THE REGIONAL DIMENSION OF UK MULTINATIONALS

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Abstract

Within the literature of international business there is a well-established branch that examines the relationship between the multinationality and performance of multinational enterprises (MNEs). It has been found that as firms expand internationally (for example, as the ratio of foreign-to-total sales increases) there is a positive effect on firm performance (usually measured by return on total assets, ROTA). We advance this literature in three ways: (i) we focus on the recent performance of UK MNEs, in terms of ROTA, but also in terms of their return on foreign assets (ROFA); (ii) we examine the ratio of European (E) to total (T) sales of these UK MNEs. This introduces intra-regional sales (E/T) as an explanatory variable affecting performance for the first time; (iii) we test the relationship between (E/T) and both ROFA and ROTA, and find a significant non-linear fit which we discuss. We conclude that the UK MNEs operate on a regional basis, rather than a global one.

Keywords: intra-regional sales; multinational enterprises; regional strategy; globalization

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1. Introduction

The locational (or geographic) decisions of multinational enterprises (MNEs) is one of the most extensively researched areas of international business. Many scholars have investigated factors which make an MNE choose one investment location over another (Aharoni, 1966; Green, 1972; Dunning, 1980; Nigh, 1985; Loree and Guisinger, 1995). Locational strategy has been traditionally studied by economists in terms of trade theory at the level of individual countries. In the field of international business, a number of scholars have emphasized that firm-level analysis of international business activity by MNEs can be undertaken (Rugman, 1981; Dunning, 1981; Porter, 1990; Bartlett, Doz and Hedlund, 1990; Yip, 2003). Indeed, the geographic locational decisions of MNEs can be considered in a broader system (network) context (Nohria and Ghoshal, 1997), rather than as a collection of individual (country-level) decisions.

Furthermore, the recent evidence on regional activities of MNEs provided by Rugman (2000, 2005) suggests that the home-triad region (as opposed to a national or global view) is the most appropriate level of analysis for the activities of MNEs. The great majority of the *Fortune* Global 500 firms average over 72% of their sales in their home region, with only a very few of them qualifying as global firms. Hence, examination of the relative merits of regional strategy (as opposed to country-level or global strategy) is of great importance to both managers and academics. Due to data limitations there are some untested aspects of the regionalization hypothesis. The work by the advocates of regional strategy provides evidence on the geographic location of revenues (Rugman and Girod, 2003; Rugman and Verbeke, 2004; Rugman, 2005). Data on the production side (foreign assets) and value added are generally not available for most of the 500 largest MNEs.

At the same time, business strategy researchers now define global strategy less narrowly than Levitt (1983) who argued that the same product could be sold in the same way across the world, a situation of perfect homogeneity. Today, most strategy scholars accept that there is heterogeneity across geographic space and that the world lacks commonality in its markets for goods and services. For example, Yip (2003, p. 1) posits: "A strategy is global to the extent that it is integrated across countries. Global strategy should not be equated with any one element - standardized products, worldwide market coverage, or a global manufacturing network. Global strategy should, instead, be a flexible combination of many elements." Using this broad definition any international operations of the MNE can be thought of as either "global" or "regional". Indeed, much of the strategy research in international business has examined "global" strategy when only "international" (i.e., cross-border) strategy is really being examined. As a result, the analysis of the global (not regional) strategies of MNEs has been dominant in the business literature to date.

In particular, there is a thick body of research analyzing the impact of an MNE's international activities on its financial performance (Tallman and Li, 1996; Hitt et al., 1997; Contractor et al., 2003). These studies use data on the geographic source of revenues as a measure of the multinationality of a business (Geringer et al., 1989; Sullivan, 1994; Tallman and Li, 1996; Reeb et al., 1998). Yet, these and related studies yield inconsistent results on the relationship between multinationality and performance (Grant, 1987; Ruigrok and Wagner, 2002; Gomes and Ramaswamy, 1999; Contractor et al., 2003). While there are many potential explanations for this inconsistency (Grant, 1987; Hitt et al., 1997; Goerzen and Beamish, 2003; Contractor et al., 2003), one important aspect is the extent to which scholars focus on country-levels, global-levels, or regional-levels of analysis. As a result, we specifically address in this

paper this new issue of the regional level of analysis.

