ETLA
ELINKEINOELÄMÄN TUTKIMUSLAITOS
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
Lönnrotinkatu 4 B 00120 Helsinki Finland Tel. 358-9-609 900
Telefax 358-9-601 753 World Wide Web: http://www.etla.fi/

Keskusteluaiheita – Discussion papers

No. 1193

Sarianna M. Lundan*

DISTANCE-RELATED BARRIERS AND THE INTERNATIONALISATION OF FINNISH MNES

* The Research Institute of the Finnish Economy (ETLA), Helsinki, Finland
Maastricht University, The Netherlands

This paper is part of the joint Networks, Services and Global Competition Research Program of ETLA (Research Institute of the Finnish Economy) and BRIE (Berkeley Roundtable on the International Economy). Financial support from Tekes (National Funding Agency for Technology and Innovation), the Federation of Finnish Technology Industries, and Nokia Corporation are gratefully acknowledged.

ISSN 0781-6847 22.08.2009

LUNDAN, Sarianna, M., **DISTANCE-RELATED BARRIERS AND THE INTERNATIONALISATION OF FINNISH MNES** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2009, 30 p. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; no. 1193).

ABSTRACT: In an integrated global economy, multinational enterprises (MNEs) have more opportunities than ever to reap the benefits of broader markets and more possibilities for an extensive division of labour between different locations. In spite of this, the evidence on the spread of the activities of MNEs seems to indicate a strong regional tendency, at least for the largest MNEs. This paper examines the theoretical arguments for the existence of such boundaries in an integrated global economy, and then examines their empirical importance using recent evidence on the internationalisation patterns of Finnish MNEs. We find that while some of the largest MNEs do indeed appear to be quite regional, some of the smaller internationalising firms are notably more global in terms of the spread of their activities.

KEYWORDS*:* Multinational enterprises, internationalisation, entropy, cultural distance, institutional distance

JEL-codes: D21, D24, F21, F23, M16

LUNDAN, Sarianna, M., **DISTANCE-RELATED BARRIERS AND THE INTERNATIONALISATION OF FINNISH MNES** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2009, 30 s. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; no. 1193).

TIIVISTELMÄ: Integroituneessa maailmantaloudessa monikansallisilla yrityksillä on entistä paremmat mahdollisuudet hyödyntää laajempien markkinoiden ja kattavan maantieteellisen työnjaon mukanaan tuomia etuja. Tästä huolimatta suurimpien yritysten toiminnan on havaittu olevan huomattavan alueellista. Tässä raportissa pohditaan maailmantalouden näkymättömien rajojen syitä, ja selvitetään niiden empiiristä merkitystä suomalaista aineistoa käyttäen. Tutkimuksesta selviää, että monet suomalaiset suuryritykset ovat toiminnassaan huomattavan alueellisia. Suomessa on myös joukko pienempiä kansainvälisiä yrityksiä, joiden toiminnan voidaan sanoa olevan enemmän globaalia.

AVAINSANAT: Monikansalliset yritykset, kansainvälistyminen, entropia, etäisyysmittarit

JEL-koodit: D21, D24, F21, F23, M16

Contents

Introduction

The first great unbundling (Baldwin, 2006) took place during the first industrial revolution, when it first became possible to produce goods in a location that was different from where they were consumed. This process facilitated economic agglomeration and led to the development of large cities, which in turn allowed for more specialization within specific regional areas. The process of specialization was based on local advantages, some of which were geographical in origin, while others developed more by accident, dependent on the location of individual entrepreneurs.

Alongside this process, which has been ongoing for more than two centuries, there is a much more recent development, which Baldwin (2006) has referred to as the second unbundling. This is the removal of any constraints of location on the production of intermediate inputs, so that products made or assembled in a particular location no longer need to draw from specialized inputs in or near that location, but can instead be assembled from inputs that are located anywhere in the world.

The process of the second unbundling, which more commonly might be referred to as globalization, has a few distinguishing characteristics. Most prominent among these is an overall growth in trade, and particularly of intra-industry trade in intermediate products, that is accompanied by an even more explosive growth in foreign direct investment. This has enabled the second unbundling of production to be extended to locations where managerial and entrepreneurial resources are not present to enable such production indigenously.

The second distinguishing feature of the contemporary global economy is the degree of interconnectedness between economic agents. At the level of the firm, this consists of relationships within the internal (ownership-based) and external (contractual) networks of activities (Lundan, 2002). On the aggregate level, the flows of intermediate inputs generate both inward and outward linkages between countries and economic areas. Indeed, it is this degree of interconnectedness that distinguishes contemporary globalization, which can be dated to the initial opening up of China in the beginning of the 1980s, from the first global economy, which reached its zenith on the eve of the First World War.

The disappearance of the first global economy taught the fundamental lesson that the process of globalization is reversible. Following the onset of the Great Depression and the

enactment of the Smoot-Hawley Tariff Act in 1930, the world economy quickly imploded with the proliferation of beggar-thy-neighbour policies. If measured simply in terms of the proportion of the stock of foreign direct investment to world output, a similar level of globalization was not reached again until 1997 (Jones, 2004), almost two decades into the second global economy.

Furthermore, in some important ways, the global economy has not become borderless (Ohmae, 1990) or 'flat' (Friedman, 2006), as some commentators have suggested. Instead, the interconnectedness of trade, investment, and financial flows across borders in increasingly seen as a source of instability and contagion (Gray, 2004; Hall & Kaufman, 2003). Indeed, in the academic literature, interest has shifted towards examining the distance-related barriers that would help explain why the global economy is 'spiky' rather than flat. The contemporary global economy is simultaneously both global and regional, and it is both open and closed in ways that are likely to produce a more integrated, but at the same time highly uneven, landscape for economic activity.

One manifestation of the unevenness of the economic landscape can be seen in the spread of the cross-border activities of multinational enterprises (MNEs). These enterprises are emblematic of an integrated global economy, and yet in recent years, more evidence has emerged that suggests that the activities of MNEs are more geographically constrained than was previously thought to be the case. Indeed, some prominent scholars have gone so far as to argue that regionalization rather than globalization better represents the reality of the global economy.

The idea that the internationalization process is limited by the ability of firms to overcome geographical, cultural and institutional barriers across borders is in itself not new. Beginning in the late 1970s, the scholars of the Uppsala school (Johanson & Vahlne, 1977; Johanson & Vahlne, 1990) suggested that the need for firms to learn about the culture and customs of different markets constrains their resource commitments abroad, and makes it more likely that firms will only gradually expand to less familiar markets over time. Subsequently, other scholars have expanded on the importance of cultural distance to the mode of entry of foreign investment (Hennart & Reddy, 1997; Makino & Neupert, 2000), and most recently, dis-similarity of institutional structures between countries has been added as an explanatory variable explaining the visible and invisible barriers to cross-border investment (Cuervo-Cazurra, 2006; Xu & Shenkar, 2002).

Our purpose in this paper is to review the theoretical explanations for the existence of distance-related barriers to cross-border economic activity, and to examine empirically whether and in what ways such barriers are visible in the pattern of internationalisation of Finnish MNEs. The paper will proceed as follows. In the first part we review the cultural and institutional explanations for the existence of distance-related barriers. While considerable scholarly work already exists in this area, our aim here is to integrate the different perspectives, and to explicitly relate the theoretical discussion to the evidence concerning the regional and global patterns of the expansion of MNEs. We then proceed to the primary contribution of this paper, which lies in the presentation of new empirical evidence on the patterns of internationalisation of Finnish MNEs.

The empirical analysis consists of three parts. In the first part, we replicate the studies by Rugman and Verbeke (2004) and Collinson and Rugman (2008) on the regionalization of large MNEs, and add both asset and employment based measures of internationalisation to the analysis. By using a database that includes both larger and smaller MNEs, we are also able to extend the analysis beyond the Fortune Global 500 firms that were the focus of the original study. In the second part of the empirical analysis, we present an entropy-based analysis of the pattern of internationalisation. While entropy measures have been used to study international diversification in the strategy literature, they have not been applied to the question of the geographical unevenness of the cross-border activities of MNEs. We think that the entropy measure is potentially a useful indicator of the spread of the international activities of the MNE, particularly when we are able to compare the within region and between regions components of entropy.

