

Value Creation and Home Region Internationalization of U.S. MNEs

Chang Hoon Oh

Abstract: This study analyzes the relationship between multinationality and performance of 1,247 US multinational enterprises (MNEs) over the period of 1995-2004 by utilizing Tobin's q theory. Internationalization is a double-edged sword: foreign intangible assets create a firm's value, while, at the same time, internationalization itself degrades the value by raising transaction costs and uncertainty in foreign operations. The empirical results show that US MNEs cannot increase their performance merely by developing their intangible assets in the rest of the home region (Canada and Mexico). Conversely, US MNEs rarely suffer from a liability of foreignness in their home region.

Keywords: performance, regional strategy, internationalization, liability of foreignness, multinationality, US multinational enterprises.

INTRODUCTION

Internationalization is a double-edged sword. On one side, cross-border activities provide advantages to multinational enterprises (MNEs). The leading theories in international business explain the positive aspects of internationalization, which this paper calls the value creation of internationalization. These theories are internalization theory (Buckley and Casson 1976; Rugman 1981), eclectic theory (Dunning 1988), and organizational capability perspective (Kogut and Zander 1993).

In contrast, internationalization can have a negative effect on a firm's performance by increasing the complexity of control and coordination (Bartlett and Ghoshal 1989) and causing the firm to suffer from the liability of foreignness (Hymer 1976). In this paper, the negative aspects are referred to as the value destruction of internationalization. The negative aspects can be explained by transaction cost economics theory. Thus, foreign direct investment will only occur when the positive aspects exceed the negative aspects, otherwise firms will not expand abroad (Buckley and Casson 1976).

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The existing, extensive empirical evidence on the relationship between multinationality and performance is inconclusive and debatable (Tallman and Li 1996; Gomes and Ramaswamy 1999; Lu and Beamish 2004; Contractor 2007). This research focuses on three general considerations. First, previous literature has not fully examined both value creation and destruction of internationalization. To date, the empirical analyses have failed to consider the two aspects together (Dess et al. 1995; Lu and Beamish 2004; Hennart 2007). As a result, mixed findings have occurred due to a biased empirical estimation.

Second, the inconsistent empirical results come from the old perspective of MNE theory, as existing studies assume that internationalization is uniform. MNEs have prioritized areas in international expansion, which was developed by the Uppsala School (e.g., Johanson and Vahlne 1977), as MNEs spread out from neighboring and homogeneous countries to distant and heterogeneous countries. However, the existing literature implicitly assumes that all foreign countries have the same strategic importance.

Third, great efforts have been made to find a better fit of empirical model, such as the quadratic or cubic fit, but existing empirical models are likely misspecified due to the lack of an analytical foundation in empirical equations. Even though the S-curve relationship between multinationality and performance could integrate existing international business theories, existing findings are not strong enough to determine the relationship between multinationality and performance. These three points will be discussed in greater detail later.

By controlling for these possible problems, this paper will answer the following questions: Is the internationalization process uniform? What is the relationship between corporate-level assets and performance? What is the relationship between subsidiary-level assets and performance? Which strategy is better – globalization or regionalization?

In order to answer these questions, Tobin's q equation is utilized. The sample used for this study covers 1,247 US MNEs across 51 industries for the period 1995 to 2004. This sample includes an almost complete data set for the international and regional activities of US MNEs for the period. The relationship between multinationality and performance will be examined by augmenting home region internationalization (other North American countries for US MNEs) and foreign region internationalization (countries outside of North America for US MNEs) to a conventional multinationality variable, which is the ratio of foreign-to-total sales (FSTS). By integrat-

ing the principles generated in previous studies, this study highlights the complementary explanations of value creation and value destruction of firm internationalization.

BACKGROUND AND LITERATURE REVIEW

Background and Theories

Basic internalization theory (Buckley and Casson 1976; Rugman 1981) focuses on the boundary of firms and the effectiveness of internal governance mechanisms, and does not fully consider the role of subsidiaries and organizational competencies that occur due to the interaction between the parent firm and the subsidiaries or between two or more subsidiaries. This theory has been extended and developed during its 30 plus year history by several researchers (Buckley and Casson 1998; Rugman and D'Cruz 2000; Rugman and Verbeke 1992, 2003; Chen 2005). In addition, other researchers have added insights stemming from the resource-based view and evolutionary perspective (Nelson and Winter 1982; Bartlett and Ghoshal 1989; Ghoshal and Bartlett 1990; Kogut and Zander 1993).

In internalization theory, economies of scale, economies of scope, and exploitation of differences across borders are the major benefits of internationalization (Rugman and Verbeke 2003; Hennart 2007). First, economies of scale can be reached at both firm and subsidiary levels, where macro-economic factors (e.g., market size, market intensity, and market integration) have critical roles. Second, economies of scope can typically be developed from a subsidiary's learning of the parents' non-location-bound, firm-specific advantages (FSAs), where managerial coordination, learning capability, and ownership advantages are important. Third, an MNE can leverage differences across the border by exploiting country-specific factors in host markets. The second and third benefits are related to each other and can be moderated by the MNE's strategic decision and resources.

Value destruction could come from the opportunity costs of the second and third processes. An operation abroad is always more costly than an operation at home, and it can only be justified if the firm can exploit the intangibles, such as know-how, R&D, reputation, and brand equity, that have accumulated at home. These negative aspects of internationalization (the liability of foreignness) were conceptualized by Hymer (1976).