More precisely, this is the first paper which explicitly takes into account and measures the underlying geography of the international business phenomenon of the MNE and the impact of regional location on firm-level performance. By putting geographic lenses on first, we are able to accurately connect the empirical evidence and existing theoretical frameworks to conduct an analysis of the international (in this case regional) strategy of multinational companies and their performance. As a result, this paper addresses two highly acute international business issues: 1) the locational (geographic) positioning of MNEs, and 2) the performance implications of their regional strategies.

We conduct our analysis for a set of the largest UK multinationals. The paper starts with an analysis of the evidence related to the international activities of UK firms in the *Fortune* Global 500. Then, we relate the evidence on the regional nature of the UK companies to the regional scope of the world's largest MNEs to show that the described pattern is not unique to the UK. We further proceed by testing the effect of regional strategy on the performance of the UK multinationals. A discussion of our findings and some concluding remarks complete this paper.

2. The Regional Dimension of UK Multinationals

One method of assessing the international competitiveness of British business is to study the performance and international geographic presence of the larger UK MNEs. As a preliminary insight into this let us first consider the 27 British MNEs listed in the *Fortune* Global 500 ranking of the world's largest firms (by revenues in 2001), as analyzed by Rugman (2005). Of these 27 MNEs, only 8 are in the manufacturing sector whereas 19 are in services. It is important

to position the 27 largest British MNEs in relation to rival firms in the rest of Europe, North America, and Asia. These three regions represent the "triad" of economic activity which dominates international business (Rugman, 2000). The world's largest 500 firms account for over 90% of the world's stock of foreign direct investment and about half of the world's trade. Despite evidence that most of them operate largely within their home regions (the 380 firms average 71% home-region sales) many of these MNEs state that they have a global strategy (Yip, 2003; Gupta and Govindarajan, 2001). Before examining this issue, we examine the basic empirical evidence on the international business activities of the world's largest MNEs.

In an influential study, Rugman and Verbeke (2004) report that of the world's 500 largest firms, only 9 can be classified as global whereas 320 of the 380 firms reporting regional sales have an average of 80% of their sales in their home region. There are also some 36 bi-regional firms. These data are reclassified in Table 1. This lists the 380 firms by their home country. There are 169 from the United States, 66 from Japan, and 119 from Europe, of which 27 are from Britain.

Table 1 here

The average intra-regional sales of the U.S. firms is 77.3%; for the Japanese it is 74.7%; and for the European it is 62.8%. Within the European group, the British firms have intra-regional sales of 64.5%. This suggests that the British (and European) firms may be somewhat less regionally based than U.S. and Japanese firms. The British firms are in the mid range of European firms, with the most "global" firms being the five from the Netherlands.

Table 2 reports the classifications of the 27 British MNEs, based on the Rugman and Verbeke (2004) and Rugman (2005) methodology. As with most of the world's other large firms, 19 of them are home-region oriented. However, four are bi-regional, and two are host-region

oriented (AstraZeneca and Wolseley) where these latter two firms have over 50% of their sales in North America. The four bi-regionals are also big players in North America, in particular, BP, GlaxoSmithKline, and Diageo. Yet many of the service-based firms are very home-region based: Tesco has 94% of its sales in Europe; Vodafone has 93%; Centrica has 94%; Abbey National has 99.5%; Kingfisher has 95%; Safeway has 100%, as does Alliance Unichem.

Table 2 here

These data suggest that most large British service MNEs do most of their business within Britain and the EU. They are poor prospects for globalization. Why is this? What are the strategies, structures, processes, and internal managerial factors that explain this lack of global sales? Are there any public policy factors such as government regulations that have an impact on these location-bound firms? But perhaps it does not really matter as other large firms from Asia and North America are also very insular and home-region based.

Are there any industry effects that matter in explaining the competitiveness of British business? The preliminary answer is yes—there is a major difference between the manufacturing and service sectors, as can be seen in Table 3.