In the third part of the empirical analysis we calculate a set of distance measures that map the geographical, cultural and institutional distance between Finland and various host countries. We then look at the portfolio of invested locations from the parent company's point of view to examine whether there are differences in the average distance between large and small MNEs, and whether firms that are quantitatively more global also invest in locations that are more distant. By looking at the empirical evidence in these three distinct ways, we believe we are able to provide a comprehensive view of the extent to which the international activities of Finnish MNEs are regional or global, and how the observed limits to their internationalisation relate to theoretically relevant concepts such as cultural and institutional similarity.

Cultural and institutional barriers to cross-border investment

We think that the borders that inhibit the emergence of the flat world are primarily and fundamentally institutional. North (1990; 2005) distinguishes between formal and informal institutions. Formal institutions are the legislative and regulatory bodies that are charged with the enforcement of formal, codified 'rules of the game'. Informal institutions consist of the norms, values and self-imposed codes of conduct that underpin the development of formal institutions. Institutions exist to counter uncertainties arising from human interaction, and more complex forms of economic exchange are likely to require to development of new institutions to facilitate exchange. North's (2005) recent work as well as that of Dunning and Lundan (2008a; 2008c) has emphasized the increasing role of uncertainty and complexity in the human environment, and hence the growing relevance of the inability of economic actors to predict or forecast the nature and extent of change in that environment.

While much of the attention of economists on institutions has focused on comparative investigation of the design of formal institutions (Kaufmann, Kraay, & Mastruzzi, 2005; La Porta, Lopez-de-Silanes, & Shleifer, 1999), we believe that informal institutions are more likely to form the root of the persistently high transaction costs experienced by economic agents. Thus, for example, in the contemporary global economy, the norms and values that guide decision-making in the wealthy developed countries that are beginning to embrace post-materialist values[1], are likely to differ considerably from those prevalent in the emerging economies, that are looking to lift large populations out of poverty, and to establish themselves as economic and political actors in the world arena.

Such uncertainties give rise to what North (2005) refers to as a non-ergodic world, and it is what we consider to be of fundamental importance in understanding the connection between institutions as a response to uncertainty, and institutional change in the global economy. Individual citizens, entrepreneurs and governments are increasingly likely to face uncertainties that are not governed by actuarial risk but exhibit genuine uncertainty in the sense of Knight (1921). Experimentation is likely to characterize the search strategies of economic actors as they look for answers in such a fundamentally uncertain environment (Cantwell, Dunning, & Lundan, 2010). Given that there are also likely to be substantial differences in the

[1] At the height of the Great Depression, Keynes (1930) wrote that the most fundamental challenge for mankind over the next decennia was unlikely to be the economic problem (of survival), which he thought could be solved, but how to model human life once the subsistence problem had been solved for a large part of the population.

objectives and the underlying norms and values of the actors, such experimental search strategies can yield very different results in different parts of the world. Consequently, far from facing a flat global economy, the challenge on the macro level will be to reconcile the various institutional responses to control uncertainty.

When we shift to a lower level of analysis, and look at the global economy from the point of view of an individual firm or an entrepreneur, which is primarily the level at which Friedman's analysis is situated, the flat world is more apparent. The institutional achievements of the past half a century have brought low tariffs in manufactured goods, and open, or even preferential, access to foreign investors (UNCTAD, 2008).

Indeed, prior to the current financial crisis, there was much discussion concerning the growth of outsourcing, and particularly the sourcing abroad of intermediate inputs in services and the higher value-added inputs involving advanced manufacturing operations and local R&D. Even so, in a large economy like the United States, where the share of foreign trade is still small as compared to domestic production, the growth in outsourcing is unlikely to be of significant influence to the economy as a whole (Mankiw & Swagel, 2006). In smaller economies, the effects can of course be more pronounced, but here one needs to also take into account the effects of both insourcing and outsourcing. Whatever the final balance of benefits and costs turns out to be, in terms of the second unbundling of the modular components of production, the world economy would indeed seem to be quite flat.

However, the extensive historical cases presented by Chandler (1990) from the end of hte 19th century highlight the basic truth that being able to produce at low cost could not be a sustainable source of competitive advantage, unless comparable investments in marketing and distribution were made in order to ensure full utilization of the production capacity. While the low cost advantage at the time of the second industrial revolution was generally achieved through enormous investments in an overwhelming scale advantage, in today's global economy, making the initial investment in scale is not always necessary, since scale advantages can also be sourced through the market. Nonetheless, it remains the case, that even when competitive advantage is based on a creative combination of modular inputs, the ability of the firm to sustain the advantage is dependent on its ability to expand its markets both domestically and abroad.

In a flat or borderless global economy, one would expect the largest MNEs to be able to source inputs from anywhere in the world, and also to have the resources and ability to sell

their product anywhere in the world. Indeed, by the late 1990s, the idea of truly global strategy began to take hold (Yip, 2003; Yip, 1989). Following this strategy, global products or services were to be minimally tailored to suit local needs, and the central task of management was to assess where customization was truly necessary, and when it could be foregone in order to reap more scale benefits.

But in spite of this push for global strategy, evidence is beginning to accumulate that the markets for the output of some of the world's largest firms are regional rather than global. This evidence has been brought forward most forcefully by Rugman and Verbeke (Rugman, 2001; Rugman & Verbeke, 2004; 2007), who have argued based on evidence of the sales of the Fortune Global 500 firms, that only a fraction of them are global in the sense that they would enjoy substantial sales in all three parts of the Triad. In fact, Rugman and Verbeke (2004) found that only nine of the 365 firms for which sufficient data was available could be properly considered global, in so far as they had sales of at least 20% in each Triad region, and no more than 50% in any one region. Thus they contended, that in reality, most of the largest MNEs appeared to be strong only in their home region, or at most in two of the three main regions in the world. In other words, there appear to be barriers to the selling of products and services around the world that are difficult for even the largest multinationals to overcome.

These 'costs of foreignness' stem from many sources, among them cultural distance, differences in regulation and other institutional features (Dunning & Lundan, 2008b). They are particularly pronounced in the downstream (sales) activities of the firm, and affect the ability of firms to craft products and services that have a global appeal. These downstream activities are also at the centre of the Rugman and Verbeke argument, since they contend that the preferences prevalent in the firm's major markets influence corporate strategy to a greater extent than the decisions related to sourcing (Rugman & Verbeke, 2008).

The earliest efforts by scholars to understand the extent and nature of such borders were undertaken by the Uppsala school, beginning with Johanson and Vahlne (1977; 1990). Their model predicted increasing resource commitment to foreign markets over time as a result of organisational learning and the accumulation of experience. It also predicted that firms would be likely to diversify their investments into countries with progressively higher levels of 'psychic distance'.[2]

[2] For further discussion and refinement of the concept of psychic distance, see O'Grady and Lane (1996) and Dow and Karunaratna (2006).

The empirical studies of the model by Vahlne and Wiedersheim (1973), Hornell et al. (1973), Johanson and Vahlne (1977) and Nordstrom (1991) with respect to Swedish MNEs demonstrated that there was a positive and significant correlation between the actual or perceived psychic proximity between Sweden and other countries, and the geographical distribution of Swedish manufacturing and sales subsidiaries. In particular, the association was found to be most pronounced in the early stages of the firm's internationalisation process. The fact that, later on, this stages or process model of internationalisation also received empirical support in several studies outside of Scandinavia, allowed Johanson and Vahlne (1990) to reject the notion that this is specifically a Nordic model, applicable only to small, open, and wealthy home countries.[3]

Of course, if a limited search for alternatives and consequent reliance on psychically close locations is the result of organisational and individual constraints on information processing, it is entirely plausible that, over time, some firms would be able to develop organisational routines to overcome the search constraints, and to reduce the costs of further information. Indeed, built into a model of gradual learning is the idea that the increasing resource commitment predicted by the model is likely to have less influence the more information and experience the firm acquires in the marketplace (Forsgren, 1989).

This would make the process model of internationalisation more applicable to initial internationalisation, but less to subsequent investments by established multinationals (Barkema, Bell, & Pennings, 1996; Kogut, 1983). In spite of this, the geographical pattern predicted by the Uppsala model is consistent with the evidence presented by Rugman and Verbeke concerning very large firms. It seems that distance matters, whether it is psychic distance, or geographic distance, which is often, although by no means always, correlated with psychic distance.[4]

One criticism of the Rugman and Verbeke measure of internationalisation is that it limits attention to the geographic destination of the output of MNEs, and pays no attention to that of the sourcing of the inputs. Indeed, as Rugman and Verbeke (2004; 2007) themselves acknowledge, the upstream activities of MNEs are likely to be more easily internationalised than are its sales and distribution. It is also the case, that as the number of countries integrated

[3] More comprehensive reviews of the Uppsala model can be found in Petersen and Pedersen (1997) and Forsgren (2002).

