Home Regionalisation Trends And Performance Implications In The Automotive Supply Industry

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Abstract: Recent research has shown that the sales (and assets) of large multinational companies are biased towards their respective home regions. Predicated on arguments about enduring differences between the world's major (triad) regions it has been suggested that this home regional focus will remain unchanged. In an extension of these arguments it has also been claimed that a home regional focus yields superior performance relative to a more dispersed locational presence. Examining a sample of large automotive suppliers, this study explores: (1) the dynamics of the home regionalisation phenomenon, and (2) the relationship between home regionalisation and firm performance. Longitudinal analysis reveals a significant decreasing trend in home regionalisation. Further analysis finds no relationship between home regionalisation and firm performance in the chosen sector. Taken together, these results hint that home regionalisation is an evolving phenomenon and that its performance benefits are dubious.

Keywords: international strategy, foreign direct investment

INTRODUCTION

A fuller appreciation of the world's contextuality (or "semi-globalisation") has superseded the globalisation hyperbole of the earlier academic and consulting literature and led to a (re-)discovery of the region among International Business (IB) scholars. The region is seen as a promising unit of analysis, thus responding to the call "for a more granular understanding of the costs and benefits from crossing borders" (Ghemawat 2007: 63).

In a number of publications, Alan Rugman, Alain Verbeke and co-authors find a majority of the world's largest firms to be home-regional rather than global in their sales and assets. Performing cross-sectional analysis on a sample of the *Fortune Global 500*, Rugman & Verbeke (2004) found that, on average, 80% of total firm sales occurred within the home region. They defined three major regions: the European Union, Asia and the North American Free Trade Agreement, collectively known as the 'triad'. Rugman and Verbeke's initial efforts led others to explore the phenomenon of home regionalisation. While the extent of any such home-regional bias remains somewhat contentious (Asmussen 2009; Osegowitsch & Sammartino 2007) it behoves IB researchers to explain its existence.

The emerging research stream on home-regionalisation has tended to be data-rich but theory-light. Assertions about regional boundaries constraining MNC expansion rest on fairly rudimentary theoretical foundations. The dominant explanation at this point in time is predicated on an *inter-regional* liability of foreignness that exceeds its *intra-regional* equivalent (Rugman & Verbeke 2007). These liabilities manifest as costs and risks arising from various cultural, institutional and geographic 'distances', within and across regions. The intra-regional liability of foreignness is diminished because the distances between countries within a single region are presumed to be comparatively low, whereas "the distance separating North America, Europe, and Asia remains substantial" (Rugman & Verbeke 2007: 201).

This paper explores the extent of firms' home regionalisation over time and examines the performance implications of home regionalisation. In line with earlier calls for more fine-grained studies (Osegowitsch & Sammartino 2008), we choose a particular, controlled setting: the global automotive supply 'industry'.

While the sampled companies' products are diverse, ranging from engine management systems to body panels, they have in common an emphasis on supplying the world's car manufacturers. In this study we deliberately trade the lack of generalisability for more valid results concerning a narrower, more homogeneous population (McKelvey 1978: 1437-1438).

HOME REGIONALISATION OVER TIME

Moving beyond the current extent of firms' home regionalisation, a related and possibly more important question concerns the dynamics of the phenomenon. Conducting a longitudinal study of the same companies (albeit using a smaller sample size) as Rugman & Verbeke (2004) over the period 1991 to 2001, Osegowitsch & Sammartino (2008) find that over time more firms expanded beyond their home-region. They propose that this may be attributable to the gradual diminution of the aforementioned distances due to a world-wide convergence process and/or a lag in configuring a firm's competitive or firm-specific advantages (FSAs) for competition in more distant arenas.

Others have argued and found evidence to suggest that the extent of home regionalisation remains relatively unchanged. Rugman (2005) posited that home-regionalisation will remain undiminished because of the formation of regional blocs as a result of regional economic integration. Regional protectionism (e.g. "Fortress Europe") is even argued to increase differences (or distances) across regions and will result in "the persistence of MNCs that will continue to earn 80% or more of their income in their home triad region" (Rugman 2005: 63). Rugman & Oh (2010) examined data from 265 firms in the *Fortune Global 500* over the period 2001 to 2005. Over this period, the average intra-regional sales to total sales ratio for the sample was 75.5% and showed little variation. The same was true for the ratio of intra-regional assets to total assets. These findings indicate to the authors that there is "no trend towards globalisation" (Rugman & Oh 2010: 83). A more recent investigation of European companies arrives at the same conclusion (Oh & Rugman 2012).