Table 3 here

In Table 3 the 27 British MNEs fall into two classifications, with only eight in manufacturing but 19 in services. The eight British manufacturing firms have lower intra-regional sales than for other European or world firms. This indicates that these eight British manufacturing MNEs are potentially more “global” than other large firms. In contrast, in all but two of the service sectors, the British firms have higher intra-regional sales than others. This indicates that these firms are much less global than others. Are there any industry-specific effects that have led to such location-based activity?

In summary, this preliminary analysis suggests a lack of globalization for all these large British firms in Table 3. As these firms are often "flagships", at the hubs of business clusters, it is likely that other businesses, especially small and medium-size businesses, are even less global and more location bound (Rugman and D'Cruz, 2000), than frequently thought.

Before moving on to report a much more detailed econometric analysis of the performance of a larger set of UK companies, we shall further relate the regional nature of UK companies to the regional scope of all the world's largest MNEs. While there is nothing special or unique about the regional nature of UK business, it is necessary to show the relevance of the empirical work reported later by first establishing the general nature of intra-regional activity for the world's largest firms.

3. The World of Regional Multinationals: Theory and Hypotheses

The definition of a multinational enterprise (MNE) is that it produces and/or distributes products and/or services across national borders. These MNEs have repeatedly been identified as the drivers of globalization, pursuing geographic integration and coordination through aspects of global strategy, such as global market participation, global products, global activity location, global marketing, and global competitive moves (Yip, 2003). Advantages of global strategy include reduced costs from product standardization, reduced duplication of activities (and relocation of activities to lower cost sites), enhanced customer preference from global uniformity and consistency, and greater global competitive advantage. But to fully achieve these benefits of global strategy, an MNE needs both globally dispersed sales and globally dispersed production (and other activities). Nevertheless, an MNE can achieve some of the advantages of global

strategy, whatever its geographic scope. So an MNE can pursue a global strategy even within a single region.

We define a regional strategy as one that seeks the benefits of geographic integration and coordination within a single region or within a collection of regions. Indeed such an integration and coordination strategy is easier to pursue within a single region, especially if the home-region government pursues policies of an internal market such as social, cultural, and political harmonization (as in the EU) or economic integration (as in NAFTA and Asia). As firms expand outside their home regions, they then face a greater liability of foreignness and other additional risks by this global expansion, to offset the additional benefits of greater geographic scope. Furthermore, inter-block business is likely to be restricted by government-imposed barriers to entry. The EU and the United States are now fighting trade wars and are responsive to domestic business lobbies seeking shelter in the form of subsidies and/or protection, as in the case of the steel and agricultural sectors. There will remain cultural and political differences between members of the triad, but there will be fewer of these within each triad block.

Rugman (2000) argues for a trend, over the last quarter century, towards regionalization and increased intra-regional economic activity. Only in a few sectors, such as consumer electronics, is a global strategy of economic integration viable. For most other manufacturing, (such as automobiles, chemicals, energy, etc.) and for all services, (such as retail, banking, etc.) regional strategies are required. On the other hand, there is counter evidence that companies who do implement global strategies perform better than those who focus on regional strategies, at least in the case of the automobile industry (Schlie and Yip, 2000).

Rugman and Verbeke (2004) examined the triad/regional economic activity of the world's largest firms in the core triad of the United States, EU, and Japan. In 2001, of the

world's largest 500 firms, 428 were in these core triad regions, whereas back in 1981 it was 445. Data were found for 380 firms reporting geographic sales distributions, based on information in the annual reports and web pages. The 380 firms were then classified according to those that are global, bi-regional, and domestic. There were no data for 120 firms (most of which are entirely domestic) and insufficient data for another 15 firms. The main results show that:-
the intra-regional average sales for each group was:-

- 80.3% for the 320 home region oriented firms;
- 42.0% for the 25 bi-regional MNEs;
- 30.9% for the 11 host-region ranked firms;
- 38.3% for the nine global MNEs.

These data confirmed the study of the 49 retail MNEs in the 500, in Rugman and Girod (2003). In that study, only one retail MNE was found to be global, namely LVMH. This result is evident across all industry sectors except for electronics, which includes seven of the nine global firms in the set.