[4] Indeed, the gravity models of international trade when applied to FDI suggest that geographical distance may be an important element in psychic distance (Bevan & Estrin, 2004; Egger & Pfaffermayr, 2004). See also Håkanson (2008).

to the global economy increases, the degree of globalisation of firms is likely to increase as well. This is, however, somewhat aside from the original point that the home region is still likely to have a strong influence on corporate strategy, and that even when MNEs talk about being global, their decision-making must be informed by the demands and opportunities present in their most important markets, and particularly so when the profitability of the foreign operations lags behind those in the home country.[5]

Another obvious point of criticism is that the classification of firms into global or regional depends on the threshold levels that are chosen by the researchers (Osegowitsch & Sammartino, 2008). In their response, Rugman and Verbeke (2008) contend that while different classifications are possible, they do not change the basic pattern, which is that some of the largest MNEs in the world seem unduly dependent on sales in their home region. In a further study by Collinson and Rugman (2008), that employs a somewhat different classification, it was shown that the same home-region bias applies to large Japanese MNEs as well.

Thus the evidence, such as it is, would seem to suggest that the flat world only applies to the sourcing of inputs, but not to the selling of the final product. At the same time, the attribution of causes to the patterns we observe depends on the measures we employ to assess internationalisation. The second part of this paper will take a detailed look at recent empirical evidence concerning the patterns of internationalisation of Finnish MNEs.

Sources of data and descriptive statistics

The data used in this study comes from Orbis, a commercial database maintained by the Dutch company Bureau van Dijk Electronic Publishing, the main benefit of which is the ability of the compiling company to collect information from various national sources and to cross-reference such data within the database, so that it becomes possible to track the ownership links between parent companies and their affiliates across borders.

Our data is limited to parent firms that have at least 150 employees, and it includes the foreign affiliates of Finnish firms which themselves are affiliates of foreign MNEs. In a previous paper (Lundan & Tolvanen, 2008), we compared the coverage of the data available

[5] See also Dunning et al. (2007) for a complementary macro-level view on the regionalization/globalization debate, and Flores and Aguilera (2007) on the pattern of US MNEs investments abroad.

from Orbis to the only other existing sources on the cross-border activities of Finnish MNEs from the Bank of Finland and Statistics Finland. From this analysis, it was apparent that there are substantial differences between the three sources. For example, a figure from Orbis of 205,737 for total employment in foreign affiliates is only 46% of the corresponding figure of 381,764 reported by the Bank of Finland. Such differences have two main causes. First, some proportion of the difference is likely to be due to the substantial number of missing observations in Orbis. Second, there are likely to be underlying differences in the method of data collection and in the comprehensiveness of the coverage of the source(s) used. In light of the various comparisons we performed earlier, we believe that the discrepancies in the aggregate data are more likely to be caused by missing values in our sample, rather than differences in the sampling frame.

Of the total of 80 countries in the Orbis data set, no affiliate data was available for 35 countries. However, most of the missing data involved countries with only one or two affiliates, and data was completely missing for only 125 affiliates.[6] In terms of the three measures of the extent of affiliate activities contained in Orbis, namely assets, turnover and employment, the most comprehensive data is available for assets and turnover, while the data on employment is missing considerably more often. Overall, the Orbis data would seem to follow roughly the same geographical distribution as the figures released by the Bank of Finland.

For the majority of cases in the sample (74%) the parent data reflects the year end 2006, for 2% of the subsidiaries the data pertains to year-end 2007, and for 7% and 17% it pertains to 2004 and 2005 respectively. Since the figures in Orbis have been converted to US dollars, these had to be converted back to euros using representative year-end exchange rates from the IMF for 2004-2007. Visual inspection of the Orbis data aggregated at the parent level revealed five erroneous parent entries which were removed.

Our sample contains 3,533 foreign affiliates of Finnish MNEs located in 80 countries and belonging to 508 parent companies resident in Finland. Of the 2,470 affiliate companies for which ownership data is available in our sample, all are majority-owned, and 88% of these are wholly-owned affiliates. The average Finnish MNE parent has seven foreign affiliates, but this distribution is very highly skewed. Nearly a half, or 245 parents in the sample, are firms with only one foreign affiliate, while the most international firms have in excess of 100 affili-

[6] Countries with more than three affiliates with missing data were Malaysia, South Africa, United Arab Emirates, Cyprus, Indonesia, New Zealand, Slovenia and Uruguay.

ate companies abroad, with a maximum of 144. The total number of countries where affiliates of Finnish MNEs are present is 80, while the average number of countries for a Finnish parent firm is three, and the highest count is 53.

Analysis and results

The empirical analysis consists of three parts. In the first part, we replicate the findings of Rugman and Verbeke (2004) concerning the Fortune Global 500 MNEs using our comprehensive sample of Finnish firms. Of this group, only two firms, Nokia and the pulp and paper giant StoraEnso, are large enough to have made it to the Fortune Global 500 list. Following Collinson and Rugman (2008), in addition to the downstream (sales) measures of internationalization, we also include an upstream asset-based measure of internationalization. Additionally, we include an employment-based measure, although this is only available for a smaller subset of the data, making it less useful than the other two measures.

In the second part of the analysis, we present an entropy measure of geographical diversification, which is a variation of the model presented by Jacquemin and Berry (1979).We decompose this measure into related (regional) and unrelated components, and perform the analysis on two different classifications, the first one following the Triad classification used by Rugman and Verbeke (2004), and the second a more fine-grained classification that better represents the main geographical areas relevant to Finnish MNEs.

In the third part, we look in more detail at the distribution of the countries where Finnish MNEs have established (or bought) affiliates. Our objective here is not to assess e*x ante* the locational factors that would induce Finnish MNEs to invest or not to invest in a given location, but rather to look *ex post* at the set of countries they have invested in, and to examine whether there are qualitative differences between the parent firms in terms of their choice of host countries.

Replication of Rugman and Verbeke (2004)

We begin the empirical analysis by applying the classification used by Rugman and Verbeke (2004) to the Finnish data. Following Collinson and Rugman (2008), we extend the analysis beyond the internationalisation of sales to also include an asset-based measure in the analysis.

We also introduce an employment-based measure of internationalization, although this measure suffers from a higher number of missing observations.

The classification employed by Rugman and Verbeke begins by excluding the group of firms whose activities are predominantly focused on the home country. It then looks at the distribution of the foreign activities of the remaining firms in order to classify them into three categories. *Home region* firms are defined as having over 50% of their sales, assets or employment in the home region, *bi-regional* firms have less than 50% in the home region and over 20% in another region, *host region* firms have over 50% of their sales/assets/ employment in another (non-home) region, while *global* firms have less than 50% of their sales, assets or employment in the home region, and over 20% in each of the two regions of the Triad. It should be noted, that firms that are global are also bi-regional, and some may also be classified as host region firms, but not *vice versa*. As a consequence, a relatively small number of firms are likely to be classified as global.

It is also evident, that any analysis that uses some form of regional classification is sensitive to the definition of regions. In order to check the robustness of our results, we employ two different regional classifications in this paper. In the Rugman and Verbeke study, regional classification was based on the published data that is available from the annual reports and other official documents filed by the companies themselves. These sources do not provide a consistent geographical breakdown of sales, assets or employment, since reporting on the geographical breakdown of such information is not mandatory (van den Berghe, 2003). As a consequence, regions are often classified differently from one firm to another, and even within one firm over time.

Since we are using data at the affiliate level and aggregating it to the parent level, we should be able to obtain a more fine-grained measure of the geographical spread of the firm's activities. However, if data is missing for any foreign affiliate, the sum of all of the regional shares will not equal 100% of the consolidated sales, assets or employment of the parent. In such cases the missing data gets absorbed into the home country share, and as a consequence, our measure of internationalisation is likely to overestimate the home region share.[7]

[7] Beyond the issue of regional classification, there are a handful of cases where investments have been made in known tax havens in the Caribbean. Such cases have not been removed from the data, since the number of affiliates in such locations is very small in relation to the total number of affiliates.