It has to be stressed that the existing longitudinal studies are relatively preliminary in nature, mostly deploying simple analytical techniques and employing (inevitably, given the global scope) coarse data.

For a couple of reasons, we argue that the regionalisation phenomenon may be much more dynamic than Rugman and co-authors suggest. Firstly, previous research by Zaheer & Mosakowski (1997) has found the so-called liability of foreignness (LOF) to be a dynamic phenomenon. LOF – conceptualised at the country level -- decreases over time as multinational companies (MNCs) adapt to their new host environments and learn from their local rivals. The same would seem plausible at a regional level, thus making expansion beyond the home region less daunting. Secondly, region-wide efforts to integrate markets – the EU and NAFTA are commonly used exemplars – may serve to reduce institutional and other distances and the corresponding costs of cross-border expansion within the region. It is dubious, however, whether such intra-regional integration simultaneously alienates the home region from other regions. It is far from settled whether occasional trade disputes between the (regional) trading blocs, and divisive political actions by the hegemons and their regional allies (Rugman 2000, 2005) are sufficient evidence to support such a narrative. Instead, intra-regional integration efforts may go hand in hand with integration across regions. For instance, floundering negotiations regarding *worldwide* trade and investment liberalisation (under the auspices of the WTO) have led to a proliferation of bilateral and multi-country agreements. While many of them have led to further integration within regions, just as many of them seem to extend across (continental) region boundaries.

In light of these arguments, we expect levels of home regionalisation to decrease over time and formulate:

H1: Over time, the degree of home regionalisation in large automotive suppliers decreases.

HOME REGIONALISATION AND FIRM PERFORMANCE

More recently, scholars have begun to ponder the performance implications of home regionalisation. The expansive research into the relationship between multinationality and performance (M-P) is the logical precursor to research on the home regionalisation and performance (R-P) relationship as both share similar theoretical rationales. We briefly canvass the M-P literature before providing an appraisal of R-P research.

Multinationality -- also referred to as (degree of) internationalisation or international diversification in the literature -- is said to confer certain advantages on MNCs. The initial contention was that these advantages boost the performance of MNCs over that of solely domestic firms. Subsequent arguments became more nuanced, positing that MNCs with a greater degree of multinationality enjoy performance benefits compared to those MNCs with a lower degree of multinationality. The main theoretical rationales underpinning these claims are as follows. Firstly, the more internationalised MNCs are, the larger the economies of scale and scope realised from standardised offerings and rationalised production (Kobrin 1991: 17). Similarly, the costs of R&D as well as branding can be spread across a broader base (Hitt, Hoskisson & Kim 1997: 771). Secondly, increased internationalisation enables the firm to achieve a higher degree of operational flexibility in terms of access to critical organisational resources (Hennart 2007). Real options theory further extends the flexibility argument, contending that a firm with a high level of international diversification is better able to hedge against adverse "future international market, cost and policy conditions" (Belderbos & Zou 2009: 601). Lastly, greater international diversification permits broader and more robust organisational learning (Hitt et al. 1997).

While there appears broad-based consensus concerning the benefits of international diversification, the vast body of empirical research on firm multinationality and performance has not yielded consistent results. Hennart bemoans that "more than one hundred empirical studies have failed to produce robust results" (2007: 45). His explanation for the lack of consistency is that the conceptual arguments predicting a positive link between multinationality and performance come with significant qualifications that are rarely incorporated in empirical tests. We note that many of Hennart's arguments – for instance, economies of scope and learning benefits also being achievable in conjunction with independent (international) partners; economies of scale often being fully realised in the domestic market -- also pertain to arguments supporting a link between home regionalisation and performance.

