

DOES THE INTERNATIONAL DIVERSIFICATION
DISCOUNT VARY BY INDUSTRY AND/OR
FIRM CHARACTERISTICS?

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ABSTRACT

Title: Does the International Diversification Discount Vary
by Industry and/or Firm Characteristics?

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Numerous studies have been undertaken on corporate and international diversification.

While most early research indicates the existence of a diversification discount, later

research reports mixed results (both premiums and discounts). Recent research has even

found a U-shaped, an inverted U-shaped, or an S-shaped relationship between

international diversification and performance. This paper suggests a major reason for

these mixed results is that the success of international diversification is dependent on

specific industry and/or firm characteristics. Therefore, by looking at all firms and

industries in aggregate, past diversification studies have been undertaken at too aggregate

a level to understand how firm and industry specific issues affect international

diversification. This study hypothesizes that the success of international diversification is

dependent upon industry and firm specific advantages such as tacit knowledge,

information technology capability, marketing capability, and international experience.

Industries/firms that possess a significant competitive advantage in one or more of these

areas will likely have an international diversification premium, while those that do not will likely have an international diversification discount. The ability of firms to generate a competitive advantage in these areas varies significantly across industries. Therefore, firms in certain industries are likely to have an international diversification premium, while others will likely have an international diversification discount.

The findings of this study do indicate that in the 30 industry sectors tested, 18 have an international diversification premium while 12 have an international diversification discount. This suggests that international diversification premiums/discounts by industry to exist. The firm specific advantages of tacit knowledge, information technology capability, and marketing capability were found to be positively correlated with firm performance for international firms, while the results of international experience with firm performance were not significant.

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CHAPTER 1

INTRODUCTION AND RESEARCH OBJECTIVES

Overview

There has been a significant volume of research performed in the areas of corporate and international diversification. However, the results of much of this research are contradictory, as several studies find the existence of corporate and international diversification discounts (Berger and Ofek, 1995; Lang and Stulz, 1994; Lins and Servaes, 1999, 2002; Denis, Denis, and Yost, 2002), while other findings suggest that related corporate diversification and international diversification can result in an increase in firm value and, thus, have a diversification premium (Morck and Yeung, 1991; Garrod and Rees, 1998; Gomes and Livdan, 2004; Gande, Schenzler, and Senbet, 2009; Dastidar, 2009). Other findings include the existence of a non-linear relationship between international diversification and firm performance, with those being a U-shaped, an inverted U-shaped, or S-shaped curves (Gomes and Ramaswamy, 1999; Capar and Kotabe, 2003; Ruijgrok, Amann and Wagner, 2007; Lu and Beamish, 2004).

International diversification (ID) is defined as the expansion of the firms' activities across the borders of global regions and countries into different geographic locations and markets (Hitt, Hoskisson, Kim, 1997). It is the geographical breadth of a

firm's international presence (Goerzen and Beamish, 2003) and refers to the portion of operations outside of the home country (as reported by sales, profits, assets or subsidiaries) within the MNE's business portfolio, thus capturing the level of the firm's international involvement (Tihanyi, Griffith and Russell, 2005; Hennart, 2007).

From an international diversification standpoint, study results are mixed. Denis, et al. (2002) indicate that international diversification has a negative impact on firm value. This international diversification discount is also supported by the earlier research of Click and Harrison (2000), Palich, Carini, and Seaman (1996), and Christophe (1997). This could be due to challenges from coordination and control across geography, time, and culture (Hitt, et al., 1997; Wagner, 2004; Lu and Beamish, 2004); the inefficient use of assets (Click, et al., 2000) and the liability of foreignness (Zaheer, 1995; Katrisha and Scordis 1998; Thomas, 2006).

However, other studies find that becoming multinational increases firm value, and that there is an international diversification premium (Errunza and Senbet 1981; Morck, et al., 1991; and Garrod, et al., 1998; Gande et al., 2009; Dastidar, 2009). This is due to firms that expand internationally achieving economies of scale, economies of scope (Kim and Lyn, 1986; Nachum 2003; Capar and Kotabe, 2003; Brock, Yaffe, and Dembovsky,

2006), taking advantage of local resources, and utilizing their intangible assets more effectively (Kotabe, Srinivasan, and Aulakh 2002; Blostermo, et al., 2004; Nachum and Zaheer, 2005; Brock, et al, 2006; Chari, Devaraj, and David, 2007; Gande et al., 2009).

Numerous studies (most of them recent) have found that the relationship between international diversification and performance is non-linear (Gomes and Ramaswamy, 1999; Capar and Kotabe, 2003; Wagner, 2004; Nachum, 2004; Lu and Beamish, 2004; Ruigrok, et al., 2007). Their rationale is that increasing levels of multinationality increases performance up to a point, but beyond this optimal point the costs of international diversification begin to outweigh the benefits, causing a performance decline (Gomes and Ramaswamy, 1999; Ruigrok, et al., 2007). These costs include increasing coordination and control, difficulties managing businesses in multiple markets with diverse cultures, and developing products to meet significant variations in customer needs. Thus, they argue and find that the relationship between international diversification and performance is curvilinear, with benefits exceeding costs up to an optimal point, where eventually the costs of ID outweigh the benefits and performance declines (Gomes and Ramaswamy, 1999).

Several recent studies even suggest the international diversification performance relationship could be that of an S-curve (Lu and Beamish, 2004; Ruigrok, et al., 2007). They suggest that this may occur as a firm realizes excessive costs and initial negative returns when first expanding into foreign markets due to the liability of foreignness (Zaheer, 1995; Thomas, 2006). As the firm's tacit knowledge increases, these costs diminish and they are able to exploit their intangible assets (Lu and Beamish, 2004). However, like the results of studies that yielded the inverted U-shaped relationship, eventually coordination and control costs lead to diseconomies of scale and result in a downward slope to the international diversification-performance curve (Gomes and Ramaswamy, 1999; Ruigrok, et al., 2007).

Research on corporate diversification (CD) has paralleled that of international diversification and an analysis of CD can offer insights into some of the issues related to international diversification. Corporate diversification is defined as a firm that reports sales in more than one business segment (i.e. unrelated business segments (Lins and Servaes, 2002; Mansi and Reeb, 2002; Hyland and Diltz, 2002; Martin and Sayrak, 2003; Fauver, Houston and Naranjo, 2003, 2004)). In one of the first major works on diversification, Rumelt (1974) found that firms with the highest levels of profitability

employed a strategy of diversifying into areas that utilized the firm's core competencies or key resources (related diversification). Conversely, firms that were vertically integrated and diversified into unrelated businesses showed the lowest levels of profitability. This could suggest that when firms internationally diversify, they would have greater success when using related diversification (i.e. using existing lines of business when moving into a new region or country).

Like international diversification, some studies on corporate diversification find the existence of a diversification discount. This is supported by Berger and Ofek (1995), whose findings indicate that corporate diversification reduces the value of a firm by an average of 13% to 15%. This is due to overinvestment in negative net present value projects and the impact of strong business units subsidizing poorly performing business units. Lang and Stultz (1994) also find that there is a negative relation between Tobin's q and diversification. In emerging market countries, corporately diversified firms trade at approximately a 7% discount when compared to single segment firms (Lins and Servaes, 2002). Further evidence of a diversification discount is that firms that have diversified, but decide to refocus on their core business outperform firms that remain diversified (Comment and Jarrell, 1995).

More recent research casts doubt on the corporate diversification discount.

Gomes and Ramaswamy (1999) find that corporate diversification enables a firm to increase its economies of scope and explore new opportunities while taking advantages of synergies between business units. This is similar to the results found by Kim and Lyn (1986) and Nachum (2003) in regard to international diversification.

When bondholder value is taken into account, it is found that any shareholder loss as a result of diversification is offset by an increase in bondholder value. This is due to the risk reduction effect of the diversification (Mansi and Reeb, 2002), which reduces risk to bondholders and increases the value of the bonds, thus offsetting the loss realized by the stockholders. It would seem that this risk reduction effect could also be the case when a firm internationally diversifies and could therefore explain the results of some studies that found ID to reduce firm value (Yung, 2002; Hennart, 2007). This could be an opportunity for future research.

Other studies dispute how the diversification discount was determined and suggest the discount is a result of measurement error (Camp and Kedia, 2002; Hyland and Diltz, 2002; Villalonga, 2004; Dastidar, 2009). The methodologies used by these

studies show that when modeled using different data and methodologies, the diversification discount is reduced or may even turn out to be a premium.

Graham, Lemmon, and Wolf (2002) suggest the corporate diversification discount exists not because the actual diversification destroys firm value, but because the acquired business segment was typically discounted before the actual diversification took place. This could also be the case from an international diversification perspective. However, this issue is yet to be examined from an international diversification standpoint, but does provide opportunity for future study.

Research Objectives

The research objective of this dissertation is to explore international diversification in more detail and potentially shed light on the disparate findings of previous studies. A potential difference in international diversification by industry was discussed by Contractor, Kundu and Hsu (2003), as they suggest that dichotomies in previous studies may be the result of treating all industries the same. In their study of 11 service industries they point out that service industries are fundamentally different from manufacturing industries due to perishability, relative intangibility, and simultaneity of production and consumption. Going even further, they suggest that there are significant

differences within service industries themselves, including capital intensity and knowledge intensity. This work is supported by Capar and Kotabe (2003), who suggest that the relationship between international diversification and performance in manufacturing firms might not apply to firms in service industries.

Therefore, this study posits that a major reason for the mixed results of past research is that the success of international diversification is dependent on specific industry and/or firm characteristics. By looking at all firms and industries in aggregate when building a model, past diversification studies have been undertaken at too high (aggregate) a level in order to understand how firm and industry specific issues impact international diversification. This is because since international diversification success is dependent on certain firm and industry characteristics, the selection of the study sample should significantly affect the findings. This could lead to the disparate results found by previous research.

This study hypothesizes that the success of international diversification is dependent upon certain firm specific advantages. These advantages could include economies of scale, economies of scope, management skill, cost and availability of resources, and intangible assets. Intangible assets include such items as tacit knowledge

(Gupta and Govindarajan, 2000; Mudambi, 2002; Adler and Hashi, 2007; Fang, et al., 2008; Nesta, 2008), marketing capability (brand awareness/customer goodwill) (Morck and Yeung, 1991; Kotabe, et al., 2002 ; Adler and Hashi, 2007; Fang, et al., 2007; Di Benedetto, DeSarbo, and Song, 2008), information technology systems (Bharadwaj, Bharadwaj and Konsynski, 1999; Nachum and Zaheer, 2005; Shin, 2006; Chari, et al., 2007), and international experience (Tihanyi, et al., 2000; Carpenter and Fredrickson, 2001; Herrmann and Datta, 2005; Thomas, 2005). These firm specific advantages can vary widely across firms and industries.

As technology advances and firms implement more sophisticated systems for global coordination and control, these advantages are even found to have interaction effects (Cantwell and Narula, 2001), thus increasing the effect they can potentially have on firm performance. Therefore, firms and industries that possess significant advantages in these areas should be positively affected and will likely have a higher international diversification premium (or lower discount).

Specifically, this research attempts to investigate in which industries firms are likely to have a diversification premium and in which industries firms are likely to have a

diversification discount. It also hypothesizes that these premiums are driven by firm specific advantages in the following areas:

- Tacit knowledge (Gupta and Govindarajan, 2000; Mudambi, 2002; Adler and Hashi, 2007; Fang, et al., 2007; Nesta, 2006, 2008)
- Information technology capability (Bharadwaj, et al., 1999; Nachum and Zaheer, 2005; Mitra, 2005 ; Shin, 2006 ; Chari, et al., 2007 ; Ravichandran, et al., 2009)
- Marketing capability (Morck and Yeung, 1991; Kotabe, et al., 2002 ; Adler and Hashi, 2007; Fang, et al., 2007 ; Di Benedetto, et al., 2008)
- International Experience (Tihanyi, et al., 2000; Carpenter and Fredrickson, 2001; Herrmann and Datta, 2005; Thomas, 2005)

There will be two components to the analysis in this study. First, on an exploratory basis, 30 industry sectors will be analyzed to determine whether these industries have an international diversification premium or discount. Second, the four factors (tacit knowledge, information technology capability, marketing capability, international experience) will be analyzed to determine whether or not these factors are related to international diversification premiums or discounts at the firm level.

Managerial Implications

This research should aid firm management in several areas. First, it should indicate to management whether firms in their industry are likely to have an international diversification discount or premium when moving from being a domestic to an international firm. This should help them with the decision on whether they should internationally diversify. Second, it indicates if any or all of the factors of tacit knowledge, information technology capability, marketing capability, and international experience may be important capabilities in their expansion plans. They could then analyze the investments they have made and the capabilities their firm has developed in each of these areas. This should assist them in determining if they are in a position to internationally diversify.

Organization

The remainder of the dissertation is organized as follows: Section 2 reviews related international diversification literature and performance relationships, formulates the conceptual model and develops the hypotheses; Section 3 describes the research methodology for both industries and firms, the variables and measures, the sample selection criteria, and the data used to generate the empirical results; Section 4 tests the

hypotheses and presents the empirical findings and analysis; and Section 5 discusses the findings, research limitations and future research opportunities. These sections are followed by the references cited and the appendices.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Research Overview

There are numerous discrepancies found in the research on international diversification. International diversification is defined as the expansion of the firm's activities across the borders of global regions and countries into different geographic locations and markets (Hitt, et al., 1997). It is the geographical breadth of a firm's international presence (Goerzen and Beamish, 2003) and refers to the portion of operations outside of the home country (as reported by sales, profits, assets or subsidiaries) within the MNE's (multinational enterprise) business portfolio, thus capturing the level of the firm's international involvement (Tihanyi, et al., 2005; Hennart, 2007). It also identifies the extent of a firm's dependence on foreign markets (Thomas and Eden, 2004).

Past research has used numerous different terms for international diversification. These terms include internationalization, geographic diversification, international expansion, global diversification, globalization, and multinationality. Each term tends to refer to the same strategic management construct as international diversification (Hitt, et al., 2006). For the purposes of this research, the term "international diversification" will

be used exclusively. International diversification entails “a strategy in which a firm expands the sales of its goods or services across the borders of global regions and countries into different geographic markets” (Hitt, Ireland and Hoskisson, 2007).

Denis, et al. (2002) indicate that international diversification has increased over time, as a greater percentage of U.S. firms operate in international markets and existing multinational firms have increased their percentage of sales that come from outside the home country. However, while firms have expanded internationally, is this diversification truly global? Research by Rugman (2003) finds that most of the world’s multinational enterprises are actually focused on their home country or region, and are not truly global. This is evidenced by the world’s 500 largest firms generating an average of 72% of their sales in their home region (Collinson and Rugman, 2008).

Denis, et al. (2002) do find that international diversification has had an effect on firm value similar to that of corporate diversification, with that being a reduction in shareholder value of similar magnitudes. This leads to the conclusion that the costs of international diversification outweigh the benefits. Click, et al. (2000) find that MNEs tend to use their assets inefficiently, as they have high levels of assets relative to the earnings they produce, thus yielding a poor return on assets. Using Tobin’s q , they find

that the discount associated with international diversification is in the range of 8.6% to 17.1%. This is consistent with other studies that find that MNEs are valued at a discount relative to purely domestic firms (Palich, et al., 1996; Christophe, 1997).

However, this research is contradicted by earlier studies of Defusco, Philippatos, and Choi (1988), whose findings suggest that foreign market involvement of U.S. based MNEs is viewed by investors in U.S. capital markets as a potential source of risk, which is compensated for by higher required rates of return on their stock holdings; and that of Errunza and Senbet (1981), whose findings indicate that there is a positive relation between the firm's degree of international involvement (defined as percentage of sales from foreign subsidiaries) and excess market value. In addition, Morck and Yeung (1991) develop and test their theory that a firm can increase its value by internalizing markets for intangible assets. They define multinationality in two ways: the number of foreign subsidiaries of a firm and the number of foreign nations in which it has subsidiaries. Their findings provide confirmation that the degree of multinationality of a firm is positively correlated with Tobin's q and that it is also related to its level of intangible assets.

