
Hof	Composite Hofstede score between i & j	0	12.30	2.17	1.66
L_1	Distance between major languages of i & j	1	5	3.70	1.32
L_2	Incidence of i's major language in j	1	5	4.67	0.87
L_3	Incidence of j's major language in i	1	5	4.67	0.87
Lang ^{F}	Difference in 'language' factor	-4.35	0.53	-0.13	1.08
R_1	Distance between major religions of i & j	1	5	2.81	1.49
R_2	Incidence of i's major religion in j	1	5	2.65	1.41
R_3	Incidence of j's major religion in i	1	5	2.65	1.41
Relig ^{F}	Difference in 'religion' factor	-1.55	1.53	-0.24	1.01
$Social_{ij}$	Diff. in Beck's Political Ideology scale between i & j	-1.0	1.0	0	0.56
Social (abs)	Absolute Value of diff. in Beck's Ideology scale	0	1.0	0.45	0.33
E_{1ij}	Diff. in % adult literacy between i & j	-73.0	73.0	0	25.34
E_{2ij}	Diff. in % in 2nd level education between i & j	-73.1	73.1	0	24.97
E_{3ij}	Diff. in % in 3rd level education between i & j	-33.6	33.6	0	10.45
Edu ^{F}	Difference in 'education' factor	-2.79	2.79	0	0.98
Edu ^{F} (abs)	Absolute value of the diff. in 'eduction' factor	0	2.79	0.79	0.58
I_{1ij}	Diff. in GDP per capita between i & j	-42,320	42,320	0	15,656
I_{2ij}	Diff. in energy consumption (equiv kg coal pc) - i & j	-11,287	11,287	0	3,893
I_{3ij}	Diff. in cars per 1000 people between i and j	-53.7	53.7	0	24.4
I_{4ij}	Diff. in % non-agricultural labour between i & j	-86.2	86.2	0	32.9
I_{6ij}	Diff. in % urban population between i & j	-84.2	84.2	0	30.2
I_{7ij}	Diff. in newspapers per 1000 people between i & j	-605	605	0	225
I_{8ij}	Diff. in radios per 1000 people between i & j	-2,096	2,096	0	542
I_{9ij}	Diff. in phones per 1000 people between i & j	-67.9	67.9	0	29.6
I_{10ij}	Diff. in TV per 1000 people between i & j	-815	815	0	285
Ind Dev ^{F}	Difference in 'industrial development' factor	-2.62	2.62	0	0.98
Ind Dev ^{F} (abs)	Absolute value of the diff. in 'industrial development'	0	2.62	0.80	0.57
D_{1ij}	Diff. in the POLCON scale between i & j	-0.89	0.89	0	0.37
D_{2ij}	Diff. in the Modif POLITY IV scale between i & j	-17.00	17.00	0	7.71
D_{3ij}	Diff. in the Freedom House Political Rights - i & j	-6.00	6.00	0	2.56
D_{4ij}	Diff. in the Freedom House Civil Liberties - i & j	-6.00	6.00	0	2.30
Dem ^{F}	Difference in 'degree of democracy' factor	-2.08	2.08	0	0.82
Dem ^{F} (abs)	Absolute value of diff. in 'democracy' factor	0	2.08	0.62	0.53
Time	Time zone differential between i and j (hrs)	0	12	4.4	3.4
Time $_{resid}$	Standardized residual of the regression of Dist on Time	-4.16	2.75	0.04	1.03
UAI_i	UAI score for the exporting country, i	8	112	67.4	22.8
X_{ij}^{COM}	Vol. of commodity exports from i to j (US$ millions)	0	63,440	261.0	1,462.9
X_{ij}^{DIFF}	Vol. of differentiated exports from i to j (US$ millions)	0	66,952	341.8	2,195.3
X_{ij}^{DIG}	Vol. of differentiated industrial exports from i to j ($m)	0	39,185	203.8	1,362.4
X_{ij}^{DCG}	Vol. of differentiated consumer exports from i to j ($m)	0	30,428	138.0	922.2