In an attempt to reconcile the disparate findings in the M-P literature, Contractor, Kundu & Hsu (2003) developed and empirically tested a three-stage theory of international diversification. Their proposed horizontal S-shaped specification of the M-P relationship is comprised of three stages. The first stage has

a declining slope predicated on the "costs and barriers to initial expansion" (Contractor et al. 2003: 7) associated with setting up international operations. The second stage consists of a positive slope that captures the realisation of the "benefits of international expansion" (p.8), including economies of scale and scope. The third stage is presented as a negative slope representing "international expansion beyond an optimal threshold" (p.8). It is argued that firms in this final stage have diversified too far into culturally distant countries, resulting in increased transaction and governance costs. The upshot is that there is a limit to how far a firm can gainfully expand internationally. Revisiting his earlier paper, Contractor (2007) postulates that the second stage – where a firm reaps the benefits of international diversification – actually captures expansion and growth within the home region. The final stage of the model, resulting in diminished performance, is interpreted as picking up expansion beyond the home region.

A number of authors have suggested that a more fine-grained understanding (and measurement) of internationalisation may help to shed light on the M-P relationship. Specifically, there is a need to distinguish home-regional expansion from other forms of internationalisation. Banalieva & Santoro (2009: 3), for instance, argue that "previous [M-P] studies show mixed results perhaps because they ignored the specific prevailing geographic orientations of the MNCs". The authors expect that "regional and global orientations have different effects on the relative financial performance [of MNCs]" (Banalieva & Santoro 2009: 3).

The argument as to why MNCs focussed on the home region may experience higher performance than more globally dispersed rivals centres on the so-called liability of inter-regional foreignness. In essence, multinational firms find it hard to transfer FSAs across country borders because they face a liability of foreignness in overseas destinations. It is argued that expanding into countries within the home triad region allows them to take advantage of a relatively lower liability of foreignness due to lower institutional, cultural, geographic etc. distance. Put differently, home regional expansion incurs fewer costs in transferring and adapting FSAs. In the words of Li (2005: 42),

> *"[Regional] strategy may facilitate the realisation of economies of scale and scope by confining the transfer and utilisation of intangible assets to a regional market that is*

physically and economically close to the domestic market. To a certain extent, the home triad-based regional strategy resembles the 'related diversification strategy'".

Empirical research on the performance implications of home regionalisation is sparse but growing. Table 1 provides a comprehensive overview of empirical work in this area. It details each study's sample, the regionalisation and performance measure used, as well as the findings.

[Table 1]

As is evident from Table 1, the bulk of empirical evidence suggests a positive link between home regionalisation and firm performance (R-P). A number of studies also point to a more complex relationship. The theoretical rationale for a link between R-P relationship is underdeveloped at this point. This literature invariably lists the "usual suspects" (economies of scales, scope, learning…) with the added qualification that expansion beyond the home region will impose countervailing adaptation and transfers (and complexity) costs that will offset any benefits, thus giving rise to the hypothesised inter-regional liability of foreignness. In the absence of strong arguments of our own we adopt this line of reasoning and formulate:

H2: There is a positive relationship between the degree of home regionalisation and firm performance in large automotive suppliers.

METHOD

Testing Hypothesis 1: Sample, Data, and Analytical Technique

Hypothesis 1 states that *over time, the degree of home regionalisation in large automotive suppliers decreases.* To test this hypothesis we rely on a continuous sample of 57 automotive suppliers drawn from the trade journal *Automotive News*' annual "Top 100 Global OEM [original equipment manufacturer] Parts Suppliers" ranking over the years 2000 to 2007 (http://www.autonews.com). The ranking is based on suppliers' total OEM sales volume. Our sample consisted of 13 Asian (all Japanese) firms, 22 European firms and 22 North American firms.[i]

Our data comes with one distinct advantage. Past studies relied on sampling frames such as the *Fortune Global 500* and as a result captured diversified companies. The data obtained – for home regionalisation and any other variables – was at the level of the parent. The aggregation of data across multiple lines of business is likely to have obscured business unit specifics. *Automotive News* data is superior in this regard in that it captures only so-called OEM revenue. OEM revenue only captures sales directly to the car companies and the corresponding parts end up in new cars or are sold as genuine spare parts.[ii] The upshot is a much cleaner measure of home regionalisation that overcomes the fact that a number of automotive suppliers are diversified. In line with much of the prior literature, our dependent variable *home regionalisation* is measured as the proportion of home regional sales to total sales.

OEM revenues and their regional breakdowns are provided by the suppliers in response to *Automotive News*' annual survey. In rare cases *Automotive News* resort to estimates for a particular year. As dedicated industry consultants they are best placed to make such estimates.