It is possible that the upstream "back end" production of the value chain is more globalized than the downstream "front end" of sales. However, even there it was found that regionally-based production clusters and networks, similar to the automobile sector are the norm (Rugman, 2000, 2005).

Based on the above analysis, regional strategy is hypothesized to have a direct impact on the performance of MNEs. However, we suggest that this relationship is not linear. Regional strategy contributes negatively to MNE performance at early stages of regionalization due to the costs associated with any international expansion. However, once an MNE achieves a certain level of familiarity with the whole region, further expansion contributes positively to its

performance due to the learning benefits of multinationality, most of which can be achieved within the home region. We shall use data on the return on total assets (ROTA) to measure the overall performance of the MNE, as explained later in the data section.

Hypothesis 1: The degree of regionalization has a negative impact on the overall performance (ROTA) of an MNE at early stages of regionalization, but this changes to a positive one once an MNE has familiarized itself with the method of conducting business within the region, leading to learning benefits.

However, a different picture emerges if we consider not only the overall performance of MNEs, but also the more specific performance of its foreign subsidiaries. This is probably a more accurate way to measure the success of an MNE's internationalization efforts as a significant home country effect may distort the ROTA data on overall performance. In this case, an MNE will be facing a tradeoff between benefits/costs of regionalization and globalization, or, in other words potential performance differentials among its subsidiaries in the home region and other parts of the world. We can address this issue by obtaining data on the return on foreign assets (ROFA). Such data have become available only in recent years for most MNEs.

Here, we suggest that early- to medium- stages of regionalization will have a positive effect on the performance of the foreign subsidiaries (ROFA) of the MNE. This occurs as familiarity in conducting business within the region will outweigh the added costs of expansion beyond the region, assuming that an MNE first expands within its home region and then goes to other regions in line with the thinking of Rugman (2005) and the Uppsala School. However, once the home region market is relatively saturated and the MNE starts expanding into other regions, additional sales within the home region are no longer contributing as much to the

performance of the MNE's foreign operations. Then ROFA starts to decrease as the home region's subsidiaries become relatively less profitable than the extra regional ones.

Hypothesis 2: The international expansion of an MNE in its home region has a positive impact on the performance of the foreign operations (ROFA) of the MNE at early- to medium-stages of regionalization, but ROFA changes to a negative one at higher stages of regionalization.

4. Empirical Testing

4.1 Data and Sampling

In this section of the paper we examine whether the benefits of regional strategy are applicable to the case of UK based MNEs. In particular, we are investigating a link between regional strategy and financial performance for a set of over 210 UK MNEs. We find their sales in the "European" (E) region and compare that to their total (T) sales, yielding (E/T). Then we test their performance against this degree of multinationality (E/T). This is the first study to test the regional (E/T) type of measure for any set of firms. As performance measures, we use return on foreign assets (ROFA). This is also one of the first studies to test for ROFA, which is calculated as a ratio of profits earned overseas to the amount of company's assets located overseas. We use ROFA as it measures the performance of the subsidiaries of the MNE, which is our primary concern, and set this against a 'regional' measure of (E/T), for the first time. Usually return on total assets (ROTA) is used, or another firm-level metric. We also regress ROTA against (E/T), and compare the difference between ROFA and ROTA as dependent variables. In line with previous research ROTA is measured as the ratio of a company's net income to the amount of its total assets.

We use the OSIRIS database, which contains the annual reports of over 30,000 public and private companies from all over the world. From this database we select the UK companies present in the top 100 across 89 industry sectors (an exhaustive list) as classified by Dow Jones (DJ). The DJ system has the advantage, relative to the U.S. Standard International Classification (SIC) system, of defining industries to fit the actual distribution of major MNEs from around the world. Hence this DJ system minimizes the problem that arises from industry diversification. Our selection method yields a total of 587 UK companies from the European total of 8,900 in the OSIRIS database. However, not all of these UK companies report the necessary regional segment data, so we found only 210 UK companies for which we are able to calculate both the regionalization measure (E/T), and the return on foreign assets (ROFA) over time. These companies constitute our sample (those companies that reported the data for only one of the years under consideration were excluded from the sample). As the internationalization process is a longitudinal phenomenon, we are looking into its evolution over a 10-year period. Accordingly, we collected the data for four years: 1993, 1998, 2001, and 2003, thus creating an unbalanced panel of 495 observations, as data for some years were missing for some companies.