We calculate the asset, turnover and employment based measures, where each is defined as the ratio of foreign assets (FA) to total assets (TA) or foreign sales (FS) to total sales (TS) or foreign employment (FE) to total employment (TE) of the firm. We remove all cases where one of the regional totals is greater than one, resulting in a reduced set of 454 parent firms. We then classify the cases as home region, bi-region, host region and global firms respectively. In the first analysis the Triad regions are defined in a manner analogous to that used by Rugman and Verbeke. In the second classification, Europe only includes the 27 EU countries, plus Norway, Iceland and Switzerland.

It is apparent from this analysis, that virtually all of the Finnish MNEs are home regional. Indeed, based on the asset and employment measures, all Finnish MNEs are home regional. Based on the turnover measure, two are bi-regional in the narrower geographical definition of Europe, and only one is bi-regional using the broader definition of Europe. These results are, however, influenced in large part by the substantial proportion of missing values in the data, which makes it difficult for a firm to reach the thresholds set by Rugman and Verbeke. We thus proceed to take a further look at the evidence, first in terms of the distribution of the activities of Finnish MNEs between countries, and then in terms of the relative distance of the host countries from the home country.

The entropy measure of internationalisation

There is a long tradition in the literature on business strategy and international business to assess diversification by means of entropy measures that aim to capture both the overall extent of foreign activity, and the degree to which it is spread geographically. This literature dates back to the seminal studies by Rumelt (1974) and Jacquemin and Berry (1979), whose focus was on product diversification. Such studies followed in the wake of conglomerate building in the US in the 1960s and 1970s, and introduced the distinction between related and unrelated diversification, while also extending the concept of entropy to the activities of the firm.

As the internationalisation of firms progressed in the 1980s, scholars also became interested in expanding these concepts to encompass geographical diversification. The simple entropy measure employed here is the similar to that used by Palepu (1985), which itself is derived from the original Jacquemin and Berry (1979) entropy measure. The formula for the entropy measure used here is as follows:

$$\sum_{i=1}^{N} P_i \ln\left(\frac{1}{P_i}\right)$$

$$0 < P_i < 1 \;,\; \sum_{i=1}^{N} P_i < 1$$

$$P_i = \frac{FA_i}{TA} \; or \; P_i = \frac{FS_i}{TS} or \; P_i = \frac{FE_i}{TE}$$

where P_i is the ratio of foreign assets (FA) in host country *i* (where *i*=1 ... N) to total assets (TA) or foreign sales (FS) to total sales (TS) or foreign employment (FE) to total employment (TE) of the firm. This proportion is multiplied by the natural logarithm of its inverse, and summed over the total number of host countries (N) in which the firm has activities. Appendix I provides some numerical illustrations of this measure.

A small difference between our measure and the entropy measure used in studies incorporating product and geographical diversification (Kim, 1989; Kim, Hwang, & Burgers, 1989; Vachani, 1991) is that here P_i is always greater than zero and less than one, and the sum of all P_i is also less than one. While in the case of product diversification it makes sense to consider the case of a firm with activities in only one segment, in the case of international diversification, the firm has to undertake activities in at least one foreign country in addition to the home country for the measure to be meaningful. Furthermore, while diversification across industry segments should sum up to one across all segments, the home country is qualitatively different from all of the host countries in the context of international diversification. Consequently, our measure excludes the home country activities from the diversification measure.

The benefit of a geographical entropy measure is that it captures the difference between the overall extent of activities that are undertaken outside of the firm's home country, and the distribution of such activities between host countries. Thus the entropy value for a firm that has 90% of its activities outside of the home country, but all of it in just one host country, is lower than that of a firm that has invested 45% in one host country and 45% in another. It is also lower than the entropy value of a firm which has only a half of its activities outside of the home country, but where such activities are evenly distributed between five different host countries. The first case could for example illustrate the situation of a Canadian firm in the pulp and paper industry that has invested all of its productive capacity in the

United States. The latter could be a Finnish company whose foreign activities are divided equally between Sweden, Denmark, Germany, the UK and Russia.

Since the measure is meant to capture both the extent of foreign activity and its distribution between different host countries, calculating an entropy measure when there is only one foreign affiliate produces somewhat counter-intuitive results. Thus for example, a firm that has a ratio of foreign to domestic assets of P_i=250/500=.5 has an entropy score of .35, while another firm with a ratio of P_i=400/500=.8 has an entropy score of .18. While we would generally consider the latter firm to be more international, the distribution of its stakes between the home and host country is more uneven, and it thus exhibits less entropy. Since parent firms with only one affiliate are nonetheless quite common (nearly a half in our sample), they are included in the analyses that follow.

We calculate total entropy measures for three variables of interest, namely the proportion of foreign assets, foreign turnover and foreign employment. In line with our definition, we have dropped all cases where the proportion of foreign activities to total activities was equal to or greater than one, suggesting erroneous data.[8] Due to missing or incorrect values, we were able to calculate the simple entropy measure for a maximum of 279 parent companies. The average entropy when using assets was .26 and the average when using turnover was .30. The average when using employment was .36, but this measure was available for only 136 parent companies.

Overall, the three measures of entropy are closely correlated with each other, with a Cronbach alpha of .97. Figure 1 shows the degree of entropy by the size of the parent, as measured by total parent turnover. To make the figure more readable, it excludes three observations where parent employment exceeds 30,000 or turnover exceeds €10 million. A similar pattern was also observed for parent assets and employment, but these were omitted for space considerations. These results suggest that, contrary to what one might expect, the degree of entropy appears to be quite independent of firm size. There appear to be substantively international MNEs of smaller size in our sample, which warrant further investigation.

[8] Such cases were caused by incorrect data for the parent or one or more of the affiliates. In a few cases, a ratio greater than one was caused by partially owned affiliates of a considerable size being counted as wholly owned.

Regional entropy

Following the approach introduced by Jacquemin and Berry (1979) and extended by Kim (1989) and Vachani (1991), the regional entropy measure employed here introduces a second index that takes into account the regional groupings of related countries. Thus, for example, a firm with 50% of its assets abroad evenly divided between 10 different host countries in Europe should have a lower entropy score than an otherwise identical firm with 10 affiliates evenly divided, two of which are in the Americas and eight of which are in different European host countries. It is possible to decompose the simple total geographic diversification (TGD) measure introduced earlier into two components, related geographic diversification (RGD) and unrelated geographic diversification (UGD). Specifically:

$$TGD = \sum_{i=1}^{N} P_i \ln\left(\frac{1}{P_i}\right)$$

$$RGD = \sum_{a=1}^{M} P_a \sum_{i \in a} P_{ia}^{a} \ln\left(\frac{1}{P_{ia}^{a}}\right)$$

$$UGD = \sum_{a=1}^{M} P_a \ln\left(\frac{1}{P_a}\right)$$

$$TGD = RGD + UGD$$

$$P_{ia}^{a} = P_{ia} / P_a$$

$$0 < P_{ia} \leq 1 \ , \ \sum_{a=1}^{M} \sum_{i \in a} P_{ia} \leq 1$$

where P_{ia} is similar in construction to P_i, except that here the ratio represents activities in host country *i* within region *a* (where *a*=1 ... M) as a proportion of the total assets, sales or employment of the firm. Similarly, P_a is the ratio of the foreign assets, sales or employment in region *a* to the total assets, sales or employment of the firm. P_{ia}^{a} is then simply the ratio of affiliate assets, sales or employment in a particular host country to the total in that region. The seven regions included in the analysis were the Nordic countries, the old EU-15, the new EU-12, Asia, NAFTA, South America and Other, which were selected based on the pre-existing knowledge of the regional patterns of the internationalization of Finnish firms.

Figure 2 plots regional entropy in relation to total entropy using the asset measure. If regional entropy accounted for all of the firms' entropy, the observations would fall on the 45-degree line. The extent to which observations lie below this line, indicates an increase in the extent of global diversification. These results demonstrate that, perhaps contrary to what might have been expected, between rather than within region entropy accounts for a large proportion of the entropy of Finnish firms. The plots for turnover and employment (omitted here for space considerations) are substantively similar, and confirm that while regional diversification is certainly present in the sample, more global patterns can be observed at both lower and higher overall levels of entropy.