As our initial analysis is concerned with the change over time in home regionalisation, *time* was used as the main independent variable. A second variable, *region of origin* (Asia, Europe or North America), was used to account for potentially different dynamics across regions of origin.

We opted for a simple longitudinal analysis using one-way repeated measures ANOVA. This analytical technique is concerned with the comparison of group means over time (Hedeker & Gibbons 2006). The key assumption of a univariate repeated measures ANOVA is sphericity (Hedeker & Gibbons 2006). When this assumption is violated, statistical significance is overestimated which can lead to Type 1 errors or 'false positives'. Therefore, Mauchly's Test of Sphericity is used to detect any non-spherical data and appropriate corrections are applied as needed (Kremelberg 2010).

Testing Hypothesis 2: Sample, Data, and Analytical Technique

Hypothesis 2 states that *there is a positive relationship between the degree of home regionalisation and firm performance in large automotive suppliers*

We tested this relationship through a cross-sectional design. Given the variability of performance data, we follow common research practice and averaged performance over three years to smooth out any random

events (e.g. Morrison 1990; Sambharya 1995). For reasons of symmetry, we also averaged our key independent, home regionalisation, and two control variables over three years.

Working backwards from *Automotive News'* 2007 "Top 100 Global OEM Parts Suppliers" ranking, we identified 81 firms present in the rankings over the period 2005 to 2007. For each firm we obtained a mean home regionalisation score across these three years. We then consulted Thomson Reuters's *Datastream* to acquire the corresponding performance (and other) data, again averaged over three years. Because a substantial number of firms represented in the 2005-2007 rankings are private companies, performance data could only be obtained for 27 of the 81 firms.

We settled on an accounting measure of firm profitability and used ROA, defined as *operating profit divided by total assets.* ROA was chosen due to its prevalence as a dependent in the R-P (and M-P) literature, thus allowing for comparison with previous studies. We also used an alternative dependent variable, ROS, defined as *operating profit divided by total sales*, averaged over 2005-2007. *Operating profit* was used for both these dependents as it reflects performance prior to being subject to different (home) countries' accounting principles and rates of taxation. Thus, it represents a 'rawer' and internationally more comparable metric of financial performance.

In view of the small sample size we limited the number of independent variables to three. The key independent variable is home regionalisation, now defined as *home region sales divided by total sales averaged over 2005 – 2007*. The two control variables are R&D expenditure (*R&D expenses divided by total sales*) and marketing expenditure (*Selling, general and administrative expenses divided by total sales)*. Both are common proxies for FSAs and their impact on financial performance has been confirmed in many prior studies.

The data was analysed using multiple linear regression. The models analysed are specified as follows:

$$Model\ 1: ROA = \beta_0 + \beta_1(HOME\text{-}REG) + \beta_2(R\&D) + \beta_3(MARKETING)$$

$$Model\ 2: ROS = \beta_0 + \beta_1(HOME\text{-}REG) + \beta_2(R\&D) + \beta_3(MARKETING)$$

RESULTS

Results: Hypothesis 1

Table 2 below reports the sample's descriptive statistics. It shows the means and standard deviations of home regionalisation for Asian, European and North American firms as well as for the total sample. The sample's mean home regionalisation score indicates that sales of the average large firm in the automotive supply sector are biased towards the home region, thus confirming earlier research.[iii] Importantly though, this bias is diminishing. For the full sample, home regionalisation decreased steadily, as depicted in Figure 1. For the average firm, home regionalisation dropped from 66% to 57% over the period 2000 to 2007. Looking at the sub-sample trends it is worth noting that dynamics vary markedly across regions of origin, with North American firms experiencing a very steep drop in home regionalisation while European firms are mostly unchanged and Asian firms experiencing a modest drop.

[Table 2]

[Figure 1]

Turning to our statistical analysis, we initially conducted Mauchly's Test of sphericity and found the assumption of sphericity to be violated. We deployed the Greenhouse-Geisser adjustment to correct for non-sphericity (Barcikowski & Robey 1984). The within-subjects results show that the mean scores differed significantly with respect to time, as $F(2.71, 146.05) = 14.801$, $p < .001$ and revealed a significant decreasing linear trend, as $F(1, 54) = 26.07$, $p < .001$. Thus, **hypothesis 1 is supported**.