4.2. Variables

As was mentioned above, we use two measures of performance as dependent variables in this study: 1) return on foreign assets (ROFA) that reflects the performance of an MNE's foreign operations (that is, its subsidiaries), and 2) return on total assets (ROTA) – a traditional measure of overall performance used in studies, for example, by Hitt et al. (1997), Gomes and Ramaswamy (1999), and Contractor et al. (2003), amongst others.

The central independent variable in this analysis is a measure of regionalization (E/T), which is a ratio of sales in a home region (Europe) to the total sales of a multinational enterprise (Rugman, 2005). Hence, this measure includes home country (UK) sales, subsidiaries' sales in the region (Europe), and the UK firm's exports to the rest of Europe. Inclusion of such export data is partly governed by data availability, but it is also appropriate as exporting obviously gives foreign sales. Both exports and foreign subsidiary sales are components of foreign sales. According to internalization theory, an internationalizing firm chooses the most cost-efficient way among all possible modes of foreign sales (Buckley and Casson, 1976; Rugman, 1981).

In this study we use a set of control variables which is traditionally used in the literature to moderate the effects of other factors which have been shown to have a significant impact on a firm's performance according to earlier research.

First, we control for a firm's size effect by including a logarithm of company's total revenues into the regressors (Tallman and Li, 1996; Hitt et al., 1997; Gomes and Ramaswamy 1999).

Second, recognizing the importance of industry effects in explaining firm performance in a multi-industry study (Schmalensee, 1985; Grant et al., 1988; Montgomery and Porter, 1991; and Tallman and Li 1996), we use the corresponding Dow Jones industry's average return on assets measured for all public companies in the world in a particular industry (as in, for example, Goerzen and Beamish, 2003).

Third we include a time trend to mediate a year or temporal effect in profitability data, as the former was shown to have a significant effect in previous research (Cowley, 1988; Mascarenhas and Aaker, 1989; Haskel and Martin, 1992; and Li, 2005).

4.3. Methodology

To test the two hypotheses outlined in the earlier section we estimate the following two major specifications:

$$S1: ROFA_{it} = \beta_0 + \beta_1 (E/T_{it}) + \beta_2 (E/T_{it})^2 + \beta_3 (E/T_{it})3 + \Sigma_j \beta_j Control\ Variable_{ijt} + \varepsilon_{it,}$$

$$S2: ROTA_{it} = \beta_0 + \beta_1 (E/T_{it}) + \beta_2 (E/T_{it})^2 + \beta_3 (E/T_{it})3 + \Sigma_j \beta_j Control\ Variable_{ijt} + \varepsilon_{it,}$$

where $ROFA_{it}$ is percentage return on foreign assets of company *i* in year *t*; $ROTA_{it}$ is percentage return on total assets of company *i* in year *t*; E/T_{it} is a ratio of European sales to total sales of company *i* in year *t*; $Control\ Variable_{ijt}$ is a control variable j for a company *i* (or industry *k*) in year *t*; ($log(TR_{it})$ is a natural logarithm of total revenues (in U.S.$ bn) of company *i* in year *t*, $ROTAW_{kt}$ is an average percentage return on assets of all public companies in the world of industry *k* in year *t*; $YEAR_t$ is a time trend); and $\varepsilon_{it,}$ is a corresponding error term.