Dess et al. (1995) declared that geographic diversification could reduce a firm's value. International expansion is associated with an endowment

of intangible assets and the internalization of those assets. Markides and Williamson (1996) found that a firm makes long-run superior returns through diversification only when the firm exploits resources or assets that are unavailable to its rivals at a competitive cost. Porter (1987) notes that a firm can gain a comparative advantage when its transferable skills and resources are of value to other markets. Using this thinking, multinationality, or the level of international diversification, is a measure of the firm's liability of foreignness. Without strong internal resources and capabilities, an MNE cannot leverage the benefits of internationalization and, therefore, will suffer from a liability of foreignness that arises from the external environment, such as cultural and institutional differences.

The resource-based view also supports the value creation and value destruction of internationalization. The diversification literature (e.g., Chatterjee and Wernerfelt 1991) shows that related diversification improves a firm's performance, while unrelated diversification lowers its performance. The literature suggests that the positive effects of diversification on performance might come indirectly from exploitable resources engaged by diversification.

Internalization theory and the resource-based view are readily applied to the regional MNE perspective. A home, or regional, focus increases scale and scope economies due to geographic, economic, cultural, and institutional integration of markets and will encounter less difficulty in regard to managerial coordination and ownership advantage when compared to a global or foreign operation. Country-specific factors can be exploited by other less risky methods (i.e., joint venture, partnership, and licensing) by balancing the internalizing benefits of foreign direct investment and exploiting core country-specific factors. The geographic, cultural, political, and institutional factors that lead to the regional homogeneity and regional focus of MNEs should be considered as related diversification that will not degrade the value of the firm when compared to unrelated geographic diversification (foreign region internationalization).

Literature Review

The relationship between multinationality and performance has received much attention, not only from within the field of international business but also from the fields of accounting, economics, and finance. This section briefly reviews the significant literature on the MNE's multinationality and its performance.

The three broad measures of a firm's performance – market performance, accounting performance, and financial performance – have often been

used to support the topic of academic research. In particular, market share, sales growth, and return on sales (ROS) are popular measures for market performance. At the same time, return on assets (ROA) and return on investment (ROI) represent the accounting performance measures. Return on equity (ROE), market value, Tobin's q , and stock prices (return) are used as measures in research on a firm's financial performance. Each measure has its own advantages, but financial performance might be the best measure in this context, because market performance and accounting performance measures do not reflect a firm's expected future profits (McWilliams and Siegel 1997). As part of intangible assets (Morck and Yeung 1991), internationalization will improve not only the performance of the firm in the concurrent period, but also the firm's future performance. In addition, growing concerns over stakeholder values make financial performance attractive to researchers (Thomas and Eden 2004; Rugman and Oh 2010).

With regard to multinationality, several measures have been proposed, including FSTS, ratio of foreign-to-total assets (FATA), number of foreign affiliates (NOFA), number of foreign countries (NOFC), and top managers' international experience. Sullivan (1994) compared a variety of multinationality measures and proposed a composite index, while Ramaswamy, Kroeck, and Renforth (1996) argued the validity of the composite index created by Sullivan. Of the measures used in existing literature, FSTS and NOFA were the most popular measures for the multinationality variable. Recently, the use of country-based count measures (i.e., NOFA, NOFC) in academic research was challenged due to overvaluation of firm multinationality (Oh 2009; Rugman and Oh forthcoming).

Research on multinationality and performance has been significantly improved upon by augmenting the non-linear equation model (Contractor, Kundu, and Hsu 2003; Geringer, Beamish, and daCosta 1989), controlling firm characteristics (Kim and Lyn 1986; Morck and Yeung 1991), moderating industry diversification (Lu and Beamish 2004; Tallman and Li 1996), and testing small MNEs (Bloodgood, Sapienza, and Almeida 1996; McDougall and Oviatt 1996). In addition, some studies have enhanced the econometric specifications of regression models. For example, Dastidar (2009) employed a two-stage least square equation model in order to control self-selection bias. Berry and Sakakibara (2008) used a first differenced equation in order to control the causality problem.

Researchers recognize that geographic expansion is one of the most important paths for firm growth (Lu and Beamish 2001), but characteristics of host countries and regions are not carefully considered in most research

with few exceptions (e.g., Flores and Aguilera 2007; Arregle, Beamish, and Hébert 2009; Oh and Oetzel forthcoming). Only a few studies have examined the heterogeneous effects of geographic expansion across countries and regions. Rugman's new regional MNE thesis (2005), Rugman and Verbeke (2004), as well as internationalization theory of the Uppsala school, and the semi-globalization perspective (Ghemawat 2007), suggest that MNEs can fully maximize the positive aspects and minimize the negative aspects of internationalization in the home region. An early study by Grant (1987) did not show any evidence that U.K. firms that increased their overseas production in North America outperformed other U.K. firms that increased their overseas production in their home region of Europe. Qian et al. (2008) found that large MNEs in developed countries maximize their performance when operating within developed regions and confirmed that most MNEs are regional rather than global. Rugman and Oh (2010) found an S-curve fit for U.S. MNEs from the perspective of regional MNEs. In contrast, Delios and Beamish (2005) compared the performance across the regional dimensions (i.e., North America, Europe, and Asia-Pacific) of Japanese firms that were introduced by Rugman and Verbeke (2004). They found that firms, operating within all of the triad regions, performed better than home-region-oriented firms and firms that operated within only two of the triad regions (bi-regional firms).

HYPOTHESES

Non-uniform Internationalization

Rugman and Verbeke (2004) demonstrated the regional nature of the world's largest MNEs. Likewise, Ghemawat (2007) underlined the difficulties of doing international business in dissimilar environments and emphasized a regional focus (semiglobalization). Subsequent studies led to important ongoing debates about globalization and regionalization: see a review article by Kolk (2010) regarding this topic. While the critical assessments of seminal works are important, the most important question should be whether a firm's revealed strategic activities and performance in its home region countries are different from those in the firm's foreign region countries.