Despite the uneven trends across home regions in Table 2, our test of between-subject effects -- that is, a test comparing the means of different groups within the sample -- yielded no significant results. This was confirmed by *post hoc* Least Significant Difference and Games-Howell tests that failed to find significant differences between firms from different home regions.

Results: Hypothesis 2

Table 3 reports the descriptive statistics and Pearson correlation coefficients of all the variables utilised in the testing of hypothesis 2.

[Table 3]

To ensure the validity of results, researchers must be mindful of multicollinearity, which may result in distorted estimates of regression coefficients as well as inflated *F*-statistics. A bivariate Pearson correlation analysis revealed that none of the independent variables attained a correlation coefficient greater than ±0.7, indicating that multicollinearity was not a problem (Hair et al. 2003). This was confirmed by the collinearity tolerance levels generated. For both models (ROA- and ROS-based), none of the assumptions underlying multiple linear regression were violated.[iv]

Table 4 shows the results for the two models, indicating that average home regionalisation over the period 2005-2007 is not a significant predictor of average ROA or ROS over 2005-2007. For both models, the regionalisation coefficient is negative but non-significant.[v] Thus, **hypothesis 2 is not supported**.

[Table 4]

We note that average marketing expenditure over 2005-2007 had a positive significant relationship with ROS. This result is in keeping with many other studies, broadly confirming the effect of intangibles. It must be acknowledged that, overall, our simple models account for only a small proportion of variance, especially in the case of our first (ROA-based) model.

CONCLUSION AND DISCUSSION

The first research question we sought to answer was: 'What are the trends, if any, in home regionalisation?'. Our first set of results indicates that, in the context of large automotive suppliers, there is a significant decline in home regionalisation over time. In explaining the findings we initially refer to the rationale put forward by Osegowitsch & Sammartino (2007). The authors speculate that their sampled MNCs' ability to leverage FSAs inter-regionally increased over the period of investigation due to "a gradual convergence process [that] diminished 'distance' across countries *and* regions" (Osegowitsch & Sammartino 2007: 61).

In addition to any macroenvironmental convergence process, MNCs may be proactively enhancing their FSA reach. Preliminary research on the dynamics of liability of foreignness *(on a country basis*) suggests that MNCs are able to "master a rapid reduction of liability of foreignness'" (Petersen and Pederson 2002:

350) if they adopt deliberate local learning policies in their host countries. Our sample of automotive suppliers may have actively and successfully taken steps to reduce their liability of inter-regional foreignness and thus, over time, increased FSA reach beyond the home region. The more these MNCs learn about operating in 'distant' markets, the more they are able to expand beyond the home region.

There may also be a sample-specific explanation for our findings. Extant studies are exclusively of consumer-facing industries (e.g. cosmetics, Oh & Rugman 2006) or companies (Rugman 2005). Ours would seem to be the first study dedicated to exploring an intermediate industry, with potential implications for home regionalisation.

Since the mid-1980s, automotive manufacturing has "been shifting from a series of discrete national industries to a more integrated global industry" (Sturgeon, Van Biesebroeck & Gereffi 2008: 302). These developments have been accompanied by many automakers adopting "global platforms" (that is, key components that are deployed across multiple models and regions) in order to reap economies of scale in design and production (Sturgeon & Florida 2000; Sturgeon et al. 2008). In globalising, automakers have "pressured their existing suppliers to move abroad with them. Increasingly, the ability to produce in all major production regions has become a precondition to be considered for a project" (Sturgeon et al. 2008: 306). As a result, it may have been pressures from their customers that essentially forced automotive suppliers to expand beyond the home region. In a recent survey, 60% of car suppliers assessed the influence of their customers on the firm's location decision as "very high" or "high" (KPMG 2005: 9).

An alternative and more benign explanation would be that their integration into automakers' supply chains aided suppliers in going beyond the home region. Rugman & Verbeke (2007) insist that upstream and downstream stages of a firm's value chain confront differential liabilities in internationalisation. It is maintained that downstream FSAs face a more formidable regional liability of foreignness on account of the one-sided commitments required. In contrast, FSAs "on the upstream side of the value chain, especially sourcing and manufacturing, are often accompanied by resource commitments from other economic actors, thereby reducing the challenges posed by the liability of inter-regional foreignness" (Rugman & Verbeke 2007: 201). Following this logic, it could be argued that automotive suppliers may

be less home region-bound on account of existing relationships with their customers. These may help to 'shrink distances' between regions and any associated inter-regional liability of foreignness. Specifically, with their customers already present in host regions, many of the costs and risks of inter-regional expansion are mitigated and diminish more quickly over time.