Previous researchers have found various functional forms for the degree of multinationality and performance relationship (for example, linear (Grant, 1987; Jung, 1991), quadratic (Geringer et al., 1989; Sullivan, 1994; Ramaswamy, 1995), and cubic (Contractor et al., 2003; Lu and Beamish, 2004)). Consequently, although the two hypotheses developed earlier explicitly refer to U-shaped and inverted U-shaped relationships, we have decided to test for various functional fits between the regionalization variable and MNE performance (starting with linear, we add quadratic and cubic terms at later stages

Since the time series is short in our dataset, estimation of either fixed or random effect models does not seem feasible. Therefore, in this paper we use a Feasible Generalized Least Squares (FGLS) estimator, which is more efficient than a pooled OLS estimator when the series exhibit heteroskedasticity (that is a concern in the analyzed data set). By downweighting estimated coefficients by an estimate of the cross-section residual standard deviation, FGLS

allows assigning a smaller weight to observations coming from populations with greater variance and a larger weight to the ones coming from populations with smaller variance. In this way cross-sectional heteroskedasticity is addressed.

Additionally, we use White heteroskedasticity consisted covariances to obtain estimates which are robust to general heteroskedasticity; that is, we allow for inter-temporal differences in variances along with cross-sectional heteroskedasticity, which is traditionally addressed by FGLS. A similar estimation technique was used in studies by Gomes and Ramaswamy (1999); Contractor et al. (2003); and Li (2005).

5. Results

Tables 4 shows the results of our analysis. Specifications 2 and 5 are directly related to the two hypotheses we developed earlier. Let us mention at the outset that both of them are confirmed, and we now continue with a more detailed discussion of the results. First let us analyze the relationship between ROFA and the regionalization variables. We can see that both linear and quadratic terms are significant in the dataset under consideration. The overall fit (as shown by the F-Statistics) is significantly better for a quadratic specification, which consequently becomes our preferred specification. We also find significant size, industry, and time effects.

This analysis demonstrates that regional sales have a significant association with the financial performance of the subsidiaries of the UK MNEs. However, the relationship is not linear. In line with hypothesis 2, smaller regionalization levels have a positive effect on the performance of foreign operations. In contrast, a high level of regional sales has a negative effect on the subsidiaries' performance. Overall, this analysis shows that regional sales have a significant impact on performance of the international operations of UK MNEs.

Table 4 here

Having analyzed the impact of regional strategy on the foreign performance of an MNE (ROFA), let us contrast it with the relationship between ROTA and regional sales, a test of hypothesis 1. As we can see from Table 4, in the case of ROTA, a cubic fit (or S curve) is also significant as well as linear and quadratic. Yet, interestingly, the overall fit for linear regression is significantly better than for other specifications. Judging by F-statistics, the linear specification has more explanatory power than the quadratic specification. The cubic specification's F-statistic is lagging behind the former two, yet the overall fit for hypothesis 1 is still significant. Hence, although the linear relationship's fit is considerably better, we cannot neglect the other specifications, which are also significant.

An interesting finding is that despite exhibiting an inverted U-shaped relationship in the ROFA model, the regionalization variable reveals a significant U-shaped relationship for the corresponding ROTA model. This difference in fit, with an inverted U-shape for ROFA, and a U-shape for ROTA, can perhaps be better understood if we consider the nature of two of the key variables: ROTA and (E/T). ROTA is the overall profitability of a multinational enterprise (it includes domestic profitability) while (E/T) also includes a significant proportion of home sales (where home sales are profitable). Hence, low levels of (E/T) indicate a highly (non-European) internationalized company, whereas a high (E/T) ratio is a sign of a more regionalized company, where there are also large home sales. Consequently, our results show that highly regionalized and highly internationalized companies are performing considerably better overall than firms which operate at medium levels of regionalization.

It is not surprising that at high levels of regionalization (that in practice translates into mostly domestic operations) companies are doing fairly well. However, when they start investing

abroad (at medium levels of regionalization that also implies medium levels of internationalization), their overall performance deteriorates due to a variety of factors. These include: a strong liability of foreignness, since a company is investing not only into its home region, but also into other less familiar regions (Zaheer and Mosakowski, 1997); and a large minimum administrative burden (Contractor et al., 2003). However, when an average regionalization threshold is surpassed, and a UK company is moving toward becoming a truly global business, the pattern changes. From that moment on, a lower regionalization scope (or higher internationalization scope) has a positive impact on the overall performance, as the company has already learned how to effectively conduct business in other regions, and its global network of subsidiaries becomes an asset, not a liability.