The single most important implication of regional MNE theory is that internationalization is not uniform (Rugman and Oh 2008). The largest MNEs have more than 75% of their sales and assets in their home region countries. These numbers show that MNEs have a preference for doing business in their home regions. The value destruction of internationalization is relatively small when the MNE enters into a home region market instead of a foreign region market. Therefore, the MNE's businesses in

home region markets do not lower the firm's market value. The non-uniform internationalization hypothesis is consistent with existing perspectives, such as stage theory, evolutionary theory, and S-curve hypothesis. These perspectives advocate a gradual involvement in the foreign market (Johanson and Vahlne 1977; Kogut and Zander 1993) and imply that MNEs have preferential areas for foreign business activities.

Contractor (2007) connects the S-curve hypothesis and regional growth of MNEs. Hennart (2007) also states that an MNE with operations in a small number of homogeneous countries should show better performance than MNEs that operate in a large number of diverse markets. These results occur because, in early internationalization, a firm suffers considerable costs. In regional growth, on the other hand, the firm enjoys the benefits of international growth. During the global stage, the incremental costs of further internationalization are higher than the incremental benefits. Hence,

Hypothesis 1. Internationalization is not uniform. Home region internationalization is different from foreign region internationalization.

Subsidiary-level Assets and Resource Complementarities

Subsidiary-level assets represent the unique organizational resources and managerial capabilities that a subsidiary has in a host market. Corporate-level assets are rarely tradable due to their economic inefficiency, which drives the MNEs to develop subsidiary-level assets in their foreign markets (Teece 1983). Although the importance of the subsidiary-specific advantage (Rugman and Verbeke 2001) and the role of the subsidiary managers (Birkinshaw 1997) are recognized, the values generated from subsidiaries have often been ignored in multinationality and performance literature. Most studies in multinationality and performance literature only recognize the subsidiary as the receiver of the parent firm's transferable capability. However, Bartlett and Ghoshal (1986) emphasized that subsidiaries should be recognized as a source of competitive advantage rather than a pipeline for centrally developed products and strategies. Although most of the subsidiary's intangible assets are internally inaccessible due to embedded tacitness, the positive effects of subsidiary-level assets should be developed from the synergetic interdependencies between the subsidiary and parent firm. Accordingly,

Hypothesis 2a. Firm performance should vary positively with the subsidiary-level intangible assets (i.e., the more subsidiary-level intangible assets, the better firm performance).

Despite the imperfection of international integration, a firm's advantage over foreign competitors can be stronger than its advantage over other firms within its domestic market (Hymer 1982; Rugman 1981). MNEs can transfer their non-location-bound FSAs and intangible assets, such as brand equity, advanced managerial practices, technological capabilities, and easy access to the capital market, into foreign markets (Rugman and Verbeke 2001). The non-location-bound FSAs will not produce additional values for the firm when the firm only operates within the domestic or homogeneous market, but will raise the firm's market value in specific foreign markets where the MNEs can develop new resources or improve their existing resources.

Internalization theory can evaluate the relative efficiency and effectiveness of alternative government mechanisms in managing economic interdependencies. Each host country has its own unique resource endowments and location-specific advantages (Lu and Beamish 2004). Internalized intangible assets in the foreign region are likely new to firms when compared to the assets of their home region. Therefore, intangible assets that are exploited from relatively new and heterogeneous markets may complement a firm's existing capabilities. However, intangible assets from existing and homogeneous markets are substitutable or redundant assets to the firm.

In a similar vein, the importance of heterogeneous and new knowledge is also emphasized in the organizational learning perspective (March 1991; Schultz 2001). The complementary characteristics of new resources allow the MNE to have comparative advantages at the firm and subsidiary levels over its competitors. The marginal contribution of new intangible assets to a firm's value is higher than that of domestic or homogeneous markets. Accordingly,

Hypothesis 2b. The positive effects of the subsidiary-level intangible assets on performance in the foreign region are higher than those in the home region.

Corporate-level Assets and Liability of Foreignness

Firm size, as well as R&D and advertisement capabilities, are corporate-level resources that are discussed in the literature. The resource-based view suggests that firms have different capabilities that help them to achieve international expansion. Competitive corporate-level assets should lead to better performance; however, parts of those assets are location bound and do not transfer across markets (Kogut and Zander 1993; Rugman and Verbeke 2001).

The difficulty in managing internationally operated firms has been well-recognized under the name of the liability of foreignness (Hymer 1976). Bergh and Lawless (1998) found that the efficiency of hierarchical governance has a limit, and that environmental uncertainty increases the costs related to diversification. Likewise, Gates and Egelhoff (1986) and Prahalad and Doz (1987) emphasized the trade-off between international diversification and domestic focus in coordination and responsiveness of the organizational structure.

Hitt, Hoskisson, and Kim (1997) suggested that coordination costs and information overload increased with the level of internationalization. Due to increasing uncertainty, expanding into heterogeneous markets increases governance costs more than expanding into similar markets (Bergh and Lawless 1998). Bartlett and Ghoshal (1989) explained that the coordination of operations across heterogeneous markets leads to diseconomies in managing increasingly larger operations.

Goerzen and Beamish (2003) showed that when an MNE operates in many heterogeneous markets, the MNE's performance is significantly reduced. In particular, an integrated institutional environment, such as a preferential trade agreement or currency union, will lower the uncertainty of expanding into a foreign market and enhance the mobility of the corporate-level resources. The liability of intra-regional expansion (expansion within home region countries) appears to be much lower than the liability of inter-regional expansion (expansion to foreign region countries) (Collinson and Rugman 2008).