Table 3 Factor Loadings and Reliabilities

Dimensions & Variables	n *	Cronbach Alpha **	Factor Loading
Language (Lang ^{F})	9,900	**.897**	
Distance Between Major Languages (L_1)			.835
Incidence of i's Major Language in j (L_2)			.948
Incidence of j's Major Language in i (L_3)			.948
Religion (Relig ^{F})	9,900	**.891**	
Distance Between Major Religions (R_1)			.914
Incidence of i's Major Religion in j (R_2)			.902
Incidence of j's Major Religion in i (R_3)			.902
Education (Edu ^{F})	9,900	**.867**	
Literacy (E_{1ij})			.876
Proportion in 2nd Level Education (E_{2ij})			.906
Proportion in 3rd Level Education (E_{3ij})			.884
Industrial Development (Ind Dev ^{F})	9,900	**.955**	
GDP per Capita (I_{1ij})			.830
Energy Consumption (kg of coal equiv) p.c. (I_{2ij})			.781
Passenger cars per 1000 People (I_{3ij})			.903
% non-Agricultural Labour (I_{4ij})			.880
% Urban (I_{6ij})			.800
Newspapers per 1000 People (I_{7ij})			.824
Radios per 1000 People (I_{8ij})			.855
Phones per 1000 People (I_{9ij})			.941
TV per 1000 People (I_{10ij})			.897
Democracy (Dem ^{F})	9,900	**.964**	
POLCON (D_{1ij})			.899
Modif POLITY IV (D_{2ij})			.966
Political Rights (D_{3ij})			.981
Civil Liberties (D_{4ij})			.956

* - The factor scores here are developed based on a data set of 100 countries, resulting in 9,900 pairs; however, the regressions in the subsequent tables are limited to 70 countries (i.e. 4,830 pairs) due missing data for the Hofstede and Beck's political ideology scales.

** - Since the variables for education, industrial development and degree of democracy come from multiple sources, the range of these scales vary dramatically. For that reason, the Cronbach Alphas are based on the standardised form of each variable

Table 4. Correlation Matrix (n = 4,830)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	GDP_i*GDP_j (ln)	**1.00**															
2	Dist (ln)	-.00	**1.00**														
3	FTA	.13 **	-.59 **	**1.00**													
4	Adjacent	.06 **	-.39 **	.23 **	**1.00**												
5	Ind Dev ^{F}	-.00	.00	-.00	-.00	**1.00**											
6	Hof	.11 **	.00	.07 **	-.07 **	.00	**1.00**										
7	Lang ^{F}	.03	.10 **	.06 **	-.15 **	.00	.16 **	**1.00**									
8	Relig ^{F}	.09 **	.19 **	-.20 **	-.11 **	-.00	-.06 **	.23 **	**1.00**								
9	Social (abs)	-.09 **	.01	-.03	-.02	-.00	.00	.03	.06 **	**1.00**							
10	Ind Dev ^{F} (abs)	.18 **	.20 **	-.19 **	-.16 **	-.00	.34 **	.04 **	.14 **	.05 **	**1.00**						
11	Edu ^{F} (abs)	.01	.19 **	-.26 **	-.13 **	-.00	.07 **	-.00	.16 **	.06 **	.60 **	**1.00**					
12	Dem ^{F} (abs)	-.09 **	.08 **	-.30 **	-.08 **	-.00	.09 **	.06 **	.27 **	.12 **	.36 **	.38 **	**1.00**				
13	Time $_{resid}$	.13 **	-.06 **	.06 **	.04 **	.00	.08 **	.06 **	.20 **	-.02	-.05 **	-.13 **	-.06 **	**1.00**			
14	UAI_i	-.03 *	-.08 **	.03	.03 *	-.04 **	-.19 **	.06 **	-.14 **	-.02	-.17 **	-.05 **	-.13 **	.00	**1.00**		
15	X_{ij}^{COM} (ln)	.73 **	-.33 **	.29 **	.20 **	.01	.13 **	-.08 **	-.04 **	-.09 **	.09 **	-.09 **	-.16 **	.08 **	-.03 *	**1.00**	
16	X_{ij}^{DIG} (ln)	.70 **	-.34 **	.33 **	.18 **	.27 **	.14 **	-.06 **	-.03	-.09 **	.06 **	-.15 **	-.21 **	.14 **	-.08 **	.78 **	**1.00**
17	X_{ij}^{DCG} (ln)	.69 **	-.36 **	.35 **	.19 **	.07 **	.15 **	-.08 **	-.01	-.09 **	.08 **	-.15 **	-.22 **	.16 **	-.06 **	.78 **	.88 **

^{F} indicates that the variable is factor score, (abs) indicates the absolute value of a variable, and (ln) indicate the natural logarithm of the variable (plus 1).

X_{ij}^{DIFF} is not included in this table for brevity but it is the sum of X_{ij}^{DIG} and X_{ij}^{DCG}.