It should be noted, however, that since the maximum potential degree of entropy is dependent on the number of regions included in the analysis, and here we have defined three sub-regions for Europe, it is unlikely that many firms in our sample would be diversified within only one region. Nonetheless, due to the number of firms with only one foreign affiliate, for the full sample containing 326 parent firms, the average number of regions they had invested in was 1.77. Since regional entropy increases as the number of regions is reduced, regional entropy is likely to account for a larger share of total entropy in a Triad-based analysis. This is indeed the result we obtained earlier (Lundan & Tolvanen, 2008). Finally, we note again, that missing data at the affiliate level implies that our entropy measures are likely to understate the true values, although the effect here is not as severe as in our attempts to replicate the Rugman and Verbeke study.

In our earlier paper, we also reported the results of a cluster analysis that was used to group the Finnish parent firms into four clusters based on their overall (TGD) entropy scores. The number of observations in this analysis was 204, and for this somewhat smaller sample, the entropy scores were notably higher than those reported for the full sample. In addition to the top two groups of highly international firms that have previously received attention in the literature, this analysis indentified a third group of consisting of smaller MNEs undertaking foreign activities, many of which are global rather than regional. At the same time, the most global MNEs were not only among the largest firms in the sample, but they were also the most regional in terms of the distribution of their activities. This is partly a data issue, as missing values are more likely for the affiliates of smaller MNEs, but it is also a function of size, as the largest MNEs will typically have a presence in multiple markets across one region, whereas smaller MNEs are more likely to have only one or two affiliates in each region. In the following section, we take another look at the characteristics of the parent firms by relat-

ing their size and degree of internationalisation to the relative distance between the host and home countries.

Distance measures

In the final part of our analysis we take a look at the portfolio of countries where Finnish MNEs have established operations in order to examine whether the parent companies differ notably in terms of the average distance between Finland and their set of host countries. Since the coverage of the Orbis data is quite good in terms of the geographical distribution of the affiliates, this analysis does not suffer from the problems caused by missing operational data indicated earlier.

We examine two main questions. First, in line with the Uppsala model of gradual learning and increasing resource commitment, we hypothesize that firms that are more international are also likely to invest in more distant countries. In other words, we expect that firms that are more international in terms of their share of foreign sales, assets or employment, are also more likely to extend investments into more distant countries. Second, we expect that firms that are larger are more likely to invest in more distant countries. This would suggest that it is not so much the learning related to its existing activity abroad, but the overall resources available to the firm, that affects its ability to overcome distance-related barriers.

We employ four different kinds of distance measures to classify the host countries. These four measures are intended to cover different types of distance-related costs of doing business, both in terms of geographical distance, and in terms of differences in formal and informal institutions. The first measure is geographical distance, for which we use simple geodesic distances between capital cities. Our institutional distance measures consist of three analogous index measures; two measures of informal institutions one measure of the quality of formal institutions.

The first of the two measures of informal institutions is the cultural distance index developed by Kogut and Singh (1988), which is simply a variance weighted-average of the four core variables from the Hofstede (1990) study, calculated with Finland as the home country. Since we argue that norms and values are important elements of the heterogeneity between countries, our second measure of informal institutions employs measures of trust and civic norms from the World Values Survey. The quality of formal institutions was measured using the Governance

Matters VII dataset developed by Kaufmann et al. (2008) at the World Bank. The index combines six dimensions of governance: Voice and Accountability, Political Instability and Violence, Government Effectiveness, Regulatory Burden, Rule of Law and Control of Corruption.

The construction of the indexes is described in more detail in Appendix II. All of the indexes measure distance, so they measure similarity, not institutional quality as such. Thus, a home country like Finland that is among the least corrupt, will have a higher institutional distance with a country that is more corrupt. Similarly, a more corrupt home country has a shorter institutional distance to a corrupt host country, which might make it easier for investors to bridge the distance.[9] Descriptive statistics and pairwise correlations are presented in Tables 1 and 2. To analyse the relationship between firm size, internationalisation and distance, we split the firms into four quartiles based on the asset measure of size and internationalisation (parent total assets and the ratio of foreign assets to total assets). We also performed a similar classification based on the sales-based measures, the results of which were very similar to the ones reported here.

The results examining the relationship between internationalisation and distance are presented in Table 3 and Figure 3. These demonstrate that there is no linear relationship between the degree of internationalisation and the reach of the firm's foreign activities in terms average distance. Indeed, the group with the lowest average distance is that encompassing the most international firms (the 4th quartile). In terms of cultural distance (the Hofstede measure) or the institutions of governance, the least international firms appear to be least sensitive to differences in these dimensions. Furthermore, the results concerning cultural distance and geographical distance are very similar, confirming that some of the least international firms have managed to bridge both kinds of distance.

Some caveats are in order here. While the problem of missing observations does not affect our ability to construct the portfolio of foreign affiliates for each parent, the quantitative measure of internationalisation is subject to the same limitations discussed earlier. Missing affiliate data on assets, sale or employment is likely to inflate the home country share. However, in the comparisons presented here, the focus is on the differences between the four groups, and not the level of internationalisation as such. As long as the missing values occur throughout the range, this should not materially affect our results. It is also the case, that many of the smaller MNEs in our sample only have one affiliate, while the distance measure

[9] This is indeed the finding of Cuervo-Cazurra (2006) concerning investment into developing countries.

for larger MNEs is an average among its affiliates. This is likely to somewhat understate the distance measures for the larger firms.

In terms of the second hypothesis related to firm size, the results are presented in Table 4 and Figure 4. The results we obtain are quite different from those reported above. The relationship with the Hofstede cultural measure and geographical distance is the opposite of that seen with internationalisation, and in line with the expectation from the literature, namely that larger firms are better able to negotiate both cultural distance and geographical distance. With the two other measures the results are more mixed, but even then it is true, that the larger half of firms has been able to overcome greater distance than the smaller half.

Discussion and conclusions

The primary contribution of this paper is the presentation of new empirical evidence concerning the internationalisation patterns of Finnish MNEs. We presented three different types of empirical analysis. We began by replicating the original study by Rugman and Verbeke (2004) on the regional versus global spread of activities of MNEs. We found that nearly all of the Finnish MNEs could be classified as home regional, but in large part this is likely to be due to a problem with missing values in our data set, and to a lesser extent, the rather restrictive classification employed by Rugman and Verbeke.

We then presented a novel application of the entropy measure and applied it to the spread of the international activities of MNEs. While the entropy measure has been used quite commonly in the studies on product and international diversification in the field of strategy, we think its use could also be extended to the discussion on distance-related barriers. This analysis demonstrated that measured in terms of entropy, there is a notable group of smaller MNEs that are quite international. We also demonstrated that the share of regional entropy in total entropy is not related to firm size, and also some of the smaller MNEs have activities that cross regions.

Finally, we took a more detailed look at the actual investment patterns of the parent companies, and calculated several kinds of geographical, cultural and institutional distance measures to describe the distance between the home and host countries. We then used these measures to assess two basic hypotheses about the kinds of parent companies that are more

likely to be able to overcome the distance related barriers, and as a consequence, to extend their investment into more distant host countries. We found that while larger firms do indeed have more foreign affiliates in more countries than smaller firms, the average distance between home and host locations is not greater for the large firms than it is for the smaller. We think this is an interesting finding, and links to another discussion on so-called 'born global' firms (Gabrielsson & Kirpalani, 2004; Knight & Cavusgil, 2004). Specifically, it calls for more research on the questions of why the geographical expansion of some of the largest MNEs seems limited, and what at the same time enables some of the smaller MNEs to overcome the distance-related barriers.

References

Baldwin, R. (2006). *Globalisation: the great unbundling(s)*. Helsinki: Prime Minister's Office.

Barkema, H. G., Bell, J. H. J., & Pennings, J. M. (1996). Foreign entry, cultural barriers, and learning. *Strategic Management Journal, 17*(2), 151-167.

Bevan, A. A., & Estrin, S. (2004). The determinants of foreign direct investment into European transition economies., *Journal of Comparative Economics* (Vol. 32, pp. 775-787).

Cantwell, J. A., Dunning, J. H., & Lundan, S. M. (2010). An evolutionary approach to understanding international business activity: The co-evolution of MNEs and the institutional environment. *Journal of International Business Studies, forthcoming*.

Chandler, A. D. (1990). *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge, Mass.: Harvard/Belknap.

Collinson, S., & Rugman, A. M. (2008). The regional nature of Japanese multinational business. *Journal of International Business Studies, 39*(2), 215-230.