Another factor to consider is the country into which the firm is expanding.

Faurver, et al., (2003) find that the determinant on whether the diversification is value increasing or decreasing is dependent upon the level of capital market development, international integration and legal systems of the host country. Their findings suggest that international diversifications are the most beneficial when firms move into countries with less developed and less integrated capital markets, but which have a strong legal system. Thus, they are able to take advantage of market inefficiencies in order to utilize local resources, penetrate underserved markets and gain market share, but while still being ensured that their investments are protected via the country's strong legal system (Cuervo-Cazurrra and Genc, 2008).

Similarly, Gande, et al. (2009) find the international diversification premium increases when a firm moves into a country with stronger credit rights than those of the home country. This is a result of the firm now having access to capital at rates lower than they were able to secure in their home country.

Kotabe, et al. (2002) and Gande, et al. (2009) suggest that firms with unique resources (intangible assets) can leverage these resources across international markets. They hypothesize that firms' research and development and marketing capabilities are

two of the factors that allow firms to achieve increased benefits when globally diversifying. Their findings indicate that these two factors moderate the impact of multinationality on firm performance. These findings are also supported by Hitt, et al. (2006).

The discussion of this previous research poses the question; why do studies on corporate and international diversification vary so widely in their results? From an international diversification standpoint, we suggest it is because these studies have been performed at too aggregate a level to truly understand the actual impacts of international diversification. Most studies have taken a macro view and have tended to look at all firms and industries in aggregate. However, there are many industry and firm specific factors that may make it either advantageous or disadvantageous for a firm to internationally diversify. For example, firms that have developed proprietary products through extensive research and development should, upon entering an international market, be able to increase profits and firm value via the increased sales they receive on these high margined products (Delios and Beamish, 1999; Kotabe, et al., 2002).

The same can be said for firms that have a better understanding of foreign markets, high levels of management skill and/or tacit knowledge (Mudambi, 2002; Fang,

et al., 2007), international experience, strong marketing capability (Kotabe, et al., 2002; Blomstermo, et al., 2004; Brock, et al., 2006, Fang, et al., 2007, Di Benedetto, et al., 2008), and advanced proprietary information systems (Nachum and Zaheer, 2005; Mitra, 2005; Shin, 2006; Chari, et al., 2007; Ravichandran, et al., 2009). Conversely, firms in industries such as insurance, where the product requires extensive tailoring to each specific country, culture, legal system or market are not likely to be able to take advantage of the aforementioned benefits and, thus, may not be well suited for international diversification (Katrishen and Scordis, 1998).

Global Industry Analysis

The internalization theory posits that direct foreign investment occurs when a firm can increase its value by internalizing markets for its intangible assets (Morck and Yeung, 1991; Hitt, et al., 1997). These assets include superior production processes, patents, marketing capabilities, managerial skills, proprietary products, the ability to innovate, information technology systems, or marketing capability/brand awareness/consumer goodwill (Hitt, Hoskisson and Ireland, 1994; Kotabe, et al., 2002; Blomstermo, et al., 2004; Brock, et al., 2006). As a result, firms in industries that are suited to possessing advantages in these areas should have a benefit in international

diversification and, thus, gain competitive advantage over their domestic rivals.

Similarly, firms and industries that possess more of these types of capabilities than their peers should have an advantage over their competition when competing globally.

There are numerous factors that can be exploited in order to gain competitive advantage. These include management skill and experience, economies of scale, economies of scope (Katrishen and Scordis, 1998; Mathur, Singh and Gleason, 2004, Delgado-Gomez, Ramirez-Aleson and Espita-Escuer, 2004), and the benefits of inter-firm relationships and transactions. Additional advantages can be gained from the reduction of transaction and coordination costs, and by exploiting intangible assets (Hitt, et al., 1997; Nachum and Zaheer, 2005; Hitt, et al., 2006; Gande, et al., 2009). These intangible assets include tacit knowledge, human capital (Hitt, et al., 2006) marketing capability, proprietary products, information technology systems and a strong research and development capability (Morck and Yeung, 1991; Kotabe, et al., 2002; Zhang, et al., 2007). These intangible asset advantages are also supported by Defusco, et al. (1988), who found that the returns of U.S. based MNEs are positively correlated with their market power.

Cantwell and Narula (2001) find that globalization has increased the interaction between many of these previously mentioned firm specific advantages. This is due to increases in competition and rapid advances in communications and other technologies; which have resulted in increased cross-border interdependence and the integration of production and markets for goods, services, and capital. Thus, firms with strong competitive advantages should be able to leverage these capabilities globally in a coordinated way to increase firm value, resulting in a successful international diversification.

Since firms that possess one or more of these competitive strengths should be more effective at competing internationally, it would also follow that those firms that possess strengths in these areas would be more successful, generate greater revenues and profits (and/or reduce costs) and, therefore, have a higher international diversification premium (lower discount).

It is also possible that certain industries present the opportunity for firms to exploit more of these competitive advantages than firms in other industries. For example, it is very expensive to develop a new product in the pharmaceutical industry; however, once it is developed, it is relatively inexpensive to manufacture, market, and sell the

product. Therefore, once the research and development costs have been expended to develop a new product, the profit margins are extremely high for the product's sales. Thus, the more markets in which the product can be sold, the greater the firm profits and the greater the firm value (Hennart, 2007). This is also the case in other industries where R&D is a significant component of sales, such as the media industry. In the media industry it is expensive to develop the product, but inexpensive to replicate and distribute it (Jung and Chan-Olmsted, 2005). Therefore, for industries that are R&D intensive, once the product has been developed, it is usually very profitable to sell it in as many markets as possible.

Firms in industries that require vast repositories of knowledge and have large economies of scale can gain significant competitive advantage if they are able to expand internationally. Computer chip making is a current example; as significant proprietary technical knowledge is required and the economies of scale are so large, purely domestic firms can no longer compete effectively in this industry. It is a requirement to be a global firm, or at a minimum have global alliances in order to reach the size and scale to be able to invest in the necessary research and development in order to develop and manufacture competitive products. Thus, computer chip firms that are global have a significant

competitive advantage over domestic firms. The same can be said for the chemical industry, which also requires significant investments in R&D in order to develop leading edge, proprietary products (Mathur, et al., 2004).

As another example, information technology systems can provide firms with a competitive advantage and can reduce or eliminate some of the challenges posed by cultural, time and geographic distance; thus, reducing the coordination and control costs of doing business internationally (Nachum and Zaheer, 2005; Ravichandran, et al., 2009). Additional advantages from the effective development and deployment of IT systems include streamlining work flows, using electronic data interchange with customers and suppliers (Shin, 2006; Chari, et al, 2007), enterprise resource planning, and improving the firm's ability to think globally but act locally. Thus, firms with strong IT systems would be able to improve their competitive position when internationally diversifying and, therefore, increase their international diversification premium (reduce discount).

Therefore, it would appear that firms in industries that tend to be able to capitalize on these previously mentioned firm/industry specific advantages should have a benefit from going global, while firms in industries that are not able to capitalize on these types of benefits would be hurt by internationally diversifying. This is the key distinction that

has been overlooked in much of the previous research on international diversification premiums and discounts. While these studies tend to take a macro view of international diversification, it should be conducted on an industry specific basis in order to capture the differences in advantages and disadvantages between industries. These differences suggest that firms in industries with certain advantages should benefit more from international diversification than firms in industries without these advantages. This poses the following research question:

Will certain industries find international diversification to be value increasing for firms in that industry, while will other industries find international diversification to be value decreasing for firms in that industry?

In order to examine the preceding research question, the first component of this study will be to explore whether the international diversification discount (premium) does vary by industry. This will be done by developing a model that compares the valuation discount (premium) of global firms in a given industry with the valuation of domestic firms in that same industry. This will be done for the 30 industries identified in the study sample. The results should identify which industries are advantaged by going global and which may be better off by staying domestically focused.

Industry/Firm Competitive Advantages

As discussed previously, certain industry/firm specific advantages can have a significant impact on whether an individual firm might have an international diversification premium or discount. While certain industries are more conducive than others in being able to capture the benefits of international diversification; on a firm specific basis, it is up to firm management to capitalize on firm capabilities to build competitive advantages. In industries with significant opportunities for international diversification, firm management must capitalize on these advantages more effectively than their competitors.

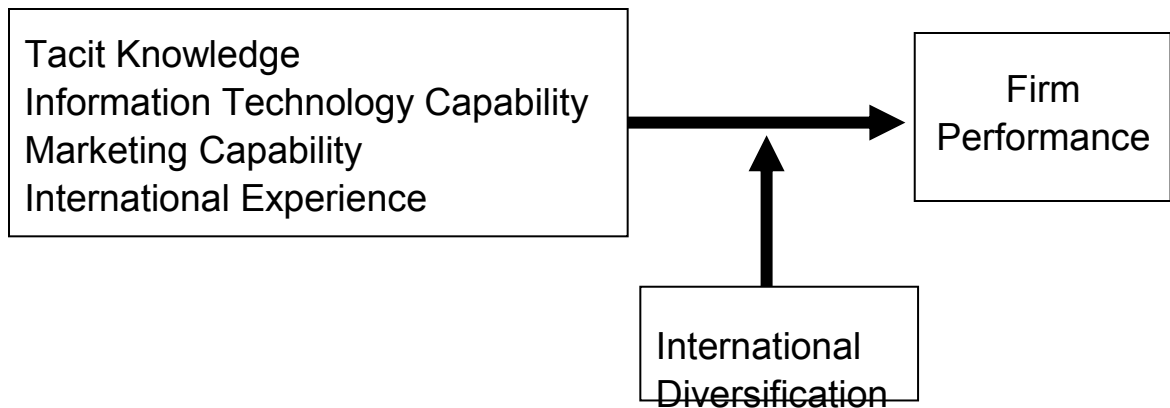
However, in industries that present the opportunity for few, if any, advantages of going global; it may be difficult to overcome the liability of foreignness (Zaheer, 1995) and firm management may be prudent to keep the firm domestic. Therefore, firm management must understand the capabilities and potential of the firm and industry, and then develop their strategy accordingly. Thus, international firms in certain industries that do a superior job of exploiting their competitive advantages should have increased firm value over those firms that stay domestic.

The following four sections will develop hypotheses for the following industry/firm specific attributes that can help provide firms with competitive advantage when competing globally (see Figure 1):

- Tacit Knowledge
- Informational Technology Capability
- Marketing Capability
- International Experience

Figure 1

Industry Characteristics, International Diversification, and Firm Performance



The Impact of Tacit Knowledge on Firm Performance

Multinationality is value increasing for firms with significant intangible assets (Yung, 2002). For example, the level of a firm's tacit knowledge and its knowledge management can be viewed as a source of competitive advantage (Mudambi, 2002; Lu, Tsang, and Peng, 2008). Tacit knowledge (or experiential knowledge) is defined as knowledge that cannot be taught, but can only be learned through personal experience (Penrose, 1966; Hadley and Wilson, 2003). Along the same line, the effective use of human capital (Hitt, et al., 2006) can provide a firm with an internalization advantage. This type of firm knowledge could include being a leader in its industry in research and development capabilities, production process expertise, extensive market knowledge, or an ability to provide customers with a highly skilled professional service offering (legal, accounting, etc.). This can yield a key competitive advantage, as since tacit knowledge is difficult to teach, it is hard to acquire and generally can take considerable time to learn through experience (Fang, et al., 2007; Fang, et al., 2008; Zhang, et al., 2007). Effectively managing and utilizing this tacit knowledge can lead to the development of proprietary products or service offerings, which should enable the firm to capture high

margins in the marketplace. Previously stated industry examples include products in the pharmaceutical industry and specialty computer chip manufacturing.

In a specific study of the international diversification of Japanese firms, Chang (1995) found that with a well planned strategy and strong execution, international diversification can be successful. He studies the sequential entry strategy of Japanese firms into the U.S. market. By leading with a product that has a strong competitive advantage over their U.S. counterparts, they were able to successfully enter the U.S. market and gain market share. The market knowledge they gained from the learning curve the Japanese companies experienced put them in a strong position to add other products and/or lines of business to their U.S. operations.

In recent studies of European based firms, it is found that international diversification has a positive relationship with firm performance (Wagner, 2004; Mathur, et al., 2004; Delgado-Gomez, et al., 2004), with firm knowledge development and competence transfer being key drivers of this positive relationship (Wagner, 2004; Fang, et al., 2008). Since individual European countries are significantly smaller from a market standpoint than the United States, it is critical for European firms to successfully go global. Benefits include exploiting market imperfections, internalization of information,

portfolio diversification, tax reduction, financial and managerial synergies, economies of scale and scope, and positive growth opportunities (Mathur, et al., 2004). Many of these benefits achieved by European firms are derived from the use of the firm's knowledge based resources, which include technological know-how, patents, tacit knowledge, and management skill (Delgado-Gomez, et al., 2004).

While most studies have been performed on manufacturing firms, Capar and Kotabe (2003) studied service firms and found a U-shaped international diversification-performance relationship. This is similar to that found by Thomas (2006), who in a study of Mexican firms attributes the U-shaped curvilinear relationship to the liability of foreignness. In their study of German service firms, Capar and Kotabe suggest differences in the nature of service firms versus manufacturing firms lead to the previously discussed inverted U-shaped curvilinear relationship between ID and performance to become non-inverted. This is because service industries have the following characteristics:

1. Many governments have restrictions on foreign firms operating in service industries in their country, thus reducing efficiency and increasing costs.

2. Services provided in foreign countries typically have to be adapted more than products, thus increasing costs.
3. Since services are typically produced and consumed at the same time, they must be produced in the host country; thus they require an immediate local presence. This is opposed to product firms that typically first enter a country by the less expensive method of exporting.

Therefore, for service industries, upon entering a new country, firm performance initially declines due to these increased costs. Once economies of scale are achieved and firm knowledge is increased through organizational learning, the performance decline should cease and turn into a performance increase. Thus, for service industries, the result is a U-shaped curvilinear relationship between international diversification and firm performance.