The other research question explored in this study was, '*What is the relationship between home regionalisation and firm performance?*' Our analysis shows no support for a positive link between home regionalisation and performance. In all our models the home regionalisation coefficient is negative but typically does not achieve significance. Although derived from a very limited sample, our findings hint that for large automotive parts suppliers, a home regional orientation has no effect on performance. These findings are consistent with those of more broad-based studies by e.g. Elango (2004), Delios & Beamish (2005), Goerzen & Asmussen (2007) and Richter (2007). Again it is conceivable that our findings are triggered by the chosen industry's specific attributes. For automotive suppliers, home regionalisation may no longer equate with higher levels of competitiveness. Specifically, their ability to leverage existing relationships with OEM customers may have helped them to avoid the inter-regional performance penalties faced by competitors in more conventional (consumer-facing) industries.

The findings of the present research point are preliminary and obviously restricted to a single industry. Nevertheless, they do point to one clear implication for managers. That is, managers should be wary of strident advice such as "think regional, act local – and forget global" (Rugman & Hodgetts 2001: 341). Such advice, based on analysis of cross-industry samples, fails to account for specific industry conditions. At least for large automotive suppliers, the normative home regionalisation message promoted by Rugman and co-authors would seem to be misguided.

The contrary nature of our findings also reinforces the need for more fine-grained industry (and company) studies. Building up a suite of such studies may allow IB researchers to provide greater insight into both the dynamics of MNC locational patterns and the potential drivers of industry differences.

Table 1: Regionalisation-Performance Literature

Article	Sample	Regionalisation Measure(s)[†]	Performance Measure(s)	Results
Elango (2004)	130 Directory of Multinationals MNCs with consolidated sales over USD 1.5 billion and foreign sales over USD 750 million	Intra-regional sales (R/T), global sales ratio	Gross profit margin	Global strategy positively associated with performance. Very weak support for regionalisation-performance association. However, if interactive variable of product diversification is present, support for the link between regional strategy and performance is stronger.
Li (2005)	574 US service firms across many industries	Intra-regional sales (R/T)	Gross return on sales, net return on sales	R/T was found to have a positive moderating effect on the multinationality-performance S-curve relationship, adjusting its slope. A higher level of R/T leads to a shift in the curve's inflection points, enabling earlier and longer enjoyment of the benefits of internationalisation.
Delios & Beamish (2005)	1229 Japanese firms across many industries	Number of FDIs, number of FDI countries	Return on sales, return on assets, Tobin's q	Home-region (and host) oriented firms performed worse compared to bi-regional and global firms.
Rugman & Sukpanich (2006)	87 *Fortune Global 500* companies	50% sales in home region	Return on equity	The FSAs of Knowledge (R&D) and service sector can only be 'exploited profitably,' in terms of ROE, in the home region.
Goerzen & Asmussen (2007)	580 Japanese MNCs across many industries	Home-region orientation (50% or more of foreign subsidiaries in home region)	Market performance (Jensen's Alpha, Sharpe's Measure, market-to-book ratio)	No statistical relationship found between global or regional strategy and market performance. Home regional firms experience higher returns on marketing expenditures than global firms.
Chen (2007)	92 Asian service MNCs	Intra-regional sales (R/T)	Return on assets	R/T was found to have only a slightly positive quadratic relationship with ROA.