Cuervo-Cazurra, A. (2006). Who cares about corruption? *Journal of International Business Studies, 37*(6), 807-822.

Dow, D., & Karunaratna, A. (2006). Developing a multidimensional instrument to measure psychic distance stimuli. *Journal of International Business Studies, 37*(5), 578-602.

Dunning, J. H., Fujita, M., & Yakova, N. (2007). Some macro-data on the regionalisation/globalisation debate: a comment on the Rugman/Verbeke analysis. *Journal of International Business Studies, 38*(1), 177-199.

Dunning, J. H., & Lundan, S. M. (2008a). Institutions and the OLI paradigm of the multinational enterprise. *Asia Pacific Journal of Management, 25*(4), 573-593.

Dunning, J. H., & Lundan, S. M. (2008b). The MNE as a creator, fashioner and respondent to institutional change. In S. Collinson & G. Morgan (Eds.), *The Multinational Firm*. Oxford: Blackwell Publishers.

Dunning, J. H., & Lundan, S. M. (2008c). *Multinational Enterprises and the Global Economy, Second Edition*. Cheltenham: Edward Elgar.

Egger, P., & Pfaffermayr, M. (2004). Foreign Direct Investment and European Integration in the 1990s. *World Economy, 27*(1), 99-110.

Flores, R. G., & Aguilera, R. V. (2007). Globalization and location choice: an analysis of US multinational firms in 1980 and 2000. *Journal of International Business Studies, 38*(7), 1187-1210.

Forsgren, M. (1989). *Managing the internationalisation process: The Swedish case*. London: Routledge.

Forsgren, M. (2002). The concept of learning in the Uppsala internationalization process model: a critical review. *International Business Review, 11*(3), 257-277.

Friedman, T. L. (2006). *The World is Flat: The Globalized World in the Twenty-first Century*. London: Penguin.

Gabrielsson, M., & Kirpalani, V. H. M. (2004). Born globals: how to reach new business space rapidly. *International Business Review, 13*(5), 555-571.

Gray, H. P. (2004). *The exhaustion of the dollar: its implications for global prosperity*. New York: Palgrave Macmillan.

Håkanson, L. (2008). *Globalisation, geography and psychic distance*: Cambridge University CIBAM Seminar.

Hall, M. J. B., & Kaufman, G. G. (2003). International banking regulation. In C. Padoan, P. A. Brenton & G. Boyd (Eds.), *The Structural Foundations of International Finance: Problems of growth and stability* (pp. 92-126). Cheltenham: Edward Elgar.

Hennart, J.-F., & Reddy, S. (1997). The choice between mergers/acquisitions and joint ventures: The case of Japanese investors in the United States. *Strategic Management Journal, 18*(1), 1-12.

Hornell, E., Vahlne, J.-E., & Wiedersheim, P. F. (1973). *Export och Utlandsetableringar*. Stockholm: Almquist and Wiksell.

Jacquemin, A. P., & Berry, C. H. (1979). Entropy measure of diversification and corporate growth. *The Journal of Industrial Economics, 27*(4), 359-369.

Johanson, J., & Vahlne, J.-E. (1977). The internationalization process of the firm - A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies, 8*(1), 23-32.

Johanson, J., & Vahlne, J.-E. (1990). The mechanism of internationalisation. *International Marketing Review, 7*(4), 11-24.

Jones, G. (2004). *Multinationals and Global Capitalism: From the Nineteenth to the Twenty First Century*. New York: Oxford University Press.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2005). Governance Matters IV:Governance Indicators for 1996-2004. Washington, DC: The World Bank.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2008). *Governance Matters VII: Aggregate and Individual Governance Indicators, 1996-2007*. Washington, DC: World Bank Policy Research Working Paper No. 4654.

Keynes, J. M. (1930, 18 October). Economic possibilities for our grandchildren. *The Nation and Atheneum*.

Kim, W. C. (1989). Developing a global diversification measure. *Management Science, 35*(3), 376-383.

Kim, W. C., Hwang, P., & Burgers, W. P. (1989). Global diversification strategy and corporate profit performance. *Strategic Management Journal, 10*, 45-57.

Knight, F. H. (1921). *Risk, uncertainty and profit*. Washington, DC: Beard Books.

Knight, G. A., & Cavusgil, S. T. (2004). Innovation organizational capabilities and the born-global firm. *Journal of International Business Studies, 35*(2), 124-141.

Kogut, B. (1983). Foreign direct investment as a sequential process. In C. P. Kindleberger & D. Audretsch (Eds.), *The Multinational Corporation in the 1980s* (pp. 38-56). Cambridge, MA: MIT Press.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance, 54*(2), 471-517.

Lundan, S. M. (Ed.). (2002). *Network knowledge in international business*. Cheltenham: Edward Elgar.

Lundan, S. M., & Tolvanen, J. (2008). *Regional and global patterns of internationalisation of Finnish MNEs*. Helsinki: The Research Institute of the Finnish Economy (ETLA) Discussion Papers No 1170.

Makino, S., & Neupert, K. E. (2000). National Culture, Transaction Costs, and the Choice Between Joint Venture and Wholly Owned Subsidiary. *Journal of International Business Studies, 31*(4), 705-713.

Mankiw, G. N., & Swagel, P. (2006). *The politics and economics of offshore outsourcing*. Cambridge, MA: NBER Working Paper 12398.

Nordstrom, R. (1991). *The Internationalization Process of the Firm Searching for New Patterns and Explanations*. Unpublished IIB dissertation, Stockholm School of Business, Stockholm.

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.

North, D. C. (2005). *Understanding the Process of Economic Change*. Princeton, NJ: Princeton University Press.

O'Grady, S., & Lane, H. W. (1996). The psychic distance paradox. *Journal of International Business Studies, 27*(2), 309-333.

Ohmae, K. (1990). *The borderless world*. New York: Harper Business.

Osegowitsch, T., & Sammartino, A. (2008). Reassessing (home-)regionalisation. *Journal of International Business Studies, 39*(2), 184-196.

Palepu, K. (1985). Diversification Strategy, Profit Performance and the Entropy Measure. *Strategic Management Journal, 6*, 239-255.

Petersen, B., & Pedersen, T. (1997). Twenty years after - Support and critique of the Uppsala internationalisation model. In I. Björkman & M. Forsgren (Eds.), *The nature of the international firm: Nordic contributions to international business research* (pp. 117-134). Copenhagen: Handelshøjskolens Forlag.

Rugman, A. M. (2001). *The end of globalization*. London: Random House.

Rugman, A. M., & Verbeke, A. (2004). A perspective on regional and global strategies of multinational enterprises. *Journal of International Business Studies, 35*(1), 3-18.

Rugman, A. M., & Verbeke, A. (2007). Liabilities of regional foreignness and the use of firm-level versus country-level data: a response to Dunning et al. (2007). *Journal of International Business Studies, 38*(1), 200-205.

Rugman, A. M., & Verbeke, A. (2008). The theory and practice of regional strategy: a response to Osegowitsch and Sammartino. *Journal of International Business Studies, 39*(2), 326-332.

Rumelt, R. P. (1974). *Strategy, structure, and economic performance*. Boston, MA: Harvard Business School Press.

UNCTAD. (2008). *World investment report 2008: Transnational corporations and the infrastructure challenge*. New York and Geneva.

Vachani, S. (1991). Distinguishing between related and unrelated international geographic diversification: A comprehensive measure of global diversification. *Journal of International Business Studies*(Second Quarter), 307-322.

Vahlne, J.-E., & Wiedersheim, P. F. (1973). Ekonomiskt avstand - Model och empirisk undersökning. In E. Hornell, J.-E. Vahlne & P. F. Wiedersheim (Eds.), *Export och Utlandsetableringar*. Stockholm: Almquist and Wiksell.

van den Berghe, D. (2003). *Working across borders: Multinational enterprises and the internationalization of employment.* Unpublished Ph.D. dissertation, Erasmus University, Rotterdam.

Xu, D., & Shenkar, O. (2002). Institutional distance and the multinational enterprise. *Academy of Management Review, 27*(4), 608-618.

Yip, G., S. (2003). *Total Global Strategy II*. Upper Saddle River, NJ: Prentice Hall.

Yip, G. S. (1989). Global Strategy...In a World of Nations? *Sloan Management Review, 31*(1), 29-41.