The signs and coefficients for control variables do not vary a lot across different specifications and dependent variables. As expected, there is a strong positive effect of a company's size (measured by total revenues); and a strong positive association between industry profitability and that of individual companies. The time trend is significant with a negative coefficient suggesting that average performance is deteriorating over the years.

Conclusions

In this study we have applied the location variable of geography to the international activities of large UK MNEs, within the context of the literature on multinationality and performance. We find that, in general, large UK MNEs conduct the majority of their sales in the European region and that the (E/T) ratio is a significant explanatory variable affecting firm performance in a positive, but non-linear manner, allowing for standard moderating control variables. We find that data on the return on foreign assets (ROFA) enrich the previous research on multinationality and

performance which has used data on return on total assets (ROTA). We find significant non-linear effects, with a quadratic fit for ROFA and an S curve for ROTA, where the latter is consistent with recent literature.

Overall, we suggest that it is necessary to move beyond analysis of the country level (used in traditional multinationality and performance studies) towards a regional level of analysis. Above all, it is necessary to recognize the value of regional metrics, such as (E/T) in the analysis of multinationality and performance. The MNE is much more than a trading firm, for, while exports are important to UK MNEs, so are the sales of their foreign subsidiaries. This paper's analysis of the relationship between the return on these foreign assets (ROFA) and intra-regional sales (E/T) presents new information and challenges to studies of the activities of MNEs.

Table 1
The World's Largest 500 Firms by Country

Country	No. of Firms	Average Revenues (USD$bn)	Average intra-regional sales (%)*
United States	169	30.3	77.3
Japan	66	28.9	74.7
Germany	29	37.3	68.1
France	27	27.2	64.8
Britain	27	25.3	64.5
Canada	16	13.5	74.1
Switzerland	8	34.7	49.6
Italy	5	38.7	83.4
Australia	5	13.6	71.4
Sweden	5	16.4	54.3
Netherlands	5	42.1	39.1
European bi-national (*)	3	73.9	47.9
Norway	2	21.6	83.0
South Korea	2	26.3	71.2
Belgium	2	18.8	58.4
Finland	2	20.0	55.1
Spain	2	29.1	50.3
Taiwan	1	11.6	100.0
Luxembourg	1	13.0	95.0
Denmark	1	10.9	94.3
Brazil	1	24.5	88.0
Singapore	1	13.1	22.4
TOTAL	380	29.2	71.9

Data are for 2001.
Numbers might not add up due to rounding.
Average intra-regional sales are by the firm's size according to weighted revenues.
There are 120 firms in the world's largest 500 which report no data in regional sales

For further information on the data and definitions used please see the Chapter 2 in Alan M. Rugman's *The Regional Multinationals* (Cambridge University Press 2005).

Table 2
The Regional Nature of UK Multinational Enterprises

500 Rank	Company	Revenues in bn US$	North America % of total	Europe % of total	Asia Pacific % of total
Bi-Regional					
4	BP	174.2	48.1	36.3	na
140	GlaxoSmithKline	29.5	49.2	28.6	na
262	Diageo	18.6	49.9	31.8	7.7
390	BAE Systems	13.0	32.3	38.1	2.7
Host-Region Oriented					
301	AstraZeneca	16.5	52.8	32.0	5.2
487	Wolseley	10.4	66.3	28.7	na
Home-Region Oriented					
114	Tesco	33.9	-	93.6	6.4
115	Royal Bank of Scotland	33.8	12.0	81.0	na
123	Vodafone	32.7	0.1	93.1	4.8
139	BT (q)	30.0	8.3	87.0	4.7
150	HBOS	27.8	na	92.1	na
154	Barclays	27.6	6.0	88.0	na
184	J. Sainsbury	24.6	16.7	83.3	-
206	Lloyds TSB Group	22.8	na	81.2	na
222	Royal & Sun Alliance	21.5	27.1	64.8	na
270	Centrica	18.2	6.2	93.8	na
280	Abbey National	17.8	0.5	99.5	-
314	Kingfisher (q)	16.1	0.8	98.3	0.6
409	Compass Group	12.6	32.4	67.6	-
418	Safeway	12.3	na	100.0	na
428	British Airways	11.9	18.6	64.8	na
439	Marks & Spencer	11.6	na	85.1	na
452	Corus Group	11.1	11.5	82.7	5.8
453	Old Mutual (q)	11.1	na	na	na
478	Alliance Unichem	10.5	-	100.0	-
Insufficient Information					
271	British American Tobacco (q)	18.1	na	31.3	9.9
341	Anglo American	14.8	18.9	46.1	17.8
Weighted Average		25.3			