Article	Sample	Regionalisation Measure(s)†	Performance Measure(s)	Results
Li & Li (2007)	200 US MNCs from Computer and office equipment (COE), and Soap, cleansers and toilet products (SCT) industries.	Firm internationalisation strategy (home-region oriented; see Rugman & Verbeke 2004).	Return on sales, return on assets, Tobin's q	Indirectly, regional strategies were found to be more effective in multidomestic industries. Partial support for the notion that intangible assets increase the effectiveness of regional strategies in a multidomestic industry. Limited support for the notion that internationalisation pace increases the effectiveness of regional strategies in a multidomestic industry.
Richter (2007)	85 non-financial MNCs across many industries	Regional sales outside the home country within the home region/Total Sales (ROR)	Return on assets (after tax)	No significant models were found for the ROR-ROA relationship.
Rugman, Kudina & Yip (2007)	210 UK-based MNCs across many industries	Intra-regional sales (R/T)	Return on foreign assets (ROFA), return on assets	Significant quadratic and cubic models found between R/T and ROFA, and R/T and ROA, respectively.
Sukpanich (2007)	91 *Fortune Global 500* MNCs from manufacturing and service sectors	Intra-regional sales (R/T)	Return on equity, return on assets, return on sales	Significant positive linear relationships found for R/T-ROE and R/T-ROA.
Qian, Li, Li & Qian (2008)	189 US *Fortune Global 500* firms across many industries	Entropy measure of regional diversification based on the firm's number of FDI countries in different regions	Return on assets, return on sales (both after tax, before extraordinary items)	Curvilinear relationship up to a moderate level of regional diversification (RD), the relationship between RD and ROA/ROS is significantly positive and linear. The relationship between higher levels of RD and ROA/ROS is significantly negative and curvilinear (quadratic). Firms maximise performance by internationalising into a medium amount of developed country regions and a limited number of developing country regions.
Banalieva & Santoro (2009)	701 MNCs from emerging markets across Asia, Europe, the Americas and Africa	The difference between R/T and local country sales/Total sales	Return on assets	Simultaneously pursuing a regional and global orientation leads to lower performance. Firms with a regional-only orientation experience higher relative performance

Article	Sample	Regionalisation Measure(s)[†]	Performance Measure(s)	Results
Beleska-Spasova & Glaister (2010)	356 British exporters	Home-region orientation (50% or more of foreign subsidiaries in home region)	Export performance (three dimensional composite scale)	Home and host-region exporters more likely to experience lower export performance compared to bi-regional and global exporters.
Qian, Khoury, Peng & Qian (2010)	123 US *Fortune Global 500* manufacturing MNCs	Entropy measure of regional diversification based on the firm's number of FDI countries in different regions	Return on assets	Significant positive linear relationship found between ROA and the entropy measure of regional diversification
Oh (2010)	To be completed			
Lee (2010)	To be completed			
Banalieva & Eddleston (2011)	To be completed			

[†] It should be noted that not all regionalisation measures follow the Triad definition as used by Rugman and co-authors (that is, North America, Europe and Asia). For example Qian et al. (2008) use the World Bank's classification recognising ten separate regions.

Table 2: Home Regionalisation Descriptive Statistics 2000-2007

Year	Asian Firms (N = 13)		European Firms (N = 22)		North American Firms (N = 22)		**Total (N = 57)**	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	**Mean**	**Std. Dev.**
2000	67.15	16.22	65.36	14.66	67.09	15.75	66.43	15.19
2001	67.03	16.17	64.13	14.64	64.72	14.77	65.02	14.82
2002	64.76	18.38	63.27	15.53	65.09	15.79	64.31	16.03
2003	62.84	17.68	65.54	16.08	61.09	14.16	63.21	15.59
2004	61.84	17.42	66.86	13.75	56.72	16.89	61.80	16.22
2005	63.00	16.91	66.00	13.30	55.86	15.48	61.40	15.44
2006	63.53	15.61	65.81	11.66	51.45	16.25	59.75	15.72
2007	63.07	15.38	65.86	10.24	46.18	17.85	57.63	17.16

Table 3: Descriptive Statistics and Pearson Correlation Coefficients

	Variables	**N**	**Mean**	**Std. Dev.**	**1**	**2**	**3**	**4**	**5**
1	Average Home Regionalisation 2005-2007 (%)	27	58.63	17.17	1				
2	Average Return on Assets 2005-2007 (%)	27	6.05	3.20	-.233	1			
3	Average Marketing Expenditure 2005-2007 (%)	27	10.82	5.22	-.196	.352	1		
4	Average R&D Expenditure 2005-2007 (%)	27	3.35	1.68	.132	.138	113	1	
5	Average Return on Sales 2005-2007 (%)	27	5.06	2.94	-.129	878**	.556**	.188	1