** p < .01, * p< .05 (2-tailed)

Table 5. Regression Models for Commodity vs Differentiated Goods Industries
Dependent variable: X_{ij} (ln) – volume of exports US$ millions

Variables	Commodity Goods		Differentiated Goods		Hypothesis, H1
GDP_i*GDP_j (ln)	.791	***	.851	***	-
	(47.96)		(53.70)		
Dist (ln)	-1.372	***	-1.490	***	-
	(-31.14)		(-35.21)		
Adjacent	.277		-.210		-
	(1.49)		(-1.18)		
Ind Dev [F]	-.020		.600	***	-
	(-0.43)		(13.15)		
Hof	.246		.298		**H1a :** Δ = +.052, t = 1.58, n.s.
	(10.33)		(13.03)		
Lang [F]	-.337	***	-.414	***	**H1b :** Δ = -.077, t = -1.71, *
	(-10.43)		(-13.32)		
Relig [F]	.102		.275		**H1c :** Δ = +.173, t = +2.56, n.s.
	(2.10)		(5.89)		
Social (abs)	-.269	***	-.331	***	**H1d :** Δ = -.062, t = -0.53, n.s.
	(-3.14)		(-4.03)		
Edu [F] (abs)	-.016		-.399	***	**H1e :** Δ = -.383, t = -4.11, ***
	(-0.24)		(-6.18)		
Dem [F] (abs)	-.154	*	-.257	***	**H1f :** Δ = -.103, t = -0.89, n.s.
	(-1.83)		(-3.18)		
Time $_{resid}$	-.156	***	-.010		**H1g :** Δ = +.146, t = 3.00, n.s.
	(-4.44)		(-0.29)		
Adj r^2	0.744		0.821		
F	111.78	***	174.90	***	

t – cell entries in the first two columns are regression coefficients with *t*-statistics below in parentheses. Anderson & Wincoop's (2003) 'multilateral trade resistance' dummy variables are included in the models but not shown in this table.

*** p < .001, ** p < .01, * p< .05 (one-tailed in the predicted direction)

Table 6. Regression Models for Industrial vs Consumer Goods Industries
Dependent variable: X_{ij} (ln) – volume of exports US$ millions

Variables	Differentiated Industrial Goods		Differentiated Consumer Goods		Hypothesis, H2
GDP_i*GDP_j (ln)	.881	***	.816	***	-
	(56.50)		(49.98)		
Dist (ln)	-1.460	***	-1.502	***	-
	(-35.08)		(-34.48)		
Adjacent	-.019		-.122		-
	(-0.11)		(-0.67)		
Ind Dev [F]	1.016	***	.204	***	-
	(22.66)		(4.35)		
Hof	.234		.270		**H2a :** Δ = +.036, t = 1.09, n.s.
	(10.42)		(11.46)		
Lang [F]	-.329	***	-.427	***	**H2b :** Δ = -.098, t = -2.21, *
	(-10.76)		(-13.34)		
Relig [F]	-.003		.396		**H2c :** Δ = +.399, t = 6.01, n.s.
	(-0.07)		(8.25)		
Social (abs)	-.176	*	-.287	***	**H2d :** Δ = -.111, t = -0.95, n.s.
	(-2.18)		(-3.39)		
Edu [F] (abs)	-.610	***	-.533	***	**H2e :** Δ = +.077, t = 0.85, n.s.
	(-9.61)		(-8.01)		
Dem [F] (abs)	-.232	**	-.351	***	**H2f :** Δ = -.119, t = -1.04, n.s.
	(-2.91)		(-4.22)		
Time $_{resid}$	-.033		-.010		**H2g :** Δ = +.023, t = 0.47, n.s.
	(-0.99)		(-0.30)		
Adj r^2	0.837		0.803		
F	196.57	***	155.70	***	

t – cell entries in the first two columns are regression coefficients with *t*-statistics below in parentheses. Anderson & Wincoop's (2003) 'multilateral trade resistance' dummy variables are included in the models but not shown in this table.

*** p < .001, ** p < .01, * p< .05 (one-tailed in the predicted direction)

Table 7. Regressions for Testing the Moderating Hypotheses: dep. var. - ln of US$m of Differentiated Consumer Goods [t]