The additional costs of doing business abroad are often much higher than when expanding intra-regionally. Corporate-level assets (location-bound FSAs) can often be easily augmented in order to become deployable within the entire home region. Hence,

Hypothesis 3. Performance should vary positively with corporate-level assets, but should vary negatively with corporate-level tangible assets that interact with the degree of foreign (region) involvement.

Performance is often driven by R&D and advertising capabilities, both of which have characteristics of public goods. Morck and Yeung (1991) further argue that the value of intangible assets is proportional to the firm's multinationality. They estimated the value by making interaction terms between multinationality and intangible assets, such as R&D and advertisement expenditures, and found marginal positive effects to support their argument only for the R&D expenditures. Christophe (1997) and

Eckert et al. (2010) found that firms with FSAs increase their market value by engaging international operations. These findings support internalization theory (Rugman 1981), which suggests that a positive effect of R&D and marketing capability interacts with multinationality through the knowledge transfer and exploitation in the organization.

In internationalization, R&D and marketing capabilities are FSAs. Transferring marketing capability in international markets has synergetic effects on performance, such as the strengthening of brand equity and awareness, efficiency of investment, and developing know-how from multiple sources. Therefore, better R&D and marketing capabilities guarantee higher performance within the foreign market. In literature, however, the results are not conclusive (e.g., Morck and Yeung 1991; Kotabe, Srinivasan, and Aulakh 2002; Lu and Beamish 2004; Berry and Sakakibara 2008). Accordingly,

Hypothesis 4. A firm's performance should vary positively with the interaction of multinationality and the transferable corporate-level R&D and marketing capability.

DATA AND METHODOLOGY

Data

The geographic sales data of US MNEs were gathered from *COMPUSTAT SEGMENT* (COMSEG), in which 9,608 US firms reported their segment sales data from 1978 to 2004. Each firm reported its sales, assets, and other items according to its own classification of geographic regions. For this study, Rugman's triad classification (2005) was followed and modified, so that the home region was designated HR, and the foreign region, FR. The home region was further divided into the domestic market and the rest of the home region (ROHR), because existing studies found different effects between foreign countries and home countries. In this study, HR is North America, FR is all other countries outside of North America, and ROHR is Canada and Mexico. Therefore, FR and ROHR, collectively, are foreign countries.

COMPUSTAT ANNUAL (COMANN) data were used for firm performance, the dependent variable and in order to control firm-specific characteristics. The dependent variable is a market value, which is the sum of common equity, preferred stock, and debt. Two firm-specific characteristics were employed – R&D intensity and advertising intensity. The R&D and advertising intensities were measured by R&D and advertising expenditures that were then divided by the firm's tangible assets. It is important

to note that these variables were developed from an analytical model. The variables and model will be discussed in the next section.

The data was reconstructed using the following steps. First, using COMSEG, data were excluded that do not fit within the classification of regions. Then, data were excluded where the region could not be identified. Then, data that aggregated two or more regions together were excluded. Segment data that could not be reclassified into the classification scheme were also excluded. After that, the sales data for each region of the classification were recalculated, and then the cleaned COMSEG data were matched with COMANN data.

After completing the data gathering process, only a few observations existed before 1994. Therefore, the sample begins with 1995. 1,291 firms across 51 industries reported their foreign sales for the ten years (1995-2004), with a total of 3,996 observations. Using the regional sales data, the number of observations decreased to 3,854 for the 1,247 firms from which data were available during the study period. Thus, not much information was lost when the regional variables were utilized as compared to a conventional multinationality variable.

Variables and Model

The dependent variable of this study is the market value of a firm. The market value of a firm is the sum of the values of its net tangible assets and its net intangible assets. In Tobin's q theory, the long-run equilibrium market value of the bundle of assets is equal to the book value of those assets. After Griliches (1981) found a significant relationship between the market value of the firm and its intangible capital, a series of research initiatives followed that evaluated the intangible capital. A large amount of R&D and marketing literature has examined and developed Tobin's q theory.

In this study, Hall's (1993) equation is improved and extended in order to estimate the stock market's relative valuation of cross border activity. Hall's (1993) equation is derived from the theoretical and analytical foundation of Tobin's q theory, as compared to the existing models that analyze the relationship between multinationality and performance. The equation comes from the usual hedonic regression for the market value of intangible assets. If multinationality affects the market value of a firm, it should stem from the intangible portions of the assets.

The market value is the sum of tangible and intangible assets:

$$(1) \quad MV = q(TA + \sum_i \gamma_i K_i)^\sigma$$

where MV is the market value, which is the sum of equity and debt; TA is the tangible assets; K_i is the intangible asset i , such as location-specific intangible assets (geographic sales), R&D expenditures, or advertising expenditures; q is Tobin's q and the average multiplier of the market value relative to the replacement cost of total assets; γ_i is the relative shadow price of the intangible asset i ; and σ is the overall scale effect.

Using the logarithms from both sides in (1) and applying the approximation method, $\ln(1 + \varepsilon) \approx \varepsilon$ results in the following equation:

$$(2) \quad \ln(MV) \approx \ln q + \sigma \left(\ln TA + \sum_i \gamma_i (K_i/TA) \right) + e$$

Equation (2) has an advantage compared to the widely used hierarchical polynomial regression. The hierarchical polynomial regression is easy to implement, but it artificially restricts the form of the testable equation, i.e., linear, quadratic, or cubic. In contrast, Equation (2) is analytically driven and estimates the overall scale effect, σ . Therefore, it is possible to determine the non-linear nature of the relationship by estimating σ in Equation (2), rather than by restricting an artificial polynomial power.