Data are for 2001.
For further information on the data and definitions used please see the Appendix and company notes in Alan M. Rugman's *The Regional Multinationals* (Cambridge University Press 2005).

Table 3
The Regional Nature of British, European and World Firms

Industry	Britain		Europe		World	
	No. of Firms	Average intra-regional Sales	No. of Firms	Average intra-regional Sales	No. of Firms	Average intra-regional Sales
Manufacturing						
Aerospace and Defense	1	38.1	2	42.7	11	66.3
Chemicals and Pharmaceuticals	2	29.8	7	37.6	18	56.5
Computer, Office & Electronics	0	na	6	49.4	36	56.2
Construction, Building Materials and Glass	0	na	5	60.6	11	73.5
Energy, Petroleum & Refining	1	36.3	7	53.8	31	66.0
Food, Drug and Tobacco	2	31.6	5	36.4	14	55.0
Motor Vehicle and Parts	0	na	8	54.4	29	60.6
Natural Resource Manufacturing	2	61.8	6	71.8	17	77.6
Other Manufacturing	0	na	5	54.0	13	57.8
Services						
Banks	5	87.4	23	75.4	40	78.3
Entertainment, Printing & Publishing	0	na	3	67.2	9	73.1
Merchandisers	6	92.4	15	75.5	63	87.9
Telecommunications & Utilities	3	91.0	11	82.8	27	87.6
Transportation Services	1	64.8	4	73.9	13	83.7
Other Financial Services	2	74.5	8	62.9	27	71.9
Other Services	2	50.0	4	51.5	21	75.8
Total	27	64.5	119	62.8	380	71.9

Data are for 2001.
Numbers might not add up due to rounding.
Average intra-regional sales are by the firm's size according to weighted revenues.

For further information on the data and definitions used please see the Appendix and company notes in Alan M. Rugman's *The Regional Multinationals* (Cambridge University Press 2005).

TABLE 4
Regional Sales and the Performance of British Companies

Dependent Variable	*Return on Foreign Assets (ROFA)*			*Return on Total Assets (ROTA)*		
Independent Variables	S1	S2	S3	S4	S5	S6
European/Total Sales	-0.03*** (0.000)	0.095*** (0.000)	0.113 (0.134)	0.012*** (0.000)	0.028*** (0.000)	-0.147*** (0.000)
European/Total Sales^2		-0.001*** (0.000)	-0.001 (0.361)		0.0003*** (0.000)	0.003*** (0.000)
European/Total Sales^3			-0.000002 (0.834)			-0.00002*** (0.000)
Total Revenues (log)	0.682*** (0.000)	0.560*** (0.000)	0.491*** (0.000)	0.716*** (0.000)	0.729*** (0.000)	0.633*** (0.000)
Industry Return on Total Assets (World)	0.332*** (0.000)	0.326*** (0.000)	0.288*** (0.000)	0.320*** (0.000)	0.347*** (0.000)	0.302*** (0.000)
Time Trend	-1.293*** (0.000)	-1.149*** (0.000)	-1.124*** (0.000)	-0.950*** (0.000)	-1.058*** (0.000)	--0.929*** (0.000)
Constant Term	20.126*** (0.000)	17.002*** (0.000)	16.193*** (0.000)	3.804*** (0.000)	4.785*** (0.000)	15.607*** (0.000)
Adjusted R-Squared	0.682	0.689	0.643	0.995	0.926	0.754
F-Statistics	264***	5333***	147***	23061***	1247***	249***
Number of observations	495	495	495	495	495	495

* p-values in parentheses

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