Appendix I Examples of entropy calculations

Parent company total Finland	Sub 1 Sweden	Sub 2 Norway	Sub 2 Denmark	Sub 4 USA	Sub 5 Canada	Sub 6 China	Simple entropy
1000	900						0.095
1000	450	450					0.719
1000	450			450			0.719
1000	250	250					0.693
1000	350	150					0.652
1000	100	100	100	100	100		1.151
1000	100	100		100	100	100	1.151

Appendix II Construction of the distance measures

1. Geographical distance

Simple geodesic distance between capital cities from CEPII (www.cepii.fr).

2. Kogut and Singh (1988) index

Cultural distance (CD_{xy}) between country x and y is calculated as the average of the differences of Hofstede's (1980) country scores adjusted by the variance (V_i) of the corresponding dimension:

$$CD_{xy} = \Sigma \{(I_{ix} - I_{iy})^2 / V_i)\} / S$$

where I_{ix} stands for the index for the ith cultural dimension and country x, V_i is the variance of the index of the ith dimension, the subscript y indicates country y, and S is the number of variables included in the index. The four core dimensions in the original Hofstede study were Individualism, Uncertainty Avoidance, Masculinity and Power Distance.

3. World Values Survey index

The World Values Surveys (WVS) have been conducted five times since 1981, and the latest survey conducted in 2005 consisted of representative national samples of at least 1000 respondents from over 80 countries (http://www.worldvaluessurvey.org/). We use measures from the 1999-2000 survey, supplemented by measures from the 1995-1997 survey if the former were not available.

We used five questions from the WVS to calculate three distance measures similar in construction to the Kogut and Singh index above. These are:

1. The key question from the WVS on interpersonal trust is the following: Generally speaking, would you say that most people can be trusted, or that you just can't be too careful in dealing with people?

2. In addition to interpersonal trust, the WVS also includes items that measure generalized trust in government and other institutions. Out of the 16 measures available, we selected the following two:

a) Confidence in government

b) Confidence in corporations

3. The questions on civic norms in the WVS ask whether it can always be justified, never be justified or is something in between for the following four issues: claiming government benefits you are not entitled to, avoiding a fare on public transport, cheating on taxes and accepting bribes. We selected the following two items:

a) Avoiding transport fare

b) Cheating on taxes

4. Governance Matters index

We used the six dimensions of the Governance Matters VII dataset (Kaufmann, Kraay, & Mastruzzi, 2008) for 2007 to create an index similar in construction to the Kogut and Singh index above. The six dimensions are Voice and Accountability, Political Instability and Violence, Government Effectiveness, Regulatory Burden, Rule of Law and Control of Corruption

Figure 1. Parent entropy by turnover

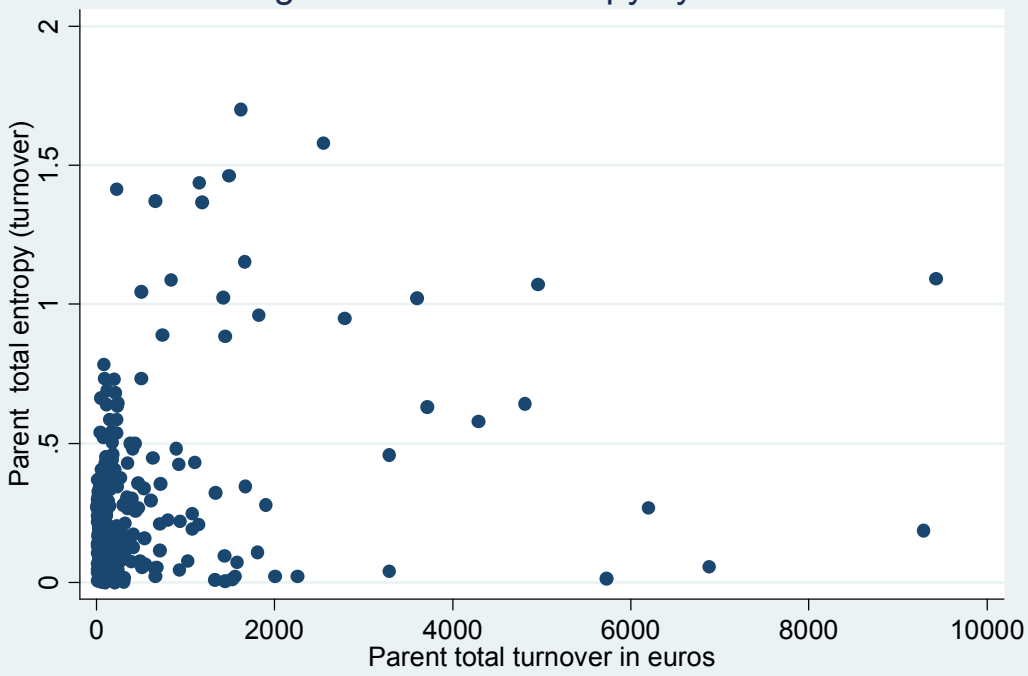

Figure 2.Total and regional entropy (seven regions)

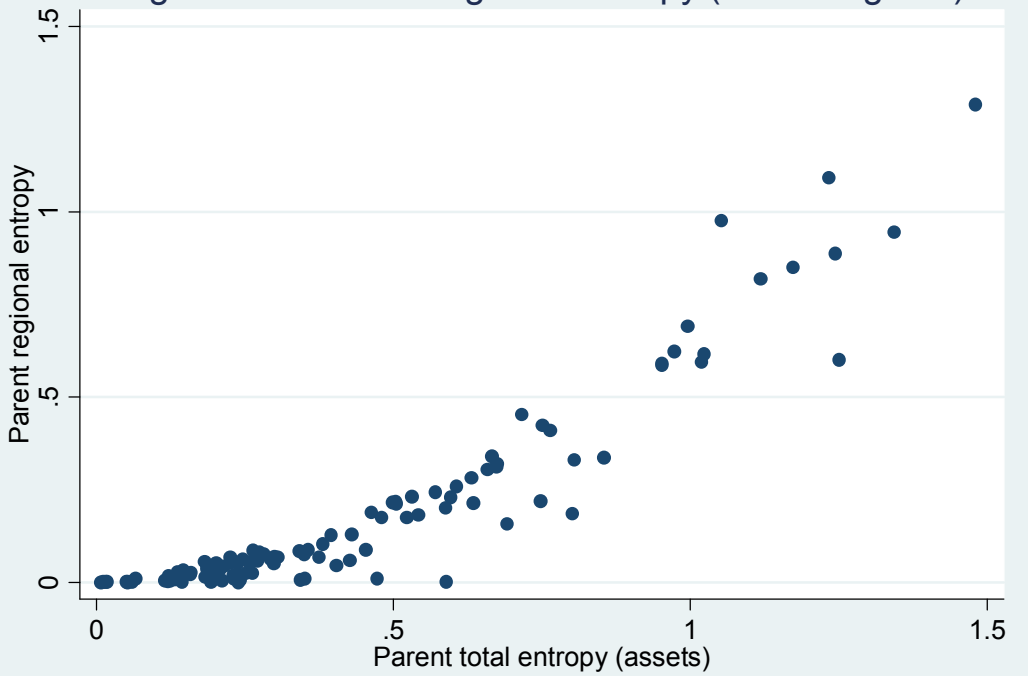

Figure 3. Distance measures in relation to parent internationlisation (foreign assets/total assets)