After the mathematical derivation shown in Appendix 2, the testable equation of (2) is

$$(3) \quad \ln(MV)_{ijt} + \alpha + \beta_1 \ln(TA)_{it} + \beta_2 \text{FSTS}_{it} + \beta_3 (\text{SD}/\text{TA})_{it} + \beta_4 (\text{SF}/\text{TA})_{it} + \beta_5 (\text{R\&D}/\text{TA})_{it} + \beta_6 (\text{ADV}/\text{TA})_{it} + \mu_j + \nu_t + \varepsilon_{ijt}$$

where subscripts i , j , and t represent firm, industry, and year, respectively. $\ln(TA)$ is for the size of the firm, FSTS is multinationality, SD/TA is domestic intangible assets, SF/TA is foreign intangible assets, $\text{R\&D}/\text{TA}$ is R&D intensity, ADV/TA is advertising intensity, μ is industry fixed effects, ν is year fixed effects, and ε is a residual error term. FSTS , SD/TA , and SF/TA can be replaced with other variables based on the regional perspective.

In order to test Equation (3), a set of independent variables was developed: tangible assets, intangible assets, and multinationality. Table 1 describes the definition of the variables used in this study, and Appendix 1 provides summary statistics and a correlation matrix. The tangible assets are corporate-level resources and are often used for the size effects of a firm in the literature. R&D and advertisement intensity are complementa-

ry corporate-level intangible assets that are frequently used for mediating the relationship between multinationality and performance (Morck and Yeung 1981; Kotabe, Srinivasan, and Aulakh 2002; Lu and Beamish 2004).

Table 1. Definition of Variables

| Variables | Definition |
|-----------|--|
| MV | Market value = (market value of common equity + liquidating value of the firm's preferred stock + debt), where debt = (long term debt + short term liabilities - short term assets). |
| FSTS | Degree of international involvement = (foreign sales / total sales). |
| RHSTS | Degree of the rest of home region involvement = (sales in the rest of home region / total sales). |
| FRSTS | Degree of the foreign region involvement = (sales in the foreign region / total sales). |
| TA | = log of tangible assets. |
| SD/TA | = domestic sales (SD) / tangible assets (TA). |
| SROHR/TA | = sales in rest of home region (SROHR) / tangible assets (TA). |
| SHR/TA | = sales in home region (SHR) / tangible assets (TA). |
| SF/TA | = sales in foreign countries (SF) / tangible assets (TA). |
| SFR/TA | = sales in foreign region (SFR) / tangible assets (TA). |
| R&D/TA | = R&D expenditure (R&D) / tangible assets (TA). |
| ADV/TA | = advertisement expenditure (ADV) / tangible assets (TA). |

Note: See Appendix 1 for summary statistics and correlation matrix for above variables.

At the subsidiary level, the geographic sales are a proxy of the economies of scale, which are known to be distinctive location advantages (Bartlett and Ghoshal 1986), location-bound FSAs (Rugman and Verbeke 2001), and benefits of international diversification (Contractor, Kundu, and Hsu 2003). The subsidiary intangible assets may include other assets, such as knowledge-based assets. However, it is well-known that subsidiaries exploit those intangible assets that are transferred from the home country, and only a few subsidiaries develop new knowledge (Hennart 2007; Doz, Santos, and Williamson 2002; Rugman 1981).

Geographic sales are divided into sales in the domestic market (SD), the home region (SHR - sales in North America), the rest of the home region (SROHR - sales in Canada and Mexico), and foreign regions (SFR - sales in outside of North America). The SHR are the sum of the SD and SROHR.



The sales in foreign countries (SF) are the sum of the SROHR and SFR. These regional sales variables reflect downstream intangible assets that are benefits of market imperfection and economies of scale at the subsidiary level.

In addition, these variables measure international diversification in some homogeneous markets (Hennart 2007). If the effects of foreign or regional sales on a firm's market values are different, then the coefficients of these variables would be statistically different. If sales in foreign regions or countries did not increase the additional value of a firm, then the variables should be insignificant.

In regard to the multinationality variable, several measures were developed for the regional variables, as well as a conventional FSTS variable. RHSTS is the percent ratio of sales in the rest of the home region countries (Canada and Mexico in this study) over total sales, and FRSTS is the ratio of sales in the foreign region (sales outside of North America) over total sales. RHSTS and FRSTS are new measures for multinationality that are based on the regional perspective. If the coefficient of the FRSTS is significantly different from the coefficients of the RHSTS, then it is possible to conclude that internationalization is not uniform. Equation (3) is extended by supplementing it with Morck and Yeung's interactions (i.e., interactions between multinationality and R&D intensity, and between multinationality and advertising intensity) for considering externalities in transferring corporate assets to subsidiaries.

EMPIRICAL RESULTS

Table 2 shows the main results from Equation (3) with the industry and year fixed effects.¹ In the first column, the typical measure of multinationality (FSTS) and corresponding subsidiary intangible assets, SD and SF, are used. The results show that multinationality is negative and statistically significant, while the SD and SF variables are positive and statistically significant.