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8
GDP_i*GDP_j (ln)	.827 ***	.829 ***	.830 ***	.834 ***	.827 ***	.827 ***	.828 ***	.829 ***
	(50.91)	(51.05)	(51.00)	(51.75)	(50.89)	(50.89)	(50.99)	(51.03)
Dist (ln)	-1.496 ***	-1.490 ***	-1.475 ***	-1.483 ***	-1.495 ***	-1.495 ***	-1.500 ***	-1.498 ***
	(-33.83)	(-33.72)	(-32.85)	(-33.85)	(-33.81)	(-33.80)	(-33.93)	(-33.91)
Adjacent	-.124	-.108	-.112	-.093	-.123	-.122	-.121	-.113
	(-0.67)	(-0.58)	(-0.60)	(-0.50)	(-0.66)	(-0.65)	(-0.65)	(-0.61)
Ind Dev [F]	.289 ***	.264 ***	.296 ***	.309 ***	.289 ***	.285 ***	.290 ***	.284 ***
	(6.13)	(5.54)	(6.28)	(6.61)	(6.12)	(6.01)	(6.17)	(6.05)
Hof	.283	.277	.277	.282	.283	.284	.279	.283
	(11.88)	(11.63)	(11.59)	(11.93)	(11.88)	(11.90)	(11.72)	(11.89)
Lang [F]	-.447 ***	-.448 ***	-.441 ***	-.416 ***	-.447 ***	-.450 ***	-.441 ***	-.448 ***
	(-13.69)	(-13.74)	(-13.47)	(-12.79)	(-13.69)	(-13.69)	(-13.48)	(-13.72)
Relig [F]	.493	.490	.493	.489	.493	.495	.488	.497
	(10.37)	(10.32)	(10.38)	(10.39)	(10.37)	(10.40)	(10.26)	(10.47)
Social (abs)	-.286 ***	-.273 ***	-.278 ***	-.281 ***	-.286 ***	-.287 ***	-.277 ***	-.287 ***
	(-3.32)	(-3.17)	(-3.23)	(-3.29)	(-3.32)	(-3.33)	(-3.21)	(-3.34)
Edu [F] (abs)	-.641 ***	-.647 ***	-.651 ***	-.646 ***	-.642 ***	-.642 ***	-.641 ***	-.638 ***
	(-9.60)	(-9.69)	(-9.74)	(-9.76)	(-9.60)	(-9.61)	(-9.60)	(-9.55)
Dem [F] (abs)	-.276 ***	-.292 ***	-.268 ***	-.291 ***	-.276 ***	-.272 ***	-.296 ***	-.273 ***
	(-3.27)	(-3.47)	(-3.18)	(-3.48)	(-3.27)	(-3.22)	(-3.50)	(-3.24)
Time [resid]	-.036	-.039	-.037	-.039	-.036	-.038	-.034	-.045
	(-1.04)	(-1.11)	(-1.06)	(-1.12)	(-1.04)	(-1.08)	(-0.97)	(-1.28)
UAI_i	.001	.003	.001	.001	.001	.002	-.001	.002
	(0.64)	(1.52)	(0.46)	(0.46)	(0.64)	(0.75)	(-0.28)	(1.07)
Hof Interaction		-.092 ***						
		(-3.28)						
Lang Interaction			-.079 **					
			(-2.57)					
Relig Interaction				-.284 ***				
				(9.36)				
Social Interaction					-.004			
					(-.13)			
Edu Interaction						.021		
						(0.70)		
Dem Interaction							-.096 **	
							(-2.75)	
Time Interaction								-.085 **
								(-2.95)
Adj r^2	0.796	0.802	0.800	0.800	0.796	0.796	0.796	0.797
F	153.15 ***	152.33 ***	155.43 ***	155.43 ***	151.90 ***	151.91 ***	152.20 ***	152.25 ***

t – cell entries are regression coefficients with *t*-statistics below in parentheses. Anderson & Wincoop's (2003) 'multilateral trade resistance' dummy variables are included in the models but not shown in this table.

*** p < .001, ** p < .01, * p< .05 (one-tailed in the predicted direction)

[1] It should be noted that some researchers, such as Gomes (1999) and Lee (1998) treat these two constructs as isomorphic. However, the author of this article favours the interpretation which views them as related but distinct constructs, with cultural distance being only one dimension of psychic distance.

[2] Tihanva, et al's (2005) use of moderators in their meta-analysis and Brouthers and Brouthers' (2003) comparison of entry mode choices between manufacturing and service firms are two of the few examples.

[3] Please note that the number of dimensions for psychic distance is reduced from eight in the earlier study, to seven in this paper, due to the fact that two of the dimensions (differences in education and differences in industrial development) are highly correlated.

[4] Precise values for all of the indicators for up to 100 countries are also available from the author.

[5] Classifications of the 181 three digit SITC codes are available on request from the author.

[6] The countries for which both the importer and exporter dummy variables were omitted for the regressions in Tables 5 & 6 are Austria, Belgium, Estonia, Ethiopia, India, Japan, Malta, Sweden, Tanzania, Trinidad & Tobago, the USA and Zambia. The exporter dummy variables for Greece, Jamaica, Portugal and Singapore were also omitted from the regressions reported in Table 7. These variables were identified by their high variance proportion loadings in the multicollinearity diagnostics. The multicollinearity predominantly concerned the baseline gravity model, and not the main variables under examination.

[7] In analyses not reported here, but available from the author, the regressions were also repeated for a larger sample of 99 countries (Luxembourg was left out of the initial 100 country sample due to missing trade data). Unfortunately, it was also necessary to exclude the culture (**Hof**) and the political ideology (**Social**) dimensions due to missing data; however the results for the remaining dimensions of psychic distance remain roughly the same.