Two recent studies have actually found that the international diversification-performance relationship is that of an S-curve (Lu and Beamish, 2004; Ruigrok, et al., 2007). Similar to Capar and Kotabe (2003), this may occur as a firm realizes excessive costs and initial negative returns (or positive returns at a reduced level) when first expanding into foreign markets due to the liability of foreignness (Zaheer, 1995). Zaheer

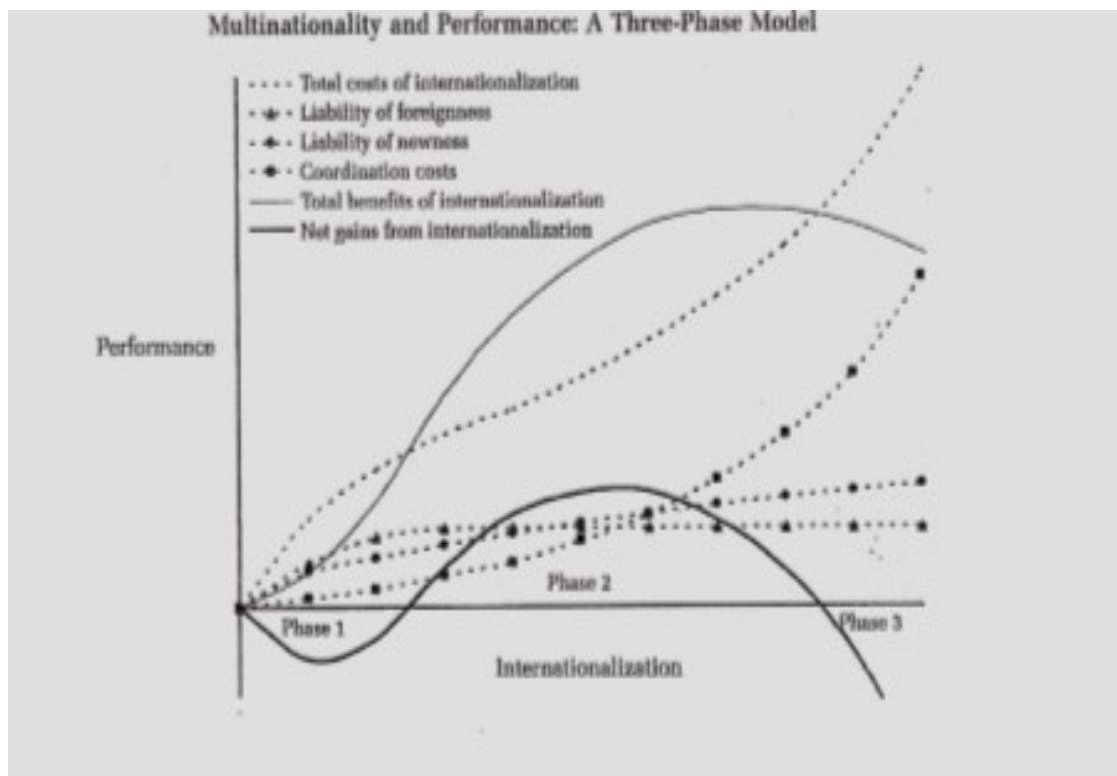
(1995) describes the following as costs a firm may encounter when entering a foreign market:

1. Costs associated with travel, transportation and coordination over distance and across time zones.
2. Costs based on a firm's unfamiliarity with the customs, cultures, and business practices of the host country.
3. Costs resulting from host country nationalism and the lack of legitimacy of foreign firms.
4. Costs from the home country, such as restrictions on high technology sales.

These costs diminish as the firm's experience increases and it is able to exploit its intangible assets (i.e., technological know-how, patents, tacit knowledge, management skill), information technology systems (Bharadwaj, et al., 1999; Chari, et al., 2007), and consumer goodwill (Lu and Beamish, 2004). This results in an acceleration of profits and a more positive slope on the international diversification-performance curve. However, like the results of studies that yielded the inverted U-shaped relationship, eventually coordination and control costs lead to diseconomies of scale and result in a downward slope on the international diversification-performance curve, resulting in an S-shape

(Gomes and Ramaswamy, 1999; Ruigrok, et al., 2007). See the Three-Phase Model of the S-shaped curve below, which was developed by Lu and Beamish (2004):

Figure 2
International Diversification S-shaped Curve



Studies of international diversification and performance in service firms yield similar results. Many of the advantages of service firms going global are the same as those for industrial firms; however, there are also some unique differences. The advantages include efficiencies from economies of scale, economies of scope (Kim and

¹ Lu, Jane W. and Paul W. Beamish, 2004, International Diversification and Firm Performance: the S-Curve Hypothesis, *Academy of Management Journal* 47 No. 4: p.600.

Lyn, 1986; Capar and Kotabe, 2003; Nachum, 2003; Brock, et al., 2006), and experiential knowledge (Blomstermo, et al., 2004; Brock, et al., 2006). Many of the costs are also similar, such as coordination and control, travel, transportation, dealing with diverse cultures, varying business practices, and host country government regulations (Katrishen and Scordis, 1998).

However, what is different for service firms in international diversification is that legal systems, laws, languages and cultures (Capar and Kotabe, 2003) can become much more significant barriers in service firms than in industrial firms. This is because services often involve the customer interacting with a person (i.e. firm employee, agent, or alliance partner), versus buying a product. It is typically much more difficult and expensive to transfer knowledge in the process of educating and training employees on how to do business in a different country and/or culture than it is to adapt a product (Brock, et al., 2006) to these same challenges. This increased requirement to transfer knowledge indicates why it can be more difficult for a service firm to diversify internationally than it might be for an industrial firm. Thus, due to the increased knowledge transfer requirement, a service firm may initially under-perform an industrial firm when internationally diversifying.

Brock, et al. (2006) empirically tested this hypothesis and found that law firms that follow their existing clients overseas have an international diversification premium. This is logical, as following home clients overseas would allow them to utilize their knowledge base of the clients and provide the law firms with an immediate revenue stream at a minimal cost. Thus, service firms going global via following their clients overseas would be expected to see a positive impact on firm performance; while those firms that merely expand overseas could be expected to see the U-shaped performance curve found by Capar and Kotabe (2003).

Similar to studies of industrial firms, other studies of service firms have found that the relationship between international diversification and performance has an inverted U-shaped curvilinear relationship (Katrishen, et al., 1998; Brock, et al., 2006).

In a study of firms in the media industry, Jung and Chan-Olmsted (2005) find that related product expansion and international diversification yield better financial performance.

The media industry is a good example of an industry that should benefit from global expansion. The primary reason is that much of the product in the media industry involves the transfer of knowledge. This is because in media, gathering and producing the knowledge is very expensive, but replication/distribution costs are typically low. In some

ways the media industry is actually similar to manufacturing in that it is research and development intensive (Jung and Chan-Olmsted, 2005), where the cost of product development is high, but manufacturing costs are relatively low.

In summary, a strong knowledge base can provide internationally diversifying firms with the competitive advantages of extensive market knowledge, cultural understanding, improved production processes, enhanced service and support to customers, strong research and development capabilities, and proprietary product and service offerings. Therefore, a higher level of tacit knowledge should make a firm more successful globally, and this should lead to a higher international diversification premium (or smaller discount) for the firm. Hence, the following hypothesis:

Hypothesis 1: The firm's level of tacit knowledge is positively related to its international diversification premium.

Multiple studies use research and development expenditures divided by firm sales (R&D intensity) as a proxy for firm knowledge. In their study on how firm resources affect the performance of a firm's overseas subsidiaries, Fang, et al. (2007) and Fang, et al., (2008) use R&D intensity as a proxy for technological knowledge, while Nesta and Saviotiti (2006) and Nesta (2008) use R&D intensity as a proxy for a firm's knowledge

capital. Nachum and Zaheer (2005) use R&D intensity as a proxy for knowledge, while in their study on knowledge flows in the multinational enterprise, Adler and Hashi (2007) use R&D intensity as a proxy for knowledge. Additionally, Lu and Beamish (2004) use R&D intensity as a proxy for technological know-how and patents. This study will use two measures of tacit knowledge. First, similar to the previously mentioned studies, this research will use R&D intensity as a proxy for tacit knowledge. Second, it will use firm R&D spending divided by number of the number of patents received over three years as a proxy for tacit knowledge. Since patents largely represent explicit/codified knowledge, more R&D spending per patent suggests that the firm had more knowledge than what was explicitly documented. Thus, the firm should also have a higher level of tacit knowledge.

The Impact of Information Technology on Firm Performance

Research has recently begun to investigate the impact of information technology (IT) investments on internationally diversified companies. This is because the effective development and deployment of information technology systems can provide a firm with a competitive advantage (Bharadwaj, et al., 1999; Chari, et al., 2007). Benefits of effective information technology systems include improved communication, improved customer service, increased product and service quality, increased corporate flexibility

(Bharadwaj, et al., 1999) and the reduction or elimination of some of the challenges posed by time and distance of doing business across the globe (Nachum and Zaheer, 2005; Ravichandran, et al., 2009). IT can also help in leveraging firm specific assets across international borders. Information technology assists in accomplishing this by improving organization wide awareness of opportunities and firm capabilities; increasing the ability of the firm to think globally, but act locally; and improving the coordination and control of an international enterprise (Mitra, 2005; Chari, et al, 2007; Ravichandran, et al., 2009).

More specifically, as it relates to international diversification, some of the challenges effectively deployed information technology systems can address are:

Coordination and control: IT can streamline workflows, provide easily accessible repositories of knowledge, and improve customers' and suppliers' ease of doing business with the firm by using electronic data interchange (Mitra, 2005; Chari, et al. 2007). In addition, groupware products can make it easy for geographically dispersed organizations to communicate, plan and synchronize changes, exchange information, develop and view project or product plans, and monitor activities (Boutellier, et al., 1998; Ravichandran, et al., 2009). Thus, the coordination and control costs that arise from doing business on a

global basis can be significantly reduced by the ability of firm management to communicate more effectively and have increased and more timely access to important management/financial data.

Thinking globally, but acting locally: Doz and Prahalad (1984) indicate that MNC's must strike a balance between responsiveness at the country level and central coordination for global competitiveness. They indicate that successful companies use management tools to coordinate globally, but still be locally responsive. Information technology is one of these key tools that can help to leverage firm specific assets across international borders. IT assists in accomplishing this by improving organization wide awareness of opportunities and firm capabilities around the globe. It can also gather local customer information and requirements electronically such as via website hits or email surveys; and then incorporate that information into product designs that can be developed globally, but have the capability for easy modification to suit the requirements of local environments (Nachum and Zaheer, 2005; Shin, 2006).

Enterprise Resource Planning (ERP) systems can also assist in this regard. ERP systems provide the ability to capture, classify and integrate local information into corporate databases where tradeoffs can effectively be weighed and product designs

undertaken that maximize global market opportunities (Chari, et al, 2007). Thus, the effective use of information technology can increase the ability of the firm to think globally, but act locally.

Entrance into new markets: IT can help reduce the cost of entering new markets by providing the ability to communicate and learn about customers without necessarily having a physical presence in the host country. This can be accomplished by information gathered from websites and via surveys (Zaheer and Manrakhan, 2001). Using data mining on this information could potentially provide better market knowledge than an actual presence in the country or, if local resources exist, the mined information can enhance the knowledge of these resources. IT can also provide for improved service when entering these new markets, such as offering 24 hour help desks and other forms of support that otherwise may not be economically feasible in the host country (Nachum and Zaheer, 2005).

A specific example of how investments in information technology have improved a firm's ability to conduct business internationally is as follows: In a case where the physical distance, time difference, and culture distance is large, such as a firm headquartered in North America with operations in Asia; technology has greatly

improved the firm's ability to monitor its Asian operations. As recently as fifteen years ago the monitoring process would typically consist of reports that were mailed from the Asian subsidiaries to executives at headquarters. There was a delay between when it was sent and then received; these reports might then be followed up by a phone conversation with questions. Several times a year executives might travel to Asia to see some of the operations or the Asian executives might come to the North American headquarters. As a result of this distance, information flow was both limited and sporadic, and North American executives did not gain a strong understanding of their Asian operations. Thus, their ability to monitor was very limited and had minimal effectiveness. Without a strong understanding of the foreign operation and a limited ability to monitor, typically, as long as business objectives were achieved, the foreign subsidiaries were often "left alone" to run their operations.

Today the environment is completely different. With advances in computer and communications technology, executives in North America have simultaneous access to all of the same information as do their executives in Asia. Reports and presentations can be emailed around the world instantaneously in preparation for worldwide video conferences or conference calls. Thus, instead of monitoring Asian operations

sporadically, they can be monitored continuously. This constant stream of information also improves the headquarters executives' knowledge of their Asian operation, therefore improving the understanding of the subsidiary operations, foreign markets, and the quality of the monitoring. Therefore, this increased information flow should lead to an improvement in the quality of decision making by the headquarters executives.

In summary, the effective deployment of information technology systems can eliminate some of the challenges posed by cultural or geographic distance and reduce the cost of others (Nachum and Zaheer, 2005; Mitra, 2005; Shin, 2006). This improves the firm's ability to monitor, share ideas, take advantage of emerging opportunities, understand within firm "best practices", and become more tightly linked with customers and suppliers (Chari, et al., 2007, Ravichandran, et al., 2009).

Therefore, when going global, firms with superior information technology systems should have a competitive advantage over firms that are not as well equipped.

Hence, the following hypothesis:

Hypothesis 2: The firm's level of investment in information technology systems is positively related to its international diversification premium.

Previous research uses a variety of proxies in representing firm investment in information technology. In their studies on how investment in IT impacts firm performance, Bharadwaj, et al. (1999) and Ravichandran, et al. (2009) use annual information technology spending divided by the firm's annual sales (IT intensity) as a proxy for the contribution investment IT makes to the firm. However, Chari, et al., (2007) measure IT intensity as annual IT expenditures divided by the number of employees. Using a third approach, Kobelsky, Hunter and Richardson (2008) define IT intensity as annual IT expenditures deflated by the market value of the firm at the beginning of the year. Since the firm market value is already used in determining Tobin's q , we define IT intensity in a similar way to how we defined R&D intensity and advertising intensity; this being annual firm IT expenditures divided by annual firm sales (Bharadwaj, et al., 1999; Ravichandran, et al., 2009).

The Impact of Marketing Capability on Firm Performance

An advantage when going global is to have strong marketing capabilities that can create a high level of brand awareness (Kotabe, et al., 2002). While proprietary products and services can command a price premium in the marketplace, having a strong brand image (consumer goodwill) can also provide a firm with pricing power (Fang, et al.,

2007). This pricing power can enhance the product's margin over and above what a similar product without the strong brand image might command. It can be costly to build this marketing capability that generates the brand image, so in order to take advantage of a product or brand's consumer goodwill, most firms with products or services that have this strong brand image would benefit by selling them on a global basis.

Kotabe, et al. (2002) suggest that firms with unique resources (intangible assets) can leverage these resources across international markets. They hypothesize that firms' marketing capabilities (which can generate brand awareness) are one of the factors that enable firms to achieve increased benefits when globally diversifying. Their findings indicate that a firm's marketing capabilities enhance the effect of multinationality on firm performance. These findings are also supported by Hitt, et al., (2006).

Marketing knowledge is the capability to analyze markets, build and maintain brands, and develop plans to sell products or services (Fang, et al., 2007). While it is difficult to build a brand, successfully doing so can yield a sustainable competitive advantage because it is rare, valuable, and can be difficult for competitors to imitate. In their study of Japanese firms, Fang, et al. (2007) find that a firm's marketing knowledge is positively associated with the firm's long-term performance.

One of the key factors in staying competitive on a long-term basis is the ability to radically innovate and develop new products and markets. In studies in Japan and the United States, Di Benedetto, et al. (2008) find that marketing capability can also lead to greater marketing innovation. This can improve a firm's ability in segmenting markets, effectively targeting these segments, and developing and implementing marketing programs. Thus, firms with a strong marketing capability can lead to the firm outperforming its competitors.

In examining both corporate and international diversification, it is found that performance is enhanced when firms are able to leverage their brand by having a focused product approach (i.e. stays within the same SIC (standard industry classification) two digit code), but a broad approach to international diversification (Tongli, Ping, and Chiu, 2005; Chang and Wang, 2007). In a study of firms based in Singapore, in addition to previously stated benefits of international diversification, Tongli, et al. (2005) suggest that internationally diversified firms with strong brands are better able to counter aggressive expansion by competitors, take advantage of market imperfections in emerging economies, and not be held hostage to the fluctuations of demand and constraints of supply in any one market.

In multiple studies of European based firms, it is also found that international diversification has a positive relationship with firm performance when firms possess intangible resources, such as significant consumer goodwill (Wagner, 2004; Mathur, et al., 2004; Delgado-Gomez, et al., 2004). Lu and Beamish (2004) suggest that for a firm to develop intangible assets such as a strong marketing capability, it requires significant investments in financial capital, time, and human capital. Also, these intangible assets are not likely to depreciate significantly when put to use in new market opportunities (Morck and Yeung, 1998). Therefore, a firm should utilize these intangible assets by internationally diversifying and deploying them in as many markets as possible. Confirming their hypotheses in a study of 1,059 Japanese firms, Lu and Beamish (2004) found that firms that invested in intangible assets to generate strong brand names and consumer goodwill achieved a greater level of profitability.