In the second column, regional variables, the RHSTS and FRSTS, and corresponding variables for subsidiary intangible assets, are employed in order to test the non-uniform internationalization hypothesis. The results show that RHSTS is positive and insignificant, while FRSTS is negative and significant. US MNEs did not have additional difficulties in diffusing their corporate-level assets to the rest of the home region when compared to the results of the diffusion of firm assets to the domestic market. Thus, MNEs have serious liabilities in regard to inter-regional foreignness. The

Table 2. Regression Results: Multinationality, Foreign Assets, and Market Value

| | Dependent Variable: Log of Market Value | | | |
|--|---|----------------------|----------------------|----------------------|
| | 1 | 2 | 3 | 4 |
| FSTS (Degree of international involvement) | -0.3742* (0.1745) | | | |
| RHSTS (Degree of the rest of the home region involvement) | | 0.2254** (0.4458) | | |
| FRSTS (Degree of the foreign region involvement) | | -0.4882* (0.1931) | -0.4858* (0.1928) | -0.2298* (0.2148) |
| TA (Size of firm: Log of tangible assets) | 1.0473** (0.0127) | 1.0472** (0.0127) | 1.0475** (0.0127) | 1.0451** (0.0128) |
| SD/TA (Intangible assets in home country) | 0.0438** (0.0162) | 0.0439** (0.0162) | | |
| SROHR/TA (Intangible assets in the rest of the home region) | | 0.0721 (0.1950) | | |
| SHR/TA (Intangible assets in the home region) | | | 0.0444** (0.0161) | 0.0441** (0.0162) |
| SF/TA (Intangible assets in the foreign countries) | 0.2787** (0.1025) | | | |
| SFR/TA (Intangible assets in the foreign regions) | | 0.3494** (0.1202) | 0.3534** (0.1199) | 0.3196** (0.1221) |
| R&D/TA (R&D intensity) | 0.3567** (0.1263) | 0.3557** (0.1263) | 0.3572** (0.1265) | 0.3927** (0.1338) |
| ADV/TA (Advertising intensity) | 0.2267* (0.1084) | 0.2239* (0.1080) | 0.2221* (0.1078) | 0.1922* (0.1088) |
| FRSTS * R&D/TA | | | | -1.4818* (0.6732) |
| FRSTS * ADV/TA | | | | 1.5534* (0.7905) |
| R ² | 0.8239 | 0.8240 | 0.8239 | 0.8242 |

Notes: N=3,854. *P < 0.1; **P < 0.05; ***P < 0.01. Intercept, year fixed effects, and industry fixed effects are estimated but not reported here. Heteroskedasticity robust standard errors are in parentheses.



integrated effects of multinationality and subsidiary intangible assets are broadly consistent with the S-curve hypothesis (Contractor, Kundu, and Hsu 2003; Lu and Beamish 2004)

The subsidiary-level assets in Canada and Mexico did not create any additional market value for US MNEs, as the coefficient of RHSTS was insignificant (0.0721), as shown in the second column of Table 2. Therefore, home region and foreign region internationalizations should be distinguished from each other. Subsidiary-specific assets in Canada and Mexico were most likely not different from US subsidiary-specific assets because of institutional and cultural similarities, geographic proximity, and also because many US MNEs already operate and compete in these countries. These results support non-uniform internationalization, and Hypothesis 1 is confirmed.

In the third column, home and foreign regions' intangible assets and corresponding regional variables (i.e., FRSTS) were used instead of FSTS in order to consider the regional perspective. The results are close to those found in the first two columns. However, the specification in the third column is better than that in the first column, as it is based on column 2's coefficients, which show that the coefficients of the HRSTS are not statistically different from zero, and the coefficients of the SROHR/TA and the SHR/TA are not statistically different from each other ($Prob > F = 0.89$). Thus, the conventional multinationality variable could be augmented with the regional variables. The remainder of this study will focus on the regional variables found in the third column of Table 2.

The coefficients of the SHR/TA and SFR/TA were positive and statistically significant. Therefore, the results support Hypothesis 2a. These results show that foreign region subsidiaries develop important intangible assets. The coefficients of the SHR/TA (0.0444) and SF/TA (0.3534), in particular, are statistically different ($Prob > F = 0.01$). The intangible assets of US MNEs create their own market value when the corporate resources are utilized in foreign region countries, more so than in the United States, Canada, or Mexico. Therefore, Hypothesis 2b is confirmed.

The coefficient of the FRSTS is negative and statistically significant, which supports Hypothesis 3. The coefficient of the FRSTS shows that 51% (e.g. $-0.49 = 0.51 - 1$) of the corporate-level tangible assets are transferred to foreign countries. US MNEs only operationalized half of their corporate-level assets when they managed the assets in foreign region countries, while they could operationalize most of the assets in home region countries. Subsidiary assets and subsidiary R&D expenditures were also used

as proxies for subsidiary intangible assets, instead of subsidiary sales. The results are broadly consistent with the results in Table 2. The results will be available upon request to interested readers.²

The results of the first three columns in Table 2 support the double-edged sword argument of internationalization: multinationality is negatively related to performance, and proprietary assets, i.e., foreign (region) intangible assets, R&D, and advertising, are positively related to performance. Indeed, Dess et al. (1995) expected a negative value for the foreign operation due to the liability of foreignness, and pointed out that MNEs do not expand abroad in order to diversify their risk but instead to exploit their intangible assets. Dess et al. (1995) explained the pattern of the firms' expansions into more culturally and economically integrated countries, which is similar to the definition of regionalism as presented by Rugman and Verbeke (2004).

In the fourth column, Morck and Yeung's interaction terms are incorporated into Equation (3). The findings are somewhat disappointing in that the interaction between R&D intensity and multinationality is significant and negative.³ However, the interaction between advertising intensity and multinationality is significant and positive, as expected. Thus, Hypothesis 4 is partially supported. Presumably, R&D transfer into foreign countries is a complex process. For example, technologically advanced MNEs might lose their monopolistic status when transferring their valuable technological knowledge, because foreign competitors would imitate the knowledge. As a result, transaction costs rise in order to keep their technological knowledge from imitators. Kogut and Zander also emphasized that "[T]he firm that is responsible for its creation faces the difficulty of appropriating a return to its use" (1993, 628).