**Significant at the .01 level (two-tailed)

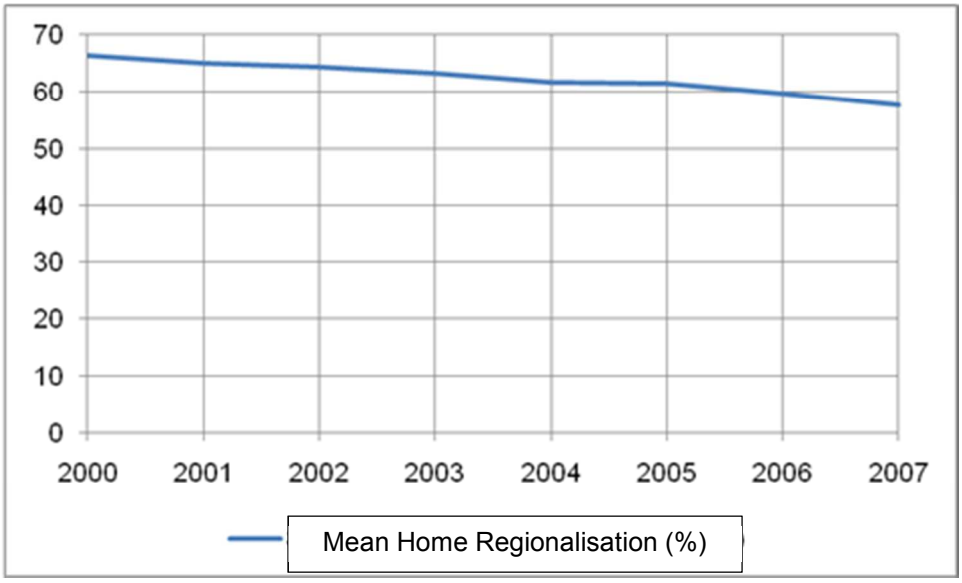
Table 4: Results of Multiple Linear Regressions

	Model 1 (ROA)	Model 2 (ROS)
Constant	-4.381 (-1.269)	1.457 (.620)
MARKETING	.184 (1.530)	.300** (3.02)
R&D	.246 (.666)	.233 (.763)
HOME-REG	-.036 (1.864)	-.007 (-.240)
Number of Observations	27	27
R^2	.168	.326
Adjusted R^2	.059	.239

Note: Values in parentheses next to coefficients indicate *t*-statistics.

** $p < .05$

Figure 1: Home Regionalisation 2000-2007



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ENDNOTES

[i] These 57 firms were the only firms to appear in every year of the survey. Other firms entered and exited the list at various points due to shifts in sales revenues, closures, consolidations and the like.

[ii] While the OEM business constitutes the overwhelming majority of suppliers' sales, some also have sizeable aftermarket revenues, that is, car parts sold to independent retailers. The aftermarket constitutes a very different segment of the industry and thus is not considered in *Automotive News* data.

[iii] It is worth noting that levels of home regionalisation in our sample (ranging from 66.43% to 57.63%) are substantially below the level reported for Rugman and Verbeke's (2004) *Fortune Global 500* sample (80.3%).

[iv] Firstly, an examination of the partial regression plots depicting the relationships between each of independent variables and two dependent variables (Hair et al. 1998), revealed linear relationships. Secondly, homoscedasticity observed as a scatter plot of the regression residuals against predicted dependent values (Hair et al. 1998) resembled null plots for both models. Thirdly, inspection of normal probability plots for all five variables indicated no departures from normal error distribution. Lastly, no (positive or negative) autocorrelation was present in either of the models. Durbin-Watson d statistics were 1.576 and 1.929, respectively, for models 1 and 2. These were higher than the upper critical value of d, for a sample size of 27 with 3 predictor variables, of 1.413 ($p = .01$) (Savin & White 1977). Hence, our error terms were independent (Montgomery, Peck & Vining 2001).

[v] Although not reported here, we also tested various lagged models to see if there is a delayed effect of home-regionalisation on ROA and ROS. Our results were unchanged. Furthermore, to maintain consistency in analysis, we tested additional models that also regressed region of origin on ROA and ROS, respectively. Dummy variables were used to represent European or Asian origins; North America was used as the baseline. The impact on our existing results was negligible.