In summary, it is advantageous to internationally diversify when a firm has strong marketing capabilities that can generate brand awareness/consumer goodwill, thus potentially increasing product sales and product pricing power, and putting in place a barrier to competitive entrants. Therefore, given that a firm will pursue an objective of

maximizing profits and firm value by utilizing a strong brand image on a global basis, the following hypothesis is presented:

Hypothesis 3: The firm's level of investment in its marketing capability is positively related to its international diversification premium.

Previous research uses advertising expenditures divided by firm sales (advertising intensity) as a proxy for variables such as marketing capability, brand awareness and consumer goodwill. In their cross-industry studies on how firm resources impact the performance of a firm's overseas subsidiaries, Fang, et al. (2007) and Fang, et al. (2008) use advertising intensity as a proxy for marketing knowledge. In their research on how intangible assets impact the performance of multinational firms, Morck and Yeung (1991) use advertising intensity as a proxy for consumer goodwill, while Kotabe, et al. (2002) use advertising intensity as a proxy for a firm's marketing capability. Additionally, Lu and Beamish (2004) use advertising intensity as proxies for brand names and consumer goodwill. Therefore, this study will use advertising intensity as a proxy for marketing capability. As an alternative measure, advertising expenditures plus SG&A expense divided by firm sales will also be used.

The Impact of International Experience on Firm Performance

Due to the complexities of running a global organization, international experience is required to be able to effectively capitalize on multinationality (Thomas, 2005). While a firm may be very successful domestically, international experience is necessary in order to understand cultural differences, market opportunities, effective management approaches, governmental issues, risks, and optimal market entry modes (Carpenter and Fredrickson, 2001; Wally and Becerra, 2001). Without a proper understanding of these issues, firm management can expose the company to unacceptable levels of risk. For example, if a firm expands internationally, but misunderstands factors such as consumer tastes, government regulations, existing distribution methods or possible retaliation from local/multinational firms, it could result in costly or even fatal mistakes for the firm (Tihanyi, et al., 2000).

International experience is also usually required for managers to have the mindset and confidence to be willing to undertake an international operation and/or expansion (Sanders and Carpenter, 1998; Hermann and Datta, 2005). Evidence of the importance of international experience in entering new markets is provided by Chang (1995) in his study of the sequential entry strategy of Japanese firms into the U.S. market. Japanese

firms entered the U.S. market sequentially in order to gain international experience and take advantage of the organizational learning curve before making further investments. Once they had gained this experience they were in a position to add other products and/or lines of business to their U.S. operations. This is evidenced by Japanese accumulated foreign direct investment of assets in the U.S. increasing from 19% in 1980 to 31% in 1987².

Also providing support that international experience is important for managers to undertake international expansion are Townsend, Yeniyurt, and Talay (2009), who found that past global experience gained through market entries facilitates future international expansion. Thus, international experience is one of the required components for firms to have the confidence and knowledge for a successful international expansion.

International experience also helps to dictate the absorptive capacity of firm management, and thus, the rate at which the firm can internationally expand. In a European study it was found that the speed at which the international expansion takes place has an impact on firm performance. A relatively slow speed of foreign expansion leads to performance improvements, as firms gain international experience, increase their

² Sea Jin Chang, "International Expansion Strategy of Japanese Firms: Capability Building Through Sequential Entry," *Academy of Management Journal*, Vol. 38, No. 2, p. 383.

knowledge base and gradually absorb the new complexity level generated by the expansion. However, when a firm expands its international operations too rapidly (i.e. enters too many new countries or markets at a rate that exceeds its absorptive capacity (Cohen and Levinthal, 1990), it can lead to firm value destruction (Wagner, 2004). This is due to the absorptive capacity of firm management, which has a negative moderating impact on the speed at which the firm can expand. It is this absorptive capacity and the capability of firm management that dictates the time it takes to overcome the liability of foreignness from each new market entered (Zaheer, 1995; Wagner, 2004). If firms wish to expand more rapidly than their existing absorptive capacity will allow, they can hire additional management talent that possesses international experience. Otherwise, they must proceed at an expansion pace that ensures current management is gaining enough international experience not to make mistakes that can lead to a reduction in firm value. Therefore, it appears that these Japanese and European studies agree that international experience is critical for firms to successfully internationally diversify.

In summary, international experience provides firm management with the understanding of foreign markets, cultural differences, effective management approaches, governmental issues, risks, and optimal market entry modes, (Carpenter and Fredrickson,

2001; Wally and Becerra, 2001) to lead the firm successfully into new international markets. It also provides them with a component of the required management skill and confidence necessary in order to undertake the international expansion (Sanders and Carpenter, 1998; Hermann and Datta, 2005). Therefore, firms with extensive international experience should perform better when internationally diversifying than firms with little to no experience. Hence, the following hypothesis:

Hypothesis 4: The firm's level of international experience is positively related to its international diversification premium.

Much of the research relating international experience to a firm's international diversification premium has been performed by using survey data and proxies such as level of international education, international work experience, and management of an international department (Sambharya, 1996; Tihanya, et al., 2000; Carpenter and Fredrickson, 2001; Wally and Becerra, 2001; and Hermann and Datta, 2005). However, with over 4,000 companies in our database, we do not have access to this level of data for the top management team members' international experience. Therefore, in measuring international experience, we use the number of geographies in which the firm operates as a proxy. Compustat provides data on the number of geographies (regions) in which the

firm has subsidiaries. It follows that the greater the number of the world's geographies in which a firm operates, the more international experience it should have acquired.

The Moderator Effect of International Diversification on the Relationships between the four Independent Variables and the Firm's International Diversification Premium

In the first phase of the analysis (Section 2.3) we examined the existence of international diversification premium/discount by industry. We did this by proposing and exploring the research question: Will certain industries find international diversification to be value increasing for firms in that industry, while will other industries find international diversification to be value decreasing for firms in that industry? In exploring this research question, we analyzed whether the international diversification discount (premium) does vary by industry. This was done by developing a model that compares the valuation discount (premium) of global firms in a given industry with the valuation of domestic firms in that same industry. The results should identify which industries are advantaged by going global and which may be better off by staying domestically focused.

In the second phase of the analysis (sections 2.4 to 2.7) we identified four factors that are industry/firm specific attributes that can help provide firms with competitive

advantage when competing globally. These are tacit knowledge, information technology capability, marketing capability and international experience. We developed and tested a hypothesis for each factor in order to determine if these factors did have a positive relationship with firm performance when a firm is internationally diversified.

Assuming that in phase one of the study we find that international diversification premiums/discounts do exist on an industry specific basis, indicating that the industry does matter; and that in phase two we find that some or all of the four factors have a positive relationship with firm performance; then in this section of the analysis (third phase) we will tie the first two phases together by examining international diversification-firm performance at the firm level by industry. Since hypotheses H1 to H4 are generic and “industry-free” (i.e., stated as if no industry effect exists), they hypothesize the main/direct effect of the four independent variables on firm performance (measured by the firm’s international diversification premium / discount). Therefore, in order to understand how a firm’s international diversification level affects the extent of the relationship between the four independent variables and firm performance, the following moderator hypothesis is developed:

Hypothesis 5: If a firm is multinational, the effect of the independent variables on firm performance is projected to be positively related to the level of international diversification.

Thus, the following:

- If the industry has a diversification premium, ID has a positive moderator effect.
- If the industry has a diversification discount, ID has a negative moderator effect.

Once H5 has been tested, comparisons can be made between the industries that have a diversification premium and the four factors of tacit knowledge, information technology capability, marketing capability, and international experience. This would provide firm management with guidance in determining which factors may be the most important to their industry when internationally diversifying. It would also provide firm management with threshold targets for the factors, indicating the average level of investment that was made by successful internationally diversified firms in their industry. This could provide significant assistance to firm management in setting their own investment targets in areas involving the four factors.

International Diversification Differences among Industries

We have hypothesized that some industries will have international diversification premiums while others will have international diversification discounts. In Section 2.8 we suggested that the international diversification/firm performance relationship is moderated by the four factors of tacit knowledge, information technology capability, marketing capability and international experience. We suggested that this relationship should be positive for industries found to have an international diversification premium at the industry level, while this relationship should be negative for industries that have an international diversification discount at the industry level. In this section we will look at certain industries to see if we would expect them to have an international diversification discount or premium.

In knowledge based services industries such as advertising, marketing research, publishing, securities, diversified financial services (Contractor, et al., 2003), legal services (Nachum, 2003; Brock, et al., 2006), accounting, consulting, and information technology services (Nachum, 2003) and media (Jung and Chan-Olmsted, 2005), firms may reap the benefits of international diversification earlier than capital intensive based industries (air transportation, construction, hotel, restaurant, wholesale trade, retail trade,

and trucking and shipping (Contractor, et al., 2003; Nachum, 2003). This is likely due to a lower total capital investment cost; following home clients overseas, thus yielding an immediate revenue stream; leveraging their human capital knowledge base over a larger customer set; taking advantage of a strong brand; and greater global standardization, which lowers costs. Finding a non-linear relationship between firm performance and international diversification, Capar and Kotabe, (2003) study German service firms and find that for the industries of retail/wholesale distribution, utilities, information technology services and tourism, the ID/firm performance relationship was negative until an 18% foreign sales to total sales (FSTS) threshold was reached, after which the relationship turned positive; thus yielding a U-shaped relationship.

The importance of global standardization is highlighted by the insurance industry, where a lack of standardization due to differences in laws and practices in different countries makes it costly to do business internationally, thus making international diversification less attractive in the insurance industry than in other financial service industries (Katrishen and Scordis, 1998).

Given this previous research, we would expect most knowledge based service industries to have an international diversification premium; while industries that are

capital based or have low global standardization would have a lower premium or even a discount. These findings are supported by Brock, et al. (2006) who find that in the knowledge based legal industry there is a positive ID/firm performance relationship.

Therefore, this yields the following hypothesis:

Hypothesis 6: The knowledge based service industries of business services (accounting, legal services, marketing research, IT services and consulting), healthcare services, engineering services, and investment firms/trusts should have an international diversification premium, while the capital intensive or non-standardized service industries of air transportation, insurance, restaurant, wholesale trade, and shipping will have an international diversification discount (or smaller premium).

In studies of manufacturing based industries, most research has been performed at an aggregate manufacturing industry level and there is little industry specific research on the firm performance impact of international diversification. Study results of firm performance of manufacturing firms are mixed from an international diversification standpoint. Denis, et al., (2002), Click and Harrison (2000), Palich, et al. (1996), Christophe (1997), and Fauver, et al., (2004) find that an ID discount exists due to challenges from coordination and control across geography, time, and culture (Hitt, 1997;

Wagner, 2007; Lu, et al., 2008); the inefficient use of assets (Click, 2000) and the liability of foreignness (Zaheer, 1995; Katrishaen and Scordis, 1998; Thomas, 2006).

Other studies contradict these findings as they conclude that becoming multinational increases firm value, and that there is an international diversification premium (Errunza and Senbet, 1981, 1984; Morck and Yeung, 1991; and Garrod and Rees, 1996; Gande, et al., 2009). This is due to firms that expand internationally achieving economies of scale, economies of scope (Kim and Lyn, 1986; Nachum 2003; Capar and Kotabe, 2003; Brock, et al., 2006), taking advantage of local resources, and utilizing their intangible assets (knowledge, marketing capability, information technology capability) more effectively (Kotabe, et al., 2002; Blostermo, et al., 2004; Nachum and Zaheer, 2005; Brock, et al., 2006; Chari, et al., 2007).

Given the foregoing, if firms are in industries where the advantages of achieving economies of scale and scope; being able to take advantage of local resources; and being able to utilize their intangible assets more effectively do not outweigh the disadvantages of coordination and control costs across geographies, time, and culture; the inefficient use of assets; and the liability of foreignness; then these industries should have an international diversification discount. Given that there is a minimal use of intangible

assets in the mining and primary metals manufacturing industries, and that they are capital intensive; this leads to the following hypothesis:

Hypothesis 7: The capital intensive industries of mining and primary metals manufacturing will have an international diversification discount.

Conversely, it would be logical that firms in industries where the advantages of achieving economies of scale and scope; being able to take advantage of local resources; and being able to utilize their intangible assets more effectively outweigh the disadvantages of coordination and control costs across geographies, time, and culture; the inefficient use of assets; and the liability of foreignness; then firms in these industries would have an international diversification premium. Given that there are large economies of scale and scope in the petroleum and construction industries, and significant investments in intangible assets such as brand names and knowledge (such as locating oil and gas fields and process knowledge), this leads to the following hypothesis:

Hypothesis 8: The industries of petroleum and construction will have an international diversification premium.

Due to the level of tacit knowledge required, it is very expensive to develop a new product in the pharmaceutical industry. Firms in this industry must make significant

investments in scientists, facilities, equipment, and research and development. This research takes years to develop and test a new product and much of it is not successful. Even products in development that appear likely to succeed often do not pass the final levels of testing/trials. This leads to the cost of developing a new product in the pharmaceutical industry being very high. However, once the product is developed and approved, it is relatively inexpensive to manufacture, market, and sell the new drug.

Therefore, once the research and development costs have been expended to develop a new product, the margins and profits are extremely high for the product's sales. Thus, the more markets in which the product can be sold, the greater the firm profits and the greater the firm value (Hennart, 2007). Therefore, for industries that are knowledge based and are R&D intensive, such as pharmaceuticals, once the product has been developed, it is usually very profitable to sell it in as many markets as possible. Thus, drug firms that are international should have higher firm valuations than those that are purely domestic. This leads to the following hypothesis:

Hypothesis 9: The drug industry will have an international diversification premium.

CHAPTER 3

RESEARCH STUDY METHODOLOGY AND CONSTRUCT MEASUREMENTS

Industry Model

In order to understand if the international diversification discount/premium is industry specific (initial research question), the change in valuation premium between domestic firms and international firms in the same industry is used to determine whether a given industry has a diversification discount or premium. Tobin's q is used as a proxy for valuation premium, as it has been widely used in research on diversification discounts/premiums (Chung and Pruitt, 1994; Bharadwaj, et al., 1999; Morck and Yeung, 1991; Delgado-Gomez, et al., 2004; Chari, et al., 2007; Gande et al., 2009). It is defined as follows:

$$\text{Tobin's } q = (\text{MV} + \text{Debt})/\text{TA}$$

MV = Market Value of Assets

Debt = Total Firm Debt

TA = Total Assets

Therefore, the Tobin's q of each international firm in a given industry segment is compared to the average of Tobin's q of domestic firms in that same industry segment. A domestic firm is defined as a firm with less than 1% foreign sales. This ratio will result in the value of each internationally diversified firm as a percentage of the firms that are

domestically focused. In order to turn this result into a premium or discount, one (1) must be subtracted from the ratio. To determine the valuation premium/discount for a given industry, we take the average of these computed firm valuation premiums/discounts. Therefore, if the resulting average is positive there will be a diversification premium, but if the resulting average is negative there will be a diversification discount. Firms with annual sales of greater than \$10 million are used in the study to ensure very small firms do not skew the results.