Robustness Checks

Three issues need to be considered in order to confirm the robustness of the results. First, along with geographic diversification, industry diversification is one of the central areas in strategic management. The effects of multinationality and industry diversification were tested in several studies (Delios and Beamish 1999; Tallman and Li 1996; Geringer, Beamish, and daCosta 1989). A variable for industry diversification was included, which is measured by the number of 4-digit industries within the firm's operating segment. Quadratic-terms for multinationality were also included. The results show that industry diversification has an inverted-U shape relationship with performance, and the interaction between multinationality and industry diversifications is insignificant. Multinationality, as well as corporate- and subsidiary-level asset variables, shows consistent results to those in Table 2. The quadratic term of multinationality is insignificant.

Second, the endogeneity problem should be considered. In particular, the measure of subsidiary intangible assets is an outcome variable (sales), and the reverse causality might exist. The model was tested with 1 year, 2 year, and 3 year lagged endogenous variables as instrumental variables for intangible assets, multinationality, and industry diversification. The results are consistent with the previous results (see the second column of Table 3). The endogeneity problem might exist, but it would not be critical in the tested model.

Third, unobserved firm characteristics might lead to biased results. A lagged dependent variable model can control the unobserved characteristics of the firm. The results did not change significantly from those found in Table 2. The coefficients of the interaction between R&D intensity and multinationality, and between advertising intensity and multinationality, lose their statistical significance but show consistent signs with those in Table 2. Unobserved effects were tested by using a firm-fixed effects model. The results of this model were also consistent with the previous results. Thus, the findings are very robust. This paper does not report these results, but they are available upon request.

DISCUSSION AND CONCLUSIONS

Implications for the Globalization versus Regionalization Debate

The globalization versus regionalization debate was initiated by Rugman and colleagues, and it has received an increasing amount of attention in academic circles. Based on transaction cost economics theory, the empirical results of this study show that US firms suffer less from foreignness in the home region market than in the foreign region market. These results occur because corporate-level assets are not easily transferable across regions. At the same time, foreign region assets are more valuable than home region assets due to their complementary characteristics and newness. Subsidiary-level assets are valuable resources, and MNEs can develop and internalize these valuable resources in foreign regions. While the foreign (region) market provides a higher reward, the risk is also higher than in the home (region) market. Therefore, expanding into the home region country can either be a first best strategy or an intertemporal second best strategy for MNEs.

In addition, our results show that the relationship between performance and multinationality also depends upon the size of assets. It is difficult for MNEs to transfer their (tangible) assets into foreign markets due to increasing costs. For example, banking, merchandising, transportation services, energy, and natural resources manufacturing industries, all of

which need large assets, are the most regionalized industries (Rugman and Oh 2007). This regionalization might occur because the MNEs' tangible assets are specialized and dedicated to certain location-bound FSAs and, therefore, do not easily transfer to other markets.

The more fundamental question is why MNEs operate in a regional market. First, they might operate in such a market because the MNEs' regional focus is a strategic outcome of successful capability development in the process of globalization. In this case, regionalization is an intertemporal *second best strategy* of the MNEs in their evolutionary process. Second, they might operate in such a market due to regional economic and political integration processes, such as in the EU, NAFTA, and ASEAN (Fratianini and Oh 2009; Curran and Zignago 2010). These regional uniformizations reduce the uncertainty and entry costs of MNEs into the regional market. In these cases, regionalization is the *first best strategy* of MNEs under the recent triad economic system.

Conclusions

The results from this study provide three important contributions to the literature that address the relationship between multinationality and performance. First, a new specification is used, which is an improvement over the theoretical market value equation developed by Hall (1993). The new specification enables an estimate to be made of the value of foreign assets and multinationality together. The results from the 1,247 US MNEs across 51 industries for 1995 to 2004 suggest that US firms' foreign intangible assets increase their market values significantly compared to the effect on their market values by their domestic assets. However, multinationality itself reduces those firms' values because of the liability of foreignness and increasing transaction costs that accompany internationalization.

Second, new regional measures were used, as well as the conventional multinationality measure, in order to consider a recent regional MNE perspective. US MNEs do not have disadvantages when they operate in the rest of the home region of Canada and Mexico; however, the operations do not create their market value. The value of US MNEs' expansion in Canada and Mexico are equal to the value of the firm's subsidiaries in the United States, but differ in value to foreign regions. These results explain the liability of inter-regional foreignness (Rugman and Verbeke 2007) and imply that internationalization is not uniform.

These results provide a better understanding of the relationship between multinationality and performance while, at the same time, suggesting the potential need for further study. This sample covers only US MNEs

with a longitudinal panel data set covering the past 10 years, 1995-2004. Economic interdependency in North America is much higher than other triad regions, due to the integrated regional economy (NAFTA), as well as the leading role of the US in the regional economy and politics and the relative economic size of Canada and Mexico. Regional heterogeneities in Europe and Asia may lead European and Asian MNEs to develop new and complementary subsidiary-level assets in the rest of their home regions, as well as in their foreign regions, while MNEs may also sufficiently reduce the liability of foreignness in their home region countries.

Irrespective of a few limitations, the contribution of this study's findings are strong and robust, as the findings provide statistically significant evidence regarding the effect of corporate- and subsidiary-level assets on the performance of US MNEs in the past ten years. This study also tests and finds the importance of liability in inter-regional foreignness and shows that internationalization is not uniform. Therefore, it is difficult to enter foreign regions, but the rewards can be higher than the costs.