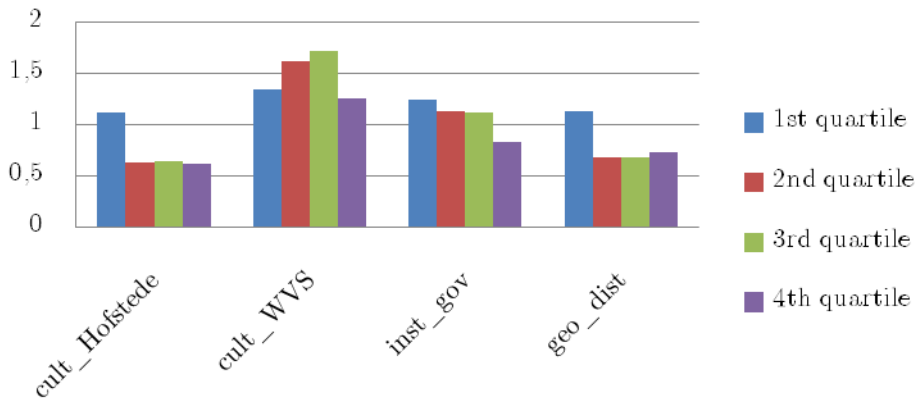

Figure 4. Distance measures in relation to parent total assets

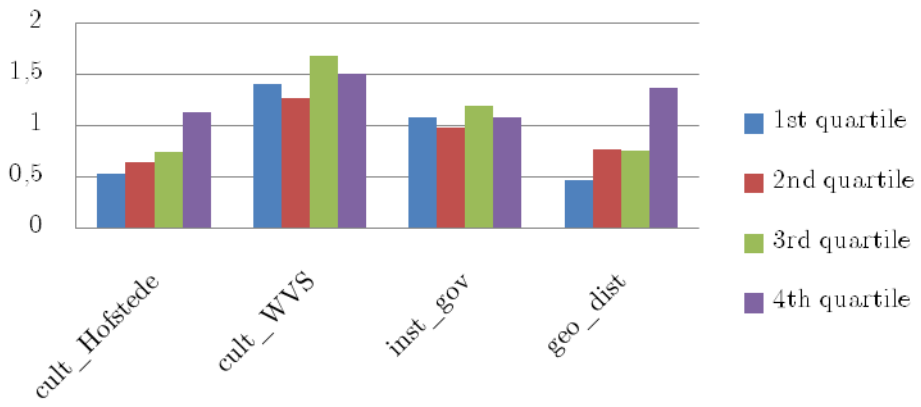

Table 1. Descriptive Statistics

	Mean	Std. Dev.	Min	Max
parent_tot_assets	1491	6873	5	62716
parent_tot_sales	951	2519	12	19437
parent_tot_empl	3030	6846	6	45631
fata	0.06	0.10	0.00	0.59
fsts	0.07	0.10	0.00	0.52
cult_Hofstede_mean	1.28	0.67	0.04	2.79
cult_WVS_mean	1.45	0.85	0.53	2.86
inst_gov_mean	1.20	1.35	0.10	6.76
geo_dist_mean	1631	1217	242	6448

Table 2. Pairwise correlations and significance level

1	parent_tot_assets	1								
		301								
2	parent_tot_sales	0.5323	1							
		0								
		301	301							
3	parent_tot_empl	0.4729	0.8523	1						
		0	0							
		291	291	291						
4	fata	-0.0821	-0.1109	-0.1319	1					
		0.1552	0.0545	0.0244						
		301	301	291	301					
5	fsts	-0.0741	-0.1222	-0.1404	0.7248	1				
		0.2	0.0341	0.0165	0					
		301	301	291	301	301				
6	cult_Hofstede_mean	0.0839	0.1166	0.1375	-0.0663	0.0507	1			
		0.1632	0.0522	0.0244	0.2709	0.3998				
		278	278	268	278	278	278			
7	cult_WVS_mean	-0.0272	-0.0302	-0.0306	-0.0549	-0.2127	-0.3563	1		
		0.7809	0.7575	0.7568	0.5743	0.0278	0.0002			
		107	107	105	107	107	102	107		
8	inst_gov_mean	0.0201	0.0249	0.0243	-0.1289	-0.1146	0.411	0.5863	1	
		0.7282	0.6664	0.6799	0.0253	0.0469	0	0		
		301	301	291	301	301	278	107	301	
9	geo_dist_mean	0.1377	0.2091	0.2639	-0.0352	0.0414	0.6517	-0.5701	0.0017	1
		0.0168	0.0003	0	0.5434	0.4747	0	0	0.9769	
		301	301	291	301	301	278	107	301	301

Table 3. Quartile groups based on parent internationalisation (foreign assets/total assets)

	parent_tot_assets	parent_tot_sales	parent_tot_empl	fata	fsts	cult_Hofstede	cult_WVS	inst_gov	geo_dist
1	70	70	66	70	70	62	37	70	70
mean	1877.52	864.80	3246.77	0.00	0.02	1.12	1.35	1.25	1137.90
min	2.22	4.00	2.00	0.00	0.00	0.04	0.53	0.03	80.98
max	62715.66	13277.00	28704.00	0.01	0.84	3.20	2.86	6.76	5587.51
sd	7987.41	1905.05	5933.56	0.00	0.10	0.88	0.73	1.11	1110.43
2	84	84	82	84	84	80	28	84	84
	212.30	423.07	1081.72	0.02	0.04	0.63	1.62	1.13	688.52
	5.12	13.00	20.00	0.01	0.00	0.04	0.53	0.03	80.98
	3250.27	9064.00	16651.00	0.03	0.22	2.79	2.86	6.76	4546.41
	503.52	1246.96	2340.95	0.01	0.04	0.81	0.96	1.03	952.48
3	79	79	78	79	79	71	25	79	79
	514.07	642.14	1642.86	0.06	0.08	0.65	1.72	1.12	683.98
	4.21	15.00	28.00	0.03	0.00	0.04	0.58	0.03	80.98
	22968.92	19437.00	45631.00	0.11	0.55	2.79	2.86	6.76	6448.08
	2601.31	2373.54	6066.19	0.02	0.07	0.77	0.91	0.90	1009.54
4	68	68	65	68	68	65	17	68	68
	112.35	169.71	533.60	0.22	0.20	0.62	1.26	0.84	726.68
	2.13	9.00	2.00	0.11	0.03	0.04	0.58	0.03	80.98
	1112.47	1560.00	3913.00	0.59	0.60	3.20	2.59	2.28	4069.54
	217.32	274.12	709.38	0.11	0.13	0.85	0.81	0.61	796.17
Total	301	301	291	301	301	278	107	301	301
	656.18	526.06	1600.74	0.07	0.08	0.74	1.49	1.09	800.46
	2.13	4.00	2.00	0.00	0.00	0.04	0.53	0.03	80.98
	62715.66	19437.00	45631.00	0.59	0.84	3.20	2.86	6.76	6448.08
	4121.81	1675.87	4500.24	0.10	0.11	0.85	0.86	0.94	987.95

Table 4. Quartile groups based on parent total assets

	parent_tot_assets	parent_tot_sales	parent_tot_empl	fata	fsts	cult_Hofstede	cult_WVS	inst_gov	geo_dist
1	91	91	87	91	91	80	18	91	91
mean	13.99	29.79	143.11	0.10	0.09	0.54	1.41	1.09	472.19
min	2.13	9.00	2.00	0.00	0.00	0.04	0.58	0.03	80.98
max	27.96	123.00	1622.00	0.53	0.41	3.20	2.86	6.76	2015.04
sd	6.97	17.65	191.25	0.10	0.09	0.83	0.90	0.83	569.10
2	73	73	72	73	73	65	22	73	73
	50.43	87.82	452.68	0.08	0.08	0.64	1.28	0.99	775.47
	28.17	4.00	2.00	0.00	0.00	0.04	0.53	0.04	80.98
	77.96	258.00	7622.00	0.59	0.52	3.20	2.59	3.95	4069.54
	14.74	48.80	890.58	0.11	0.11	0.84	0.84	0.70	997.47
3	76	76	73	76	76	73	31	76	76
	147.84	251.37	822.58	0.07	0.08	0.74	1.68	1.20	758.71
	79.02	26.00	73.00	0.00	0.00	0.04	0.53	0.03	80.98
	280.13	950.00	2484.00	0.48	0.60	3.20	2.86	6.76	5587.51
	53.74	176.30	536.27	0.10	0.12	0.86	0.94	1.33	884.18
4	61	61	59	61	61	60	36	61	61
	2972.47	2133.07	6113.95	0.04	0.07	1.13	1.50	1.08	1372.08
	287.30	5.00	62.00	0.00	0.00	0.04	0.58	0.03	80.98
	62715.66	19437.00	45631.00	0.39	0.84	3.20	2.86	3.11	6448.08
	8836.79	3266.83	8577.47	0.07	0.13	0.74	0.77	0.75	1313.25
Total	301	301	291	301	301	278	107	301	301
	656.18	526.06	1600.74	0.07	0.08	0.74	1.49	1.09	800.46
	2.13	4.00	2.00	0.00	0.00	0.04	0.53	0.03	80.98
	62715.66	19437.00	45631.00	0.59	0.84	3.20	2.86	6.76	6448.08
	4121.81	1675.87	4500.24	0.10	0.11	0.85	0.86	0.94	987.95