However, in a specific industry, smaller firms usually have faster growth rates than larger firms. This could lead to small firms having higher valuation premiums and higher Tobin's q s, and thus skewing the results in industries where firm size varies between the domestic and the global firms. Therefore, since firm size can affect Tobin's q , we control for firm size by using annual firm sales as a proxy. Capital structure can also affect firm valuation, so we control for differences in capital structure by using firm debt as a percentage of total assets as an additional control variable. Hence, for a specific industry the equation to find the average Tobin's q for domestic firms is:

$$\text{Tobin's } q D_I = \frac{\sum (\text{Tobin's } q D_F)}{\text{Firms}_D} \quad [\text{Eq. 1}]$$

Tobin's $q D_I$ = Average Tobin's q for domestic firms in a given industry

Tobin's $q D_F$ = Tobin's q for each domestic firm in a given industry

Firms_D = Number of domestic firms in the industry

In order to find the average Tobin's q for an all international firms in a specific industry

the equation is as follows:

$$\text{Tobin's } q \text{ I}_I = \frac{\sum (\text{Tobin's } q \text{ I}_F)}{\text{Firms}_I} \quad [\text{Eq. 2}]$$

Tobin's $q \text{ I}_I$ = Average Tobin's q for international firms in a given industry

Tobin's $q \text{ I}_F$ = Tobin's q for each international firm in a given industry

Firms_I = Number of international firms in the industry

Equation 3 then yields the valuation premium/discount for international firms by taking

the Tobin's $q \text{ I}_I$ (Equations 2) generated for all international firms in an industry and

dividing it by Tobin's $q \text{ D}_I$ that was generated for all domestic firms in an industry

(Equation 1), thus yielding equation 3:

$$\text{PD}_I = (\text{Tobin's } q \text{ I}_I / \text{Tobin's } q \text{ D}_I) - 1 \quad [\text{Eq. 3}]$$

PD_I = Diversification discount/premium (percentage) for all international firms relative to the domestic firms in that industry

Tobin's $q \text{ I}_I$ = Tobin's q for international firms in a given industry

Tobin's $q \text{ D}_I$ = Tobin's q for domestic firms in a given industry

To determine Tobin's q for an international or domestic firm in an industry, the ratio of the firm's market value to book value is used. Hence, substituting these variables for determining each of the Tobin's qs into equation 3 yields equation 4:

$$PD_I = [(\sum ((MVI/BVI)/ (\sum (MVD/BVD)/Firms_{SD} - 1)) - 1) / Firms_I \mid S, LEV] \quad [Eq.4]^3$$

PD_I = Diversification discount/premium (percentage) for a given industry I

I = Industry

MVI = Market value of an international firm in a given industry

BVI = Book value of an international firm in a given industry

MVD = Market value of all domestic firms in a given industry

BVD = Book value of all domestic firms in a given industry

S = Annual firm sales as a proxy for firm size (control variable)

LEV = Total firm debt divided by total assets (control variable)

In addition to using Tobin's *q*, Return on assets (ROA) and return on equity (ROE) are also used as alternate measures of firm performance (Shin, 2006). This is discussed in detail in Section 4.3 (Robustness).

A second measure is used for international diversification. This measure is called degree of internationalization (DOI) and is the ratio of firm sales from foreign operations divided by total firm sales (Kotabe, et al., 2002; Tihanyi, et al., 2003; Tihanyi, et al., 2005; Ruigrok, et al., 2007).

$$DOI_I = FS_I/TS_I \quad [Eq. 5]$$

DOI = Degree of internationalization of a firm

I = Industry

FS = Total annual foreign sales of a firm

TS = Total annual sales of a firm

³ Equation 4 uses an equal value weighting for each firm in the sample. This is necessary so that a few large firms with significant diversification discounts or premiums do not skew the results.

Therefore, in order to determine whether there is an international diversification premium (discount), the degree of internationalization must be compared to performance. Again Tobin's q is used as the measure for firm performance. On an industry basis, Tobin's q is regressed against degree of internationalization, controlling for total firm leverage (debt divided by total assets) and firm size. Total assets is used as a proxy for firm size since total firm sales is already used in DOI. This will determine the industry international diversification premium (discount) and yields equation 6.

$$MVG_I/BVG_I = \alpha + \beta_1 * DOI_I + \beta_2 * LEV + \beta_3 * ASSETS + \varepsilon \quad [Eq. 6]$$

I = Industry

DOI = Degree of internationalization (at firm level)

MVG = Market value of a firm in a given industry

BVG = Book value of a firm in a given industry

LEV = Total firm debt divided by total assets (control variable)

ASSETS = Total assets

Industry Characteristics Model

In order to test the other hypotheses (1, 2, 3, and 4), a model is developed in order to see if there are specific firm/industry characteristics that lead to international diversification discounts and/or premiums. Therefore, in addition to the industry analysis previously discussed, firm specific variables (independent variables) are compared with

the international diversification premium or discount (dependent variable). These independent variables are from gathered the Compustat database and Information Week.

These variables are:

- 1) R&D Intensity
- 2) Patent Investment (R&D spending per patent)
- 3) Information Technology Intensity
- 4) Advertising Intensity
- 5) SG&A Intensity
- 6) Number of Regions (geographies)
- 7) Control variables
 - Firm size (total assets)
 - Firm leverage (total debt)

Variables and Measures

Hypothesis 1 suggests that greater tacit knowledge provides the firm/industry with a competitive advantage, which should lead to an increase in the international diversification premium (or reduction in discount). Tacit knowledge is difficult to measure, but previous research has used the number of patents (Mancusi, 2008), percentage of firm employees who are technical and professional staff (Thornhill; 2006), and research and development intensity (Nachum and Zaheer, 2005; Nesta and Saviotti, 2006; Nesta, 2008; Adler and Hashi, 2007; Fang, et al., 2007; Fang, et al., 2008).

Research and development intensity is defined as the firm's annual research and development expenditure divided by the firm's total annual sales.

The following studies use R&D intensity as a proxy for firm knowledge. In their study on how firm resources impact the performance of a firm's overseas subsidiaries, Fang, et al. (2007) and Fang, et al. (2008) use R&D intensity as a proxy for technological knowledge, while Nesta and Saviotti (2006) and Nesta (2008) use R&D intensity as a proxy for a firm's knowledge capital. Additionally, Nachum and Zaheer (2005) use R&D intensity as a proxy for knowledge, while in their study on knowledge flows in the multinational enterprise, Adler and Hashi. (2007) use R&D intensity as a proxy for knowledge. Lu and Beamish (2004) use R&D intensity as a proxy for technological know-how and patents. This study will use two measures of tacit knowledge. First, similar to the previously mentioned studies, this research will use R&D intensity as a proxy for tacit knowledge. Second, it will also use firm R&D spending divided by the number of patents received over three years as a proxy for tacit knowledge (Patent investment). Since patents largely represent explicit/codified knowledge, more R&D spending per patent suggests that the firm had more knowledge than what was explicitly documented. Thus, the firm should also have a higher level of tacit knowledge. These

variables are lagged three years in order to allow time for the R&D investments to have a potential impact in the marketplace.

Hypothesis 2 suggests the development and deployment of information technology systems can provide firms with a competitive advantage (Bharadwaj, et al., 1999; Nachum and Zaheer, 2005; Chari, et al., 2007). These systems have the potential to provide the benefits of both increased revenue and cost reduction. While it is difficult to measure the increase in benefits or reduction in costs directly, the amount of money firms spend on information technology systems should be directly related to the benefits they receive (Nachum and Zaheer, 2005; Chari, et al., 2007).

Previous research uses a variety of proxies in representing firm investment in information technology. In their study on how investment in IT impacts firm performance, Bharadwaj, et al. (1999) use annual information technology spending divided by the firm's annual sales (IT intensity) as a proxy for the contribution investment IT makes to the firm. However, Chari, et al. (2007) measure IT intensity as annual IT expenditures divided by number of employees. Using a third approach, Kobelsky, et al. (2008) define IT intensity as annual IT expenditures deflated by the market value of the firm at the beginning of the year.

Since the firm market value is already used in determining Tobin's q , we define IT intensity in a similar way to how we defined R&D intensity and advertising intensity. Therefore, the proxy used for hypothesis 2 is information technology intensity, which is the firm's annual information technology spending divided by total annual firm sales (Bharadwaj, et al., 1999; Ravichandran, et al., 2009). This variable is lagged three years as the investment in IT will take time to yield the desired benefits to the firm (Tihanyi, et al., 2005). The data for information technology spending is gathered from Information Week's IW500 (Bharadwaj, et al., 1999; Chari, et al., 2007).

Hypothesis 3 suggests that, on a firm specific basis, marketing capability (brand awareness/consumer goodwill) can provide a sustainable competitive advantage, which should lead to an increase in the global diversification premium (or reduction in discount). While it is difficult to measure marketing capability directly, the firm's advertising can differentiate products and increase brand awareness, and is thus an indication of its marketing capability. Therefore, the amount a firm spends on advertising should be directly related to the firm's marketing capability.

This is supported by earlier research, as advertising intensity (annual advertising expense divided by annual firm sales) is used as a proxy for variables such as a firm's

marketing capability and consumer goodwill. In their cross-industry studies on how firm resources impact the performance of a firm's overseas subsidiaries, Fang, et al. (2007) and Fang, et al. (2008) use advertising intensity as a proxy for marketing knowledge. In their research on how intangible assets impact the performance of multinational firms, Morck and Yeung (1991) use advertising intensity as a proxy for consumer goodwill, while Kotabe, et al. (2002) use advertising intensity as a proxy for a firm's marketing capability. Therefore, this study will use advertising intensity as a proxy for marketing capability. As an alternative measure for marketing capability, we will use advertising expense plus SG&A expense divided by firm sales. This will provide a measure that includes all marketing, sales, and advertising investments made by the firm.

Hypothesis 4 suggests that an increase in the firm's level of international experience will be positively correlated with an increase in the international diversification premium (reduction in discount). Much of the research relating international experience to a firm's international diversification premium has been performed by using survey data. For example, Tihanya, et al. (2000) proxies international experience by using the level of international education and work experience of the executives who participated in the survey. Sambharya (1996) and

Hermann and Datta (2005) use the percentage of top management team members (TMT) who worked abroad, in an international division, or attended a foreign university. Similar to Sambharya (1996), Wally and Becerra (2001) use the percentage of TMT members who have worked abroad or managed an international department, while Carpenter and Fredrickson (2001) use the ratio of TMT members' years of international experience to total employment tenure.

However, with over 4,000 companies in our database, we do not have access to this level of data for TMT members' international experience. Therefore, in measuring international experience, we use the number of geographies (regions) in which the firm operates as a proxy. Compustat provides data on the number of geographies in which the firm has subsidiaries. It follows that the greater the number of the world's regions in which a firm operates, the more international experience it should acquire. Therefore, the proxy for international experience is: N GEO = Number of regions in which the firm operates

The model required to test these four hypotheses is as follows:

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 ADI + \beta_4 SGA + \beta_5 ITI + \beta_6 N GEO + \beta_7 LEV + \beta_8 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 6}]$$

$$TQ = \text{Tobin's } q$$

RDI = Research and development intensity (annual R&D expense/annual total firm sales)

RDP = Patent Investment (annual R&D expense/annual number of patents)

ADI = Advertising intensity (annual advertising expense / annual total firm sales)

SGA = SGA intensity ((annual SG&A expense +advertising expense) / annual total firm sales)

ITI = Information technology intensity (annual IT expense/annual total firm sales)

NGEO = Number of Compustat regions in which the firm operates

LEV = Firm leverage (total debt/total assets)

ASSETS = Firm size (total assets)

If TQ is positively correlated with some/all of the independent variables, and the

IV's are significant, it would support the hypotheses that the diversification premium increases with an increase in some or all of the following: tacit knowledge, information technology investment, marketing capability, and international experience. If the relationship between TQ and all of the IV's is negative, or if the results are not significant, the hypotheses would not be supported. The beta coefficients indicate the correlation each specific independent variable has on the dependent variable. The hypotheses project each of these coefficients to be positive. Control variables include total assets as a proxy for firm size and the ratio of debt to total assets as a proxy for capital structure.

Hypothesis 5 states the effect of the independent variables on firm performance is moderated by the level of international diversification. That is, if a firm is multinational,

the effect of the independent variables on firm performance is projected to be positively related to the level of international diversification. This requires regressions to be run that investigate the interaction effects of the previously discussed independent variables with degree of internationalization (DOI). Therefore, the following additional variables must be regressed with Tobin's q as the dependent variable:

RDI_DOI = Research and development intensity * DOI

RDP_DOI = Patent Investment * DOI

ADI_DOI = Advertising intensity * DOI

SGA_DOI = SGA intensity * DOI

ITI_DOI = Information technology intensity * DOI

NGEO_DOI = Number of Compustat regions in which the firm operates * DOI

Each of these interaction terms must be run in separate regressions, so 7

additional regressions will be run in order to investigate the impact of DOI with the

independent variables. The regressions with their interaction terms are as follows:

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDI * DOI + \beta_3 RDP + \beta_4 ADI + \beta_5 SGA + \beta_6 ITI + \beta_7 N GEO + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 7}]$$

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 RDP * DOI + \beta_4 ADI + \beta_5 SGA + \beta_6 ITI + \beta_7 N GEO + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 8}]$$

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 ADI + \beta_4 ADI * DOI + \beta_5 SGA + \beta_6 ITI + \beta_7 N GEO + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 9}]$$

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 ADI + \beta_4 SGA + \beta_5 SGA * DOI + \beta_6 ITI + \beta_7 N GEO + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 10}]$$

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 ADI + \beta_4 SGA + \beta_5 ITI + \beta_6 ITI * DOI + \beta_7 NGEO + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 11}]$$

$$TQ = \alpha + \beta_1 RDI + \beta_2 RDP + \beta_3 ADI + \beta_4 SGA + \beta_5 ITI + \beta_6 NGEO + \beta_7 NGEO * DOI + \beta_8 LEV + \beta_9 ASSETS + \sum \beta_i \text{ Other Control Variables} + \varepsilon \quad [\text{Eq. 12}]$$

Sample Selection and Data Collection

U.S. based firms from the Compustat database are used in the study. Data from Compustat on these firms are available with regard to total sales, foreign sales, market value, book value, total debt, foreign income, total assets, advertising expenses, SG&A expenses, research and development expenses, and number of geographies in which each firm operates. Additionally, Compustat provides information by industry segment and geographic segment. This allows the firms to be segregated into different industry segments. Within these industry segments, the Compustat fields indicating foreign income and foreign sales can be used to categorize a firm as either international or domestic. An international firm is one that reports at least 1% of its sales as foreign. Sensitivity analysis will be performed to see if the level of internationalization (based on sales) affects the results. For determining whether a company is multinational, this sensitivity analysis will be performed at the 1%, 5%, and 10% levels of foreign sales to

total sales. Data on firm information technology spending will be gathered from InformationWeek (Chari, et al, 2007).

If a firm does not have at least 1% sales/income coming from a foreign subsidiary, then it is considered domestic. Firms with annual sales under \$10 million and with share prices under \$1 are excluded. Industries that have fewer than 40 firms and in which less than seven firms are globally diversified are excluded in order to ensure the statistical validity of the analysis. Banking firms are excluded (SIC Code = 60) since they are almost all domestic. Previous research on international diversification has used a wide variety of time periods. This study will cover the year of 2007 (Tihanyi, et al., 2003). The exception to the 2007 period is for information technology spending data. The latest year these data are available is 1996. Since this variable is lagged three years in the regression, Tobin's q for the year 1999 will be calculated for use with IT spending. The sample data for 2007 is summarized in Table 1.

In order to determine which industries tend to have the largest number (and percentage) of international firms, the sample data are broken down into a macro industry view. This information is in Table 2 and includes the standard industry classification code (SIC code), industry, total number of firms in the industry in the year 2007, number

Table 1. 2007 Sample Description

Initial Sample (Number of Firms)	5,682
Firms eliminated due to missing financial information	451
Stocks with share prices below \$1	237
Firms in SIC code 60 (depository institutions)	<u>655</u>
Final sample of firms used in analysis	4,339

of firms per industry that are internationally diversified (ID is defined as firms that reported international sales of greater than 1% of total firm sales), and percentage of firms per industry that are internationally diversified. Two digit industry codes are used in the breakdown for 23 industry sectors. There are data available to break down seven industry sectors at the three digit SIC code level, these are: Drugs, Computer Equipment, Communications Equipment, Electronic Components, Measurement/Control Devices, Medical Instruments, and Telephone Communications.

Table 2 shows that of the 3,171 firms, 1,581 (50%) have foreign sales greater than 1% of their total sales and are therefore, internationally diversified. Industries with the highest percentage of global firms are Computer Equipment (87%), Measuring/Control

Devices (82%), Electronic Components (82%), and Paper Manufacturing (81%). Factors contributing to the globalization of these industries could be key information technology systems, international experience, economies of scale, high levels of tacit knowledge, marketing capability and proprietary products; each of which is a major driver of successful firms in the manufacturing, computer, and electronics industries.

Other industries with an above average percentage of global firms include Mining (67%), Manufacturing – Food (54%), Manufacturing – Apparel (59%), Primary Metals (70%), Fabricated Metals (61%), Communications Equipment (76%), Transportation Equipment (66%), Medical Instruments (67%), and Engineering Services (55%). The industries with the smallest percentage of global firms are Investment Firms and Trusts (10%), Health Services (10%), Retail - Restaurants (13%), Insurance (15%), Credit Unions/Mortgage Brokers (17%), Shipping (20%), and Utilities (25%),.

In order to ensure the analysis for each industry is statistically valid, only industries with a minimum of 40 firms, at least seven of which must be internationally diversified, are used in the study. The Banking Industry (SIC code 60) is omitted as almost all firms are domestic; their inclusion could distort the overall results. Therefore, the final scope of the analysis includes the 30 industry sectors found in Table 2.

Table 2. International Diversification of Firms
by Industry Sector (Year 2007)

2 Digit SIC Code	Industry	Total Number of Firms	Number of Intl Firms	% Intl
	-			
10	Metal Mining	48	32	67%
13	Petroleum	163	50	31%
20	Mfg.- Food	106	57	54%
23	Mfg.- Apparel	41	24	59%
26	Mfg.- Paper	42	34	81%
27	Printing	49	22	45%
283	Drugs	205	95	46%
33	Primary Metals	61	43	70%
34	Fabricated Metals	54	33	61%
357	Computer Equipment	89	77	87%
366	Communications Equip	97	74	76%
367	Electronic Components	191	156	82%
37	Transportation Equip	102	67	66%
382	Measuring/Control Dev	91	75	82%
384	Medical Instruments	117	78	67%
44	Shipping	56	11	20%
45	Air Transportation	43	22	51%
481	Telephone Comm.	98	52	53%
49	Utilities	157	39	25%
50	Wholesale Trade-Durable	85	48	56%
51	Wholesale Trade-Non	52	21	40%
58	Retail-Restaurants	54	7	13%

Table 2. International Diversification of Firms
by Industry Sector (Year 2007) - Continued

<u>2 Digit SIC Code</u>	<u>Industry</u>	<u>Total Number of Firms</u>	<u>Number of Intl Firms</u>	<u>% Intl</u>
59	Other Retail	55	19	35%
61	Credit Union/ Mortgage	41	7	17%
62	Securities Brokers	86	29	34%
63	Insurance	147	22	15%
67	Investment Firms/Trusts	201	20	10%
73	Business Services	483	315	65%
80	Health Services	77	8	10%
87	Engineering Services	80	44	55%
	Totals	3,171	1,581	50%

CHAPTER 4 HYPOTHESIS TESTING AND EMPIRICAL RESULTS

Industry International Diversification Premiums/Discounts

This study examined the research question: Will certain industries find international diversification to be value increasing for firms in that industry, while will other industries find international diversification to be value decreasing for firms in that industry? Our results indicate that the international diversification premium/discount does vary by industry sector. These results can be found in Table 3.

Of the 30 industries tested, 18 had international diversification premiums, while 12 had discounts. There was wide range in the premiums/discounts, as the lowest discount was -29.2% while the highest premium was 84.8%. The industries with the highest premiums were Investment Firms/Trusts (84.8%), Apparel Manufacturing (24.4%), and Utilities (21.9%); while those with the greatest discounts were Paper Manufacturing (-29.2%), Securities Brokers (-29%), and Transportation Equipment (-27%). Thus, international diversification premiums/discounts by industry do exist and vary significantly.

Table 3. International Diversification Premiums/Discounts
of Firms by Industry Sector (Year 2007)

2 Digit SIC Code	Industry	Total Number of Firms	Number of Intl Firms	% Intl	Domestic Tobin's <i>q</i>	Intl Tobin's <i>q</i>	Premium or Discount
	-						
10	Metal Mining	48	32	67%	2.17	2.14	-1.4%
13	Petroleum	163	50	31%	1.53	1.71	11.8%
20	Mfg.- Food	106	57	54%	1.9	1.67	-12.1%
23	Mfg.- Apparel	41	24	59%	1.35	1.68	24.4%
26	Mfg.- Paper	42	34	81%	1.44	1.02	-29.2%
27	Printing	49	22	45%	1.39	1.49	7.2%
283	Drugs	205	95	46%	2.97	2.54	-14.5%
33	Primary Metals	61	43	70%	1.69	1.35	-20.1%
34	Fabricated Metals	54	33	61%	1.27	1.43	12.6%
357	Computer Equipment	89	77	87%	1.9	1.88	-1.1%
366	Communications Equip	97	74	76%	1.29	1.45	12.4%
367	Electronic Components	191	156	82%	2.31	1.89	-18.2%
37	Transportation Equip	102	67	66%	1.67	1.21	-27.5%
382	Measuring/Control Dev	91	75	82%	2.17	1.87	-13.8%
384	Medical Instruments	117	78	67%	2.39	2.51	5.0%
44	Shipping	56	11	20%	1.33	1.17	-12.0%
45	Air Transportation	43	22	51%	0.89	0.97	9.0%
481	Telephone Comm.	98	52	53%	1.37	1.62	18.2%
49	Utilities	157	39	25%	1.05	1.28	21.9%
50	Wholesale Trade-Durable	85	48	56%	1	1.18	18.0%
51	Wholesale Trade-Non	52	21	40%	1.21	1.41	16.5%
58	Retail-Restaurants	54	7	13%	1.59	1.65	3.8%

Table 3. International Diversification Premiums/Discounts
of Firms by Industry Sector (Year 2007) - Continued

2 Digit SIC Code	Industry	Total Number of Firms	Number of Intl Firms	% Intl	Domestic Tobin's <i>q</i>	Intl Tobin's <i>q</i>	Premium or Discount
59	Other Retail	55	19	35%	1.57	1.84	17.2%
61	Credit Union/ Mortgage	41	7	17%	1.11	0.88	-20.7%
62	Securities Brokers	86	29	34%	2.07	1.47	-29.0%
63	Insurance	147	22	15%	0.44	0.51	15.9%
67	Investment Firms/Trusts	201	20	10%	1.45	2.68	84.8%
73	Business Services	483	315	65%	2.02	2.17	7.4%
80	Health Services	77	8	10%	1.76	1.95	10.8%
87	Engineering Services	80	44	55%	1.85	2.11	14.1%
	Totals	3,171	1,581	50%	1.61	1.62	1.2%

However, when looking at the entire sample in aggregate, the overall result was an ID premium of only 1.2%, or near zero. This highlights the importance of examining the industries individually; as if the results were examined only in aggregate, it may be determined that ID premiums/discounts do not exist for the sample used in this study.

Hypothesis Testing

Multiple regressions were run in order to test the hypotheses. The first four hypotheses test the independent variables of tacit knowledge, information technology

capability, marketing capability, and level of international experience against their effect on firm performance (dependent variable). The proxies for the independent variables are tacit knowledge (R&D Intensity, Patent Investment); information technology capability (IT Intensity); marketing capability (Advertising Intensity, SG&A Intensity), international experience (number of regions in which the firm operates). The proxy for the dependent variable of firm performance is Tobin's q .

	Variable	Proxy
Dependent Variable	Firm Performance	Tobin's q
Independent Variables	Tacit Knowledge	R&D Intensity Patent Investment
	IT Capability	IT Intensity
	Marketing Capability	Advertising Intensity SG&A Intensity
	International Experience	Number of regions in which the firm operates

Tables 4 and 5 present the results of testing hypotheses 1, 3, and 4⁴. Table 4 results are for international firms only, while Table 5 results are for all firms, both international and domestic. Hypothesis 1 suggests that the firm's level of tacit knowledge is positively related to its international diversification premium. For international firms, Patent Investment has a positive coefficient (.00092) and is

⁴ Hypothesis 2 must be tested separately, since it uses separate data (1996 IT spending data and 1999 firm performance data, instead of the 2004/2007 data which is used by the other independent variables).

significant ($t = 2.45, p < .05$), and R&D Intensity has a positive coefficient (1.599) and is significant ($t = 4.31, p < .01$). For all firms, Patent Investment has a positive coefficient (.00077) and is significant ($t = 1.64, p < .10$), and R&D Intensity has a positive coefficient (1.289) and is also significant ($t = 4.81, p < .01$). In both cases, the coefficients for international firms are greater than that of all firms for Patent Investment (.00092 > .00077) and R&D Intensity (1.599 > 1.289). Note that R&D Intensity and Patent Investment were used in the same regression because the correlation between these two independent variables is low at .09 (See Table 6). Separate regressions were also run for R&D Intensity with the other independent variables, and Patent Investment with the other independent variables, and the results were the same.

A Chow test was performed comparing the strength of the coefficients for the independent variables of international firms to those of all firms. For Patent Investment, the F-statistic is positive and significant (F-statistic = 4.98, $p = 0.03$) and the F-statistic is also positive and significant for R&D Intensity (F-statistic = 5.68, $p = .05$). Therefore, the results for Patent Investment and R&D Intensity indicate that tacit knowledge has a greater impact on performance in international firms than in all firms. Thus, Hypothesis 1 is supported.

Table 4. Regression for Firm Performance of International Firms

	Number of obs= 1003
	F(9, 950) = 13.43
	Prob > F = 0.0000
	R-squared = 0.2138
	Adj R-squared = 0.1707
	Root MSE = 1.1154

		Robust		
Tobin's q	Coef.	Std. Err.	t	p-value
Patent Investment	.00092**	.001	2.45	0.02
R&D Intensity	1.599***	.368	4.31	0.00
Advertising Intensity	4.009**	1.694	2.37	0.02
Number of Regions	-.009	.017	-0.52	0.61
Assets	-.012	.024	-0.49	0.62
ROA	2.516***	.534	4.71	0.00
Leverage	.028	.345	0.08	0.93
Constant	2.029***	.170	11.92	0.00

Table 5. Regression for Firm Performance of All Firms (International and Domestic)

Number of obs= 1308 F(9, 1250) = 15.91 Prob > F = 0.0000 R-squared = 0.1953 Adj R-squared = 0.1586 Root MSE = 1.2273					
Tobin's q	Coef.	Robust Std. Err.	t	p-value	
Patent Investment	.00077*	.001	1.64	0.10	
R&D Intensity	1.289***	.268	4.81	0.00	
Advertising Intensity	3.204**	1.423	2.25	0.03	
Number of Regions	-.023	.016	-1.47	0.14	
Assets	-.016	.024	-0.64	0.52	
ROA	1.443***	.435	3.32	0.00	
Leverage	.158	.317	0.50	0.62	
Constant	2.215***	.160	13.87	0.00	

Table 6. Correlation Coefficients for Dependent and Independent Variables

	Tobin's q	Patent Invest.	SG&A Intensity	R&D Intensity	Number Regions	Adver. Intensity	IT Intensity
Tobin's q	1.00						
Patent Invest.	0.04**	1.00					
SG&A Int.	0.24***	0.01	1.00				
R&D Intensity	0.25***	0.09***	0.38***	1.00			
Number Reg.	0.10***	0.01	0.08***	0.08***	1.00		
Ad Intensity	0.08***	0.04	0.24***	-0.02	-0.04***	1.00	
IT Intensity	-0.01	-0.01	0.19***	0.24***	-0.05	0.00	1.00

* $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$

Hypothesis 2 suggests that the firm's level of investment in information technology systems is positively correlated with its international diversification premium. Since the available data are from a different year (1996) than that of the other independent variables (2007), separate regressions for IT Intensity must be run. The reason for this is twofold. First, since the dependent variable (Tobin's q) in the full model uses 2007 data and the most recent data available on IT spending is from 1996, putting IT Intensity in the full model would mean Tobin's q is lagged 11 years from IT Intensity. It would be unrealistic to expect any effect on firm performance from a variable which is lagged 11 years. Second, the data for 1996 IT spending are available

for only 329 firms. Therefore, if IT Intensity was a variable in the full model it would greatly reduce the number of observations to less than 329. This would have a negative effect on the full model.

In order to provide confirmation of the preceding rationale, IT Intensity was tested in the full model. The result was a reduction in the number of observations in the regression of the international firms from 1,003 to 141; and in the regression of all firms from 1,308 to 207. In each of these regressions, only advertising intensity was significant, as all other independent variables became insignificant. Thus, the IT Intensity independent variable was run in separate regressions. The results of these regressions are displayed in Tables 7 and 8.

For international firms, IT Intensity has a positive coefficient (14.876) and is significant ($t = 2.11$, $p < .05$) and for all firms IT Intensity has a positive coefficient (14.071) and is significant ($t = 2.83$, $p < .01$). Since the coefficient for international firms is greater than that of all firms for IT Intensity ($14.876 > 14.071$), it indicates that information technology capability has a greater impact on performance in international firms than in all firms. This is confirmed by using a Chow test, which shows that the

difference between the coefficients is significant (F-statistic = 3.64, p = 0.06). Thus,

Hypothesis 2 is supported.

Table 7. Regression for IT Intensity/Firm Performance of International Firms

Number of obs= 194					
F(4, 189) = 6.67					
Prob > F = 0.0000					
R-squared = 0.1885					
Root MSE = 1.0603					

Tobin's <i>q</i> (1999)	Coef.	Robust Std. Err.	t	p-value	
-----+-----					
IT Intensity	14.876**	7.038	2.11	0.04	
Assets	.091*	.051	1.78	0.08	
ROA	7.427***	1.940	3.83	0.00	
Leverage	-.596	.542	-1.10	0.27	
Constant	.671	.467	1.44	0.15	

Table 8. Regression for IT Intensity/Firm Performance of All Firms

				Number of obs=	329
				F(4, 324)	= 10.67
				Prob > F	= 0.0000
				R-squared	= 0.1592
				Root MSE	= .97956

Tobin's <i>q</i> (1999)	Coef.	Robust Std. Err.	t	p-value	
-----+-----					
IT Intensity	14.071***	4.967	2.83	0.01	
Assets	-.016	.045	-.35	0.72	
ROA	7.008***	2.188	3.20	0.00	
Leverage	-.416	.388	-1.07	0.29	
Constant	1.423***	.476	2.99	0.00	

Hypothesis 3 states that the firm's level of investment in its marketing capability is positively related to its international diversification premium. The proxy for marketing capability is Advertising Intensity. The output for Advertising Intensity is found in Tables 5 (international firms) and 6 (all firms).

For international firms, Advertising Intensity has a positive coefficient (4.009) and is significant ($t = 2.37, p < .05$) and, for all firms, Advertising Intensity has a positive coefficient (3.204) and is significant ($t = 2.25, p < .05$). Since the coefficient for

international firms is greater than that of all firms ($4.009 > 3.204$), it indicates that marketing capability has a greater impact on performance in international firms than in all firms. The Chow Test confirms this by comparing the strength of the coefficients for both international and all firms. For Advertising Intensity the F-statistic is positive and significant (F-statistic = 6.93, $p = 0.01$). Thus, Hypothesis 3 is supported.

As an alternative measure for marketing capability, SG&A Intensity is used.

However, SG&A Intensity could not be included as an independent variable in the previous regressions because it is so highly correlated (.24) with Advertising Intensity⁵.

Thus, separate regressions were run for SG&A Intensity, with the results found in Tables 9 and 10.

For international firms, SG&A Intensity has a positive coefficient (1.409) and is significant ($t = 4.81$, $p < .01$) and, for all firms, SG&A Intensity has a positive coefficient (1.344) and is significant ($t = 6.36$, $p < .01$). Since the coefficient for international firms is greater than that of all firms ($1.409 > 1.344$), it indicates that marketing capability has a greater impact on performance in international firms than in all firms. This is confirmed by a Chow Test, where for SG&A Intensity the F-statistic is positive and significant (F-statistic = 10.68, $p = 0.00$). Thus, additional support is provided for Hypothesis 3.

⁵ Advertising Intensity and SG&A Intensity have a 24% correlation. See Table 6.

Table 9. Regression for SG&A Intensity/Firm Performance of International Firms

	Number of obs= 1005
	F(8, 953) = 15.76
	Prob > F = 0.0000
	R-squared = 0.2283
	Adj R-squared = 0.1870
	Root MSE = 1.1043

Tobin's q	Coef.	Robust Std. Err.	t	p-value
Patent Investment	.002***	.001	2.47	0.01
R&D Intensity	1.026***	.406	2.53	0.01
SG&A Intensity	1.409***	.293	4.81	0.00
Number of Regions	-.001	.017	-0.08	0.93
Assets	-.024	.023	-1.05	0.29
ROA	3.071***	.486	6.32	0.00
Leverage	.367	.323	1.13	0.26
Constant	1.458***	.198	7.38	0.00

Table 10. Regression for SG&A Intensity/Firm Performance of All Firms

	Number of obs= 1310
	F(8, 1253) = 18.58
	Prob > F = 0.0000
	R-squared = 0.2242
	Adj R-squared = 0.1895
	Root MSE = 1.2044

Tobin's q	Coef.	Robust Std. Err.	t	p-value
Patent Investment	.001	.001	1.30	0.19
R&D Intensity	1.280***	.258	4.97	0.00
SG&A Intensity	1.344***	.211	6.36	0.00
Number of Regions	-.024	.016	-1.49	0.14
Assets	-.033	.022	-1.48	0.14
ROA	2.094***	.416	5.04	0.00
Leverage	.428	.300	1.43	0.15
Constant	1.681***	.182	9.23	0.00

Hypothesis 4 suggests that the firm's level of international experience is positively related to its international diversification premium. For international firms, Number of Regions has a negative coefficient (-.009) and is not significant ($t = -0.52$, $p > .10$) and for all firms Number of Regions has a negative coefficient (-.024) and is not significant ($t = -1.47$, $p > .10$). Thus, Hypothesis 4 is not supported.

Hypothesis 5 is a moderator hypothesis that states that if a firm is multinational, the effect of the independent variables on firm performance is projected to be positively related to the level of international diversification. Thus, six regressions must be run in order to investigate the impact of the interaction effects of the independent variables combined with DOI on firm performance. The results for these regressions are found in Table 11. In analyzing the results, all of the interaction terms are insignificant, as is indicated by the following t values: R&D Intensity*DOI = -1.59, Patent Investment*DOI = 1.1, Advertising Intensity*DOI = 0.62, SG&A Intensity*DOI = -4.12, IT Intensity*DOI = 1.17, and Number of Regions*DOI = 0.18. Thus, hypothesis 5 is not supported. However, in Models 1 (coeff. = 0.311, $p < 0.00$) and 4 (coeff. = .230, $p < 0.01$), DOI is positively correlated with firm performance, thus offering some support that the greater the degree of internationalization of the firm, the better the firm performance.

Table 11. Regression of Interaction Effects of Independent Variables with Degree of Internationalization (DOI)

This table displays the results of six regressions that were run in order to investigate the interaction effects between the independent variables with the degree of internationalization. t-statistics appear in parentheses.

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>	<u>Model 5</u>	<u>Model 6</u>
DOI	0.311*** (4.7)	-0.443 (-3.17)	0.067 (0.95)	0.230*** (3.3)	0.297 (1.17)	0.126 (1.24)
R&D Intensity	1.602*** (7.96)					
R&D Intensity*DOI	-1.597 (-3.85)					
Patent Investment		0.00076 (0.7)				
Patent Invest*DOI		0.0018 (1.1)				
Advertising Intensity			1.846 (1.48)			
Advertising Int*DOI			1.880 (0.62)			
SG&A Intensity				1.729*** (10.12)		
SG&A Intensity*DOI				-0.940 (-4.12)		
IT Intensity					10.508* (1.75)	
IT Intensity*DOI					6.101 (1.17)	
Number of Regions						-0.007 (-0.31)
Number of Regions*DOI						-0.006 (-0.18)
Total Assets	-0.082 (-7.36)	-0.090 (-4.1)	-0.099 (-8.15)	-0.072 (-5.99)	-0.023 (-0.55)	-0.096 (-7.79)
Total Debt	-0.621 (-4.84)	-0.125 (-0.4)	-0.288 (-2.05)	0.102 (0.75)	-0.947 (-2.63)	-0.296 (-2.1)
Constant	2.238 (29.09)	2.685 (18.3)	2.366 (29.24)	1.723 (17.53)	1.922 (5.82)	2.382 (27.74)

* p<.10, ** p<.05, *** p<.01

Hypothesis 6 states that the knowledge based service industries of Business Services (accounting, legal services, marketing research, IT services, and consulting), Healthcare Services, Engineering Services, and Investment Firms/Trusts should have an international diversification premium, while the capital intensive or non-standardized service industries of Air Transportation, Insurance, Restaurant, Wholesale Trade, and Shipping will have an international diversification discount (or smaller premium). Analyzing the results for these industries, their diversification premiums/discounts are as follows.

The industries projected to have a diversification premium are (each industry is followed by its actual premium/discount) Business Services, +7.4%; Health Services, +10.8%; Engineering Services, +14.1%; Investment Firms/Trusts, +84.8%, generating an average premium of +29.3% (median +12.5%). The industries projected to have a diversification discount are (each industry is followed by its actual diversification premium/discount) Air Transportation, +9.0%; Insurance, -27.7%⁶; Restaurant, +3.8%, Wholesale Trade, +17.2%, and Shipping, -12%, generating an average premium of -2%

⁶ Since the insurance industry sector was the primary anomaly in the sensitivity analysis performed at the 1%, 5%, and 10% levels of international sales as a percentage of total sales (significant premium at the 1% level and significant discounts at the 5% and 10% levels). Therefore, the median value is used (-27.7%).

(median = +3.8%). With an average premium of +29.3% (median +12.5%) for the industries projected to have an international diversification premium, and an average discount of -2% (median +3.8%) for industries projected to have a smaller premium or a discount, Hypothesis 6 is supported.

Hypothesis 7 suggests the capital intensive industries of Mining and Primary Metals Manufacturing will have an international diversification discount. Analyzing the results for these industries, their diversification premiums/discounts are as follows:

Mining has an international diversification discount of -1.4% and Primary Metals Manufacturing has a discount of -20.1%. Since both industries have a diversification discount, hypothesis 7 is supported.

Hypothesis 8 states that the industries of Petroleum and Construction will have an international diversification premium. There were not enough international construction firms in the database to determine whether that industry has a premium or discount, however, the Petroleum industry has a premium of +11.8%, thus, yielding partial support for hypothesis 8.

Hypothesis 9 suggests that the Drug industry will have an international diversification discount. However, a discount of -14.5% was found. Thus, hypothesis 9 is not supported.

Robustness

In order to examine whether the definition of an international firm impacted the previously discussed results, a sensitivity analysis was performed at different levels of international sales to define an international firm. In the main analysis, an international firm is defined as any firm that has a minimum of 1% of its sales generated from its foreign operations. In this sensitivity analysis, two additional definitions of international firms are used; these minimums are 5% and 10% of sales generated from foreign operations. Tobin's q 's for each of these thresholds were computed and international diversification premiums/discounts determined. The results are compared in Table 12.

The sensitivity analysis indicates that the level of international sales used in the model does not significantly affect the results. Of the 90 computed international diversification premiums/discounts, there are only three that had a change from discount to premium or vice versa. These are Computer Equipment, where a -1.1% discount (1% level) became an +11.6% premium (10% level), Medical Instruments, where a +5.0%

Table 12. Industry Sector International Diversification Premiums/Discounts

Sensitivity Analysis at 1%, 5%, and 10% International Sales Levels (2007)

2 Digit SIC Code	Industry	% Intl	1% Premium or Discount	5% Premium or Discount	10% Premium or Discount
	-				
10	Metal Mining	67%	-1.4%	-1.4%	-1.4%
13	Petroleum	31%	11.8%	11.8%	15.8%
20	Mfg. - Food	54%	-12.1%	-11.6%	-7.6%
23	Mfg. - Apparel	59%	24.4%	32.1%	19.6%
26	Mfg. - Paper	81%	-29.2%	-31.0%	-25.7%
27	Printing	45%	7.2%	10.9%	10.9%
283	Drugs	46%	-14.5%	-12.3%	-10.3%
33	Primary Metals	70%	-20.1%	-13.8%	-9.7%
34	Fabricated Metals	61%	12.6%	21.3%	24.0%
357	Computer Equipment	87%	-1.1%	1.1%	11.6%
366	Communications Equip	76%	12.4%	12.4%	8.3%
367	Electronic Components	82%	-18.2%	-17.5%	-15.6%
37	Transportation Equip	66%	-27.5%	-33.5%	-13.7%
382	Measuring/Control Dev	82%	-13.8%	-11.7%	-11.7%
384	Medical Instruments	67%	5.0%	5.4%	-3.6%
44	Shipping	20%	-12.0%	-12.0%	-12.0%
45	Air Transportation	51%	9.0%	10.1%	10.1%
481	Telephone Comm.	53%	18.2%	19.9%	21.5%
49	Utilities	25%	21.9%	22.6%	24.5%

Table 12. Industry Sector International Diversification Premiums/Discounts

Sensitivity Analysis at 1%, 5%, and 10% International Sales Levels (2007) - Continued

2 Digit SIC Code	Industry	% Intl	1% Premium or Discount	5% Premium or Discount	10% Premium or Discount
50	Wholesale Trade- Durable	56%	18.0%	12.5%	0%
51	Wholesale Trade- Non	40%	16.5%	17.4%	9.6%
58	Retail-Restaurants	13%	3.8%	3.8%	15.2%
59	Other Retail	35%	17.2%	29.2%	29.2%
61	Credit Union/Mortgage	17%	-20.7%	-20.7%	-11.9%
62	Securities Brokers	34%	-29.0%	-27.3%	-25.2%
63	Insurance	15%	15.9%	-27.7%	-29.8%
67	Investment Firms/Trusts	10%	84.8%	106.9%	98.6%
73	Business Services	65%	7.4%	8.4%	7.4%
80	Health Services	10%	10.8%	17.7%	7.9%
87	Engineering Services	55%	14.1%	1.0%	3.6%
Totals	Totals	50%	1.2%	2.5%	3.5%

premium (1% level) became a 3.6% discount (10% level) and Insurance, where a +15.9%

premium (1% level) became at -27.7% discount (5% level) and -29.8% discount (10%)

level.

The greater than 40 percentage point swing from premium to discount in the Insurance industry when going from the 1% to the 5% and 10% levels could be explained as follows. As previously discussed, due to different laws and customs in different countries, it is very difficult to sell a standardized insurance product around the world. Gaining knowledge about country differences and having to develop different products for each country/market makes it expensive for insurance firms to internationally diversify. Thus, they were projected to have a diversification discount. However, at the 1% foreign sales level, insurance firms have a 15.9% diversification premium. This premium could result from the firm following home clients overseas, which would allow them to sell a standardized product with minimal additional investment, and potentially providing the firm with a diversification premium.

However, firms that had increased foreign sales levels (5% and 10%) were likely to have been forced to develop new country specific products that can require foreign investments and significantly increase operating expenses. Therefore, at the greater percentage of international sales levels of 5% and 10%, these premiums turned into discounts of -27.7% and -29.8% respectively. These international diversification

discounts at the 5% and 10% levels for the insurance industry would provide additional support for Hypothesis 6.

A sensitivity analysis was also performed in regard to firm performance. In addition to using Tobin's q , Return on Assets (ROA) and Return on Equity (ROE) were tested as alternate measures of firm performance in order to determine whether an industry had an international diversification premium or discount. The results are as follows in Table 13.

In analyzing the results, whether there is a premium or discount remains the same 77% (23/30) of the time when comparing the results generated by using Tobin's q and ROE, and 80% (24/30) of the time when comparing the results generated by using Tobin's q and ROA. The differences in the results could be from using Net Income in computing ROA and ROE. Net income is typically a more volatile variable than market value or book value, which are used in computing Tobin's q . This is evidenced by numerous firms and even some industries having negative ROA's and/or ROE's in 2007, thus indicating that net income would have had to be negative in 2007 for those firms and industries. It could be valuable to run this sensitivity analysis in other years to see if the

Table 13. Industry Sector International Diversification Premiums/Discounts
Sensitivity Analysis Using Tobin's q , ROA and ROE (2007)

2 Digit SIC Code	Industry	% Intl	Tobin's q Premium or Discount	ROA Premium or Discount	ROE Premium or Discount
10	Metal Mining	67%	53.5%	471.4%	767.7%
13	Petroleum	31%	41.4%	126.5%	86.0%
20	Mfg.- Food	54%	27.9%	-20.7%	-9.5%
23	Mfg.- Apparel	59%	18.3%	29.2%	28.7%
26	Mfg.- Paper	81%	-21.9%	-5.2%	-5.3%
27	Printing	45%	-11.5%	6.9%	13.9%
283	Drugs	46%	-12.3%	131.0%	145.6%
33	Primary Metals	70%	-11.5%	-6.3%	-4.9%
34	Fabricated Metals	61%	-1.7%	3.4%	-4.7%
357	Computer Equipment	87%	1.1%	98.3%	130.9%
366	Communications Equip	76%	12.4%	-52.0%	-35.8%
367	Electronic Components	82%	-17.5%	10.3%	-16.7%
37	Transportation Equip	66%	-10.4%	-72.5%	-67.6%
382	Measuring/Control Dev	82%	-11.7%	-240.0	-294.0%
384	Medical Instruments	67%	5.4%	336.4%	429.4%
44	Shipping	20%	-16.4%	-3.0%	-31.8%
45	Air Transportation	51%	-9.1%	65.2%	65.9%
481	Telephone Comm.	53%	19.9%	122.2%	201.7%
49	Utilities	25%	-3.9%	25.0%	33.6%
50	Wholesale Trade- Durable	56%	-27.3%	-10.5%	22.2%
51	Wholesale Trade- Non	40%	21.3%	69.4%	53.2%

Table 13. Industry Sector International Diversification Premiums/Discounts Sensitivity Analysis Using Tobin's q , ROA and ROE (2007) - Continued

2 Digit SIC Code	Industry	% Intl	Tobin's q Premium or Discount	ROA Premium or Discount	ROE Premium or Discount
58	Retail-Restaurants	13%	1.6%	6.7%	-11.6%
59	Other Retail	35%	39.9%	39.5%	51.6%
61	Credit Union/Mortgage	17%	-47.3%	0.0%	-196.8%
62	Securities Brokers	34%	-52.3%	-86.7%	-28.9%
63	Insurance	15%	0.0%	-40.0%	16.9%
67	Investment Firms/Trusts	10%	55.5%	486.7%	171.0%
73	Business Services	65%	50.4%	222.7%	179.0%
80	Health Services	10%	35.2%	51.4%	-8.5%
87	Engineering Services	55%	-7.3%	9.3%	10.2%
Totals	Totals	50%	3.2%	43.5%	36.7%

results are significantly impacted. In analyzing the results generated by ROA and ROE to each other, the premiums/discounts compare favorably 80% (24/30) of the time.

In order to check for endogeneity, the study uses a two stage least squares regression (2SLS) that follows the model of Villalonga (2004). In the first stage of the

2SLS the following control variables are created in order to predict the dependent variable (DOI). These include Dividend, which indicates whether the firm pays a dividend and is an indicator variable = 1 if the firm pays a dividend, and = 0 if there is no dividend; merger, which is an indicator variable where if the firm had an acquisition at some point and that acquisition generated revenue in 2007, the variable = 1, otherwise = 0; Foreign Incorporation, another indicator variable which = 1 if the firm is incorporated in a country other than the United States, otherwise = 0; Major Stock Exchange which = 1 if the firm is listed on the NYSE, AMEX or NASDAQ stock exchanges, otherwise = 0; and Capital Expenditures/Sales, which is capital expenditures divided by sales.

In setting up the second stage of the 2SLS, the dependent variable is Tobin's q and the independent variables are DOI, R&D Intensity, Patent Investment, Advertising Intensity, SG&A Intensity, the Number of Regions in which the firm operates, Return on Assets, Total Assets, and Total Debt. The endogenous variable is the predicted DOI.

The results of the first stage predict DOI and are displayed under Model 1 in Table 14. The output of the second stage is also displayed in Table 13. The results for the moderator variables in the table are similar to those found in running the main model.

These results indicate that even after controlling for endogeneity, when we predict DOI we get results similar to our main results. Therefore, even though there is some endogeneity in the results, our overall model is not significantly affected by endogeneity.

Table 14. Endogeneity Testing Results (2007)

This table displays two stage least squared results investigating the endogeneity of the model. The results of the first stage are displayed in the column Model 1. The results of the second stage are displayed in columns Model 2 through Model 6.

The dependent variable in Model 1 is DOI. The dependent variable in Models 2 through 6 is Tobin's q . t-statistics appear in parentheses.

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>	<u>Model 5</u>	<u>Model 6</u>
<i>Firm Characteristics</i>						
Dividend	-0.06897 (-6.33)					
Merger	-0.02559 (-1.82)					
Foreign Incorporation	0.412063 (25.54)					
Major Stock Exch.	-0.00737 (-0.44)					
Capital Expend/Sales	-0.07092 (-4.99)					
Predicted DOI (from Model 1)		-0.72853 (-2.81)	-1.15322 (-3.57)	-0.49404 (-1.65)	-0.52944 (-1.94)	-1.07388 (-2.44)
Patent Investment		0.001446 (1.78)	0.001334 (1.67)	0.001521 (1.87)	0.002303 (1.27)	0.001541 (1.91)
R&D Intensity		1.282818 (3.84)	1.214221 (3.64)	1.461807 (2.82)	1.293278 (3.91)	1.294374 (3.88)
Advertising Intensity		-0.62201 (-0.2)	2.527109 (1.58)	3.417559 (2.21)	3.380872 (2.19)	3.340405 (2.15)
Number of Regions		-0.02061 (-1.12)	-0.02152 (-1.16)	-0.0203 (-1.11)	-0.02083 (-1.13)	-0.06011 (-1.63)
Total Assets	0.025534 (9.57)	-0.05694 (-2.05)	-0.03615 (-1.16)	-0.05897 (-2.15)	-0.05715 (-2.08)	-0.05226 (-1.91)
ROA	0.148925 (3.96)	1.079452 (1.74)	1.156555 (1.88)	1.136032 (1.85)	1.098243 (1.78)	1.155099 (1.9)
Total Debt		0.680648 (1.3)	0.690896 (1.33)	0.680261 (1.3)	0.674551 (1.29)	0.676917 (1.3)
Constant	879634 (4.06)	2.494464 (12.33)	2.355898 (11.81)	2.438176 (12.31)	2.437494 (12.29)	2.570821 (10.75)

Table 14. Endogeneity Testing Results (2007) - Continued

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>	<u>Model 5</u>	<u>Model 6</u>
<i>Interaction Effects</i>						
Advert. Int.*pDOI		15.1302 (1.68)				
SG&A Int.*pDOI			1.792627 (2.64)			
R&D Intensity*pDOI				-0.86601 (-0.47)		
Patent Invest*pDOI					-0.00201 (-0.6)	
Num. of Regions*pDOI						0.110596 (1.5)

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Study Overview and Contribution

Previous research on international diversification has shown conflicting results, reporting both international diversification premiums and discounts. This study suggests that a major reason for these mixed results is that the success of international diversification is dependent on specific industry and/or firm characteristics. By looking at all firms and industries in aggregate when building a model, past diversification studies have been undertaken at too high (aggregate) a level in order to understand how firm and industry specific issues impact international diversification. This could have led to the disparate results found in past research.

This study analyzed 30 industry sectors to determine whether these industries have an international diversification premium or discount. While the results of the overall sample of all firms in all 30 industries shows an average international diversification premium of only 1.2% (or essentially zero, indicating no discount or premium); the results found for the individual industries showed significant variations in premiums and discounts. In comparing the firm performance (using Tobin's q) of the

international firms of each of these industry sectors to the firm performance of the domestic firms of the sectors, we do find that international diversification premiums/discounts vary by industry. The results found that 18 industries have diversification premiums, while 12 have diversification discounts. The majority of these premiums/discounts were significant, as 13 industries had premiums of greater than 10%, while 10 had discounts of greater than -10%. Thus, the results show that industry does matter when looking at international diversification and firm performance.

These findings contradict earlier research which found international diversification discounts relative to purely domestic firms (Palich, et al., 1996; Christophe, et al., 1997; Click et al., 2000; Denis et al., 2002) or international diversification premiums relative to domestic firms (Errunza and Senbet, 1981; Defusco et al., 1988; Morck and Yeung, 1991; Garrod and Rees, 1996). Thus, it does appear that these previous studies may have been performed at too aggregate a level to take into account the effect the industry has on the international diversification/firm performance relationship. It could be interesting to re-examine these past studies on an industry specific basis to see if their results would vary by industry.

Overall, of the nine hypotheses developed in this study, six were found to be fully or partially supported. In examining the hypotheses that tested the international diversification premium/discount of certain industries, the study found that the knowledge based industries of Business Services, Health Services, Engineering Services, and Investment Firms/Trusts have international diversification premiums, as was projected to be the case. Therefore, it does appear that in high value, knowledge based industries, where the product has some level of standardization, that firms in these industries will likely have an international diversification premium.

These findings are in line with the research of Brock et al. (2006), who found a positive international diversification/firm performance relationship in their study of firms in the knowledge based legal industry. Also, our results have both similarities and differences with the findings of Capar and Kotabe (2003), who found a U-shaped international diversification/firm performance relationship in their study of German service firms. Thus, while we largely found ID premiums in the industries tested in the Capar and Kotabe (2003) study, their results indicated that, at low levels of international diversification, the diversification/performance relationship was initially negative. It did not turn into a premium until a foreign sales threshold of 18% of total sales was reached.

Industries with non-standardized products or services and/or required high capital expenditures were projected and found to have a diversification discount or smaller premium. These industries were Air Transportation, Insurance, Restaurant, Shipping, Mining, and Primary Metals Manufacturing. Wholesale Trade was found to be the exception, as that industry actually had a premium of 17.2% (average of durable and non-durable).

For the insurance industry, our results are similar to the findings of Katrisha and Scordis (1998), who found that insurance firms with a low degree of international diversification have a premium. However, their results also found that insurers with the highest levels of international diversification suffered from diseconomies of scale and had a diversification discount. This compares favorably to our results, where insurers at the 1% foreign sales level had a premium of +15.9%, however, at the 5% and 10% foreign sales levels they had discounts of -27.7% and -29.8% respectively.

The Wholesale Trade industry's premium could be the result of the low cost of manufacturing in less developed countries, particularly in China and other Asian countries. Wholesale Trade firms that sell purely domestically in the U.S. may not have developed the level of relationships with Asian suppliers as have international firms that

have more experience in dealing with foreign countries and markets. Therefore, the purchasing costs of domestic firms may be higher, thus reducing their profits and firm value relative to international firms. To investigate this issue further, researchers would have to explore potential differences in supplier relationships between international and domestic firms within the Wholesale Trade industry.

Surprising results were found in our testing of the Drug industry. The Drug industry was expected to yield an international diversification premium, but the results of the study showed it actually has an international diversification discount of -14.5%. This may be an anomaly due to the way pharmaceutical firms price their products. A premium was expected for the Drug industry due to the combination of pharmaceutical firms spending highly on R&D to develop new products, and production and sales costs being very low once the product has been developed. Thus, gross margins are very high once a product is developed and any increase in sales yields high margins and profits.

However, there is a pricing anomaly that impacts the firms in the study since they are U.S. based. There does not appear to be any purchasing power parity in the Drug industry. While the U.S. allows drug prices to be market based, many other countries do

not. This leads to higher drug prices in the U.S. than in other countries (Danzon and Chao, 2000; Wagner and McCarthy, 2004). Also, since the cost of product production is low and product margins are very high, pharmaceutical firms have significant flexibility in product pricing, which they can exercise to maximize the profit they receive from a specific country. As a result, these factors lead to the following:

- 1) Prices and product gross margins are highest in the U.S., and this is where the U.S. pharmaceutical firms recapture the majority of their R&D expense.
- 2) Many developed nations have price controls, which lead to prices 6% to 33% lower than those in the U.S. (Danzon and Furukawa, 2003). While these countries are still attractive from a profit standpoint, the lower prices lead to lower gross margins.
- 3) In order to sell product in third world countries, the pharmaceutical firms must charge considerably lower prices in order for them to be affordable. Thus, while profitable, sales in these countries yield significantly lower gross margins.

While expanding internationally yields increased profit, the issues previously mentioned do result in gross margin reduction. This gross margin reduction could lead to reduced market values of the firms in the Drug industry and, thus, a lower Tobin's q .

This could explain why this industry showed a diversification discount (when measured by Tobin's q). It could also explain why firms in the Drug industry yield an international diversification premium when using ROA and ROE as the basis for firm performance. Since expanding internationally increases profit with very little additional investment, that could lead to the positive impacts on both ROA and ROE that were seen in the study results.

This study also hypothesized that the success of international diversification is dependent upon certain firm specific advantages. We proposed that these advantages include the intangible assets of tacit knowledge, marketing capability, information technology systems, and international experience. We did find a positive and significant correlation between firm performance and the intangible assets of tacit knowledge, marketing capability, and information technology capability. The finding that this correlation was greater for international firms than for domestic firms indicates the greater impact these factors have on firms that have internationally diversified. Thus, firms that have capabilities in these areas are likely to have improved performance when internationally diversifying. This highlights the importance of investments in tacit

knowledge, marketing capability and information technology capability to firm management that is considering internationally diversifying their firm.

However, no support was found for the correlation between international experience and firm performance. While we still suggest that international experience is important when internationally diversifying, this result could be due to the proxy that was used for international experience (number of regions in which the firm operates). It may be useful to try to develop other proxies for this independent variable and re-test.

We explored the relationship between the four factors and individual industry international diversification premiums/discounts, however, there were not enough firms in the industries at the two digit or three digit SIC code levels to generate significant results. We did explore this at the one digit SIC code level, but at the one digit level the industries are too aggregated to highlight their differences. For example, SIC code = 2 (Manufacturing) would include Food Manufacturing (SIC = 20), Apparel (SIC = 23), Paper (SIC = 26), Printing (SIC = 27), and Drugs (SIC = 283). The premiums/discounts for these industries are respectively, -12.1%, +24.4%, -29.2%, +7.2%, and -14.5%. This averages to -4.8% and, thus, at this aggregated level we lose the uniqueness of each industry sector. Therefore, the best approach might be to attempt to expand the number

of firms studied in these industries (or even examine just a few of the industries in greater depth) to see if significant results could be found. This could also explain why previous research performed at aggregate industry levels yielded disparate results.

In exploring the interaction effects of Degree of Internationalization and the four factors on firm performance, the projected positive relationship was not found. This could be due to the testing being done on the entire database, and not completed on an industry by industry basis. The industry issues previously discussed could also have an impact on these interaction effects. More firms may be needed in the database in order to perform this testing on an industry specific basis, and this provides an opportunity for future research.

In summary, our results had both consistencies and inconsistencies from prior research. Our findings tended to confirm past studies that had examined international diversification by using a sample of only one industry, or a group of similar industries. Conversely, studies that used a sample that covered a wide range of industries tended to find disparate results (either international diversification premiums or discounts). Therefore, our findings did not agree with the results of these studies which were done on an aggregate industry level.

However, our research could be taken a step further in order to compare it with research that found the international diversification/firm performance relationship to be non-linear (Gomes and Ramaswamy, 1999; Capar and Kotabe, 2003; Wagner, 2004; Nachum, 2004; Lu and Beamish, 2004; Ruigrok, et al., 2007). In order to do so, we would need to extend our analysis by developing a model which examined the average firm performance for a given level of internationality by industry (as measured by the ratio of foreign sales/total sales).

Managerial Implications

This research provides valuable information to firm management in multiple areas. It informs managers as to whether firms in their industry are likely to have an international diversification discount or premium when moving from being a domestic to an international firm. Based on the results of this study, the industry sectors of Apparel Manufacturing, Fabricated Metals, Telephone Communications, Utilities, Non-durable Wholesale Trade, Other Retail, Investment Firms/Trusts, and Health Services look the most attractive, with diversification premiums in excess of 15%; while Paper Manufacturing, Drugs, Transportation Equipment, Electrical Components, Measuring and Control Devices, Credit Unions, Securities Brokers, and Insurance look the least

attractive, as they all show diversification discounts in excess of 10%. This information should help firm management with the decision on whether they should consider internationally diversifying their company.

The research also indicates that the factors of tacit knowledge, information technology capability, and marketing capability have a positive impact on the performance of international firms and, thus, may be important capabilities their firm should possess if they are to consider international expansion. The factor of international experience was not found to impact the performance of internationally diversified firms.

Research Limitations

While this research provided valuable insight into international diversification and its impact on certain industry sectors, there were several limitations to this study. First, it would have been helpful if there were more firms in the database so that regressions could have been run analyzing each of the independent variables (tacit knowledge, information technology capability, marketing capability, international experience) and their relationship to performance by industry. This would have allowed us to understand if certain factors were more critical than others in contributing to the performance of firms in the given industry.

Second, while there are many data variables in the Compustat database, numerous variables are not populated with data. For example, communication expense might be an excellent proxy for information technology expense, as IT drives the predominant share of a corporation's communication expense. While a communication expense variable does exist in Compustat, it is not populated with data. The same could be said for commission expense. Combining commission expense with advertising expense could yield a more accurate proxy for marketing capability; however, while there are four commission expense variables in Compustat, none are well populated with data.

Finally, while IT intensity was found to have a positive and significant correlation with Tobin's q in our analysis, the data used for IT intensity was from 1996. This is the latest year IT spending data is available and the 1996 data has been used in several recent studies. However, over the last 14 years IT capabilities have increased significantly in its ability to yield benefits to a corporation, and it would be helpful if more recent data on IT spending could be used. This may be difficult to accomplish since, for competitive reasons, firms seem reluctant to release information on their IT spending.

Future Research Opportunities

There are multiple opportunities for research that can extend this work. First, this research could be analyzed via a time series to see if the international diversification premiums/discounts have changed over time. This would provide researchers with input on which industry sectors may be becoming more attractive to international diversification and which may becoming less attractive. The impact of the independent variables on firm performance could also be done via time series. This could show which of the variables are potentially increasing in importance to multinational firms and which may be decreasing. Firm management could use this information as a potential indicator of the relative importance of making future investments in certain firm capabilities. This would require the research to be performed over a number of years, which may make it difficult to collect the necessary data. This is especially true of data on information technology spending, as firms now seem to view this information as sensitive strategically, and they appear to be reluctant to share their IT spending data.

Second, this research suggests that the effective development and implementation of leading edge information technology systems can reduce the coordination and control costs of international diversification, along with providing the firm other benefits.

Research in the areas of IT and its impact on firm performance is relatively new and could be expanded to look at specific components of IT such as lead management systems, ERP systems, data gathering/market intelligence, etc. to analyze in more detail their specific benefits to firms that have internationally diversified. These data would likely need to be gathered via survey as there does not appear to be a secondary source that would supply it.

Third, additional research could be done on the interaction effects of the independent variables used in the study. The hypothesis on the interaction effects was not supported, and it could