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APPENDIX 1

| Summary Statistics and Correlation Matrix | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|------|------|---------|---------|---------|---------|--------|---------|--------|--------|--------|--------|
| Variables | Mean | S.D. | | | | | | | | | | |
| 1. MV (log) | 2.78 | 2.51 | | | | | | | | | | |
| 2. FSTS | 0.07 | 0.17 | 0.06** | | | | | | | | | |
| 3. RHSIS | 0.01 | 0.05 | 0.02 | 0.39** | | | | | | | | |
| 4. FRSTS | 0.06 | 0.16 | 0.06** | 0.10** | | | | | | | | |
| 5. TA (log) | 4.07 | 2.12 | 0.88** | 0.12** | 0.13** | | | | | | | |
| 6. SD/TA | 1.78 | 1.82 | -0.06** | -0.24** | -0.13** | -0.13** | | | | | | |
| 7. SROHR/TA | 0.02 | 0.14 | -0.02 | 0.27** | 0.04* | 0.00 | 0.00 | | | | | |
| 8. SHR/TA | 1.80 | 1.82 | -0.06* | -0.22** | -0.23** | 0.99** | 0.08** | | | | | |
| 9. SF/TA | 0.10 | 0.29 | 0.02 | 0.80** | 0.71** | -0.12** | 0.56** | -0.07** | | | | |
| 10. SFR/TA | 0.09 | 0.24 | 0.04* | 0.80** | 0.83** | -0.14** | 0.07** | -0.14** | 0.87** | | | |
| 11. RD/TA | 0.12 | 0.27 | -0.30** | 0.08** | 0.08** | -0.34** | 0.03 | -0.02 | -0.02 | 0.08** | | |
| 12. ADV/TA | 0.07 | 0.17 | -0.09** | -0.07** | -0.07** | -0.14** | 0.19** | -0.01 | 0.19** | -0.03* | -0.03* | 0.15** |

Note: N=3,854. *P < 0.1; **P < 0.05; ***P < 0.01.

APPENDIX 2: MATHEMATICAL DERIVATION

$$(A-1) \quad MV = q \left(a \cdot TA \cdot \frac{SHR}{TS} + b \cdot TA \cdot \frac{SFR}{TS} + \sum_i \gamma_i K_i \right)^\sigma$$

where TS is total sales: see text and Table 2 for other notations.

Taking logarithm transformation of equation (A-1) and factoring out TA, the result is

$$\ln MV = \ln q + \sigma \ln TA + \sigma \ln \left[a \cdot \frac{SHR}{TS} + b \cdot \frac{SFR}{TS} + \sum_i \frac{\gamma_i K_i}{TA} \right]$$

Since, $a \cdot \frac{SHR}{TS} = b \left(1 - \frac{SFR}{TS} \right)$

$$\ln MV = \ln q + \sigma \ln TA + \sigma \ln \left[a + (b-a) \cdot \frac{SFR}{TS} + \sum_i \frac{\gamma_i K_i}{TA} \right]$$

After factoring out a, the result is

$$\ln MV = \ln q + \sigma \ln TA + \sigma \ln a + \sigma \ln \left(1 + \frac{(b-a)}{a} \cdot \frac{SFR}{TS} + \frac{1}{a} \sum_i \frac{\gamma_i K_i}{TA} \right)$$

Since $\ln(1 + \varepsilon) = \varepsilon$, finally, the result is

$$(A-2) \quad \ln MV = \underbrace{\ln q + \sigma \ln a}_{\text{constant}} + \underbrace{\sigma \ln TA}_{\text{tangible assets}} + \underbrace{\frac{(b-a)}{a} \cdot \frac{SFR}{TS}}_{\text{multinationality}} + \underbrace{\frac{1}{a} \sum_i \frac{\gamma_i K_i}{TA}}_{\text{intangible assets}}$$

The presumption is that a is close to 1, because MNEs may fully internalize their domestic (or home region) assets. This was tested with and without multinationality variables in the equations. The constant term, as well as other coefficients, is not changed across specifications, and the conclusion is that $\ln a = 0$ (that is $a = 1$). Therefore equation (A-2) can be rearranged to

$$(A-3) \quad \ln MV = \ln q + \sigma \ln TA + (b-1) \cdot \frac{SFR}{TS} \sum_i \frac{\gamma_i K_i}{TA}$$

If an MNE can internalize and utilize its tangible assets more efficiently in its foreign region rather than in its home region ($b \geq 1$), the coefficient of multinationality variable will show a positive sign. In Table 3, the coefficient of FRTS is -0.4882, and therefore b is 0.5118 ($-0.4882 = 0.5118 - 1$). Therefore, only half of tangible assets are internalized and utilized in the foreign region.



ENDNOTES

- 1 See Appendix 2 for the mathematical derivation of the empirical equation in Table 2.
- 2 The results from the subsidiary assets and R&D expenditures show that foreign region intangible assets increase firm value more than home region intangible assets. Due to the unavailable data for the assets, the observations dropped from 3,854 to 1,209, and for R&D the observations dropped to 126.
- 3 The negative coefficient of the interaction will also be disappointing to Lu and Beamish (2004), who found a cubic-type relationship between the interaction and performance. However, based on their descriptive statistics, the effects of the interaction between the intangible assets (R&D and advertising intensities) and multinationality on performance cannot be positive. Their Figures 2 and 3 (2004, 605-606) show that the relationship is positive when the multinationality is higher than 0.4, but that the mean value of the multinationality is 0.04 and the standard deviation is 0.07. The multinationality of their sample MNEs is less than 0.25 ($= 0.04 + 0.07 \times 3$) at the 1% confidence interval. What they found is the strictly negative effects of the interaction between R&D and multinationality on performance. The positive effects in Figures 2 and 3 are strictly hypothetical as they occurred only on the uncontrolled outliers (less than 10 firms among the 1,059 firms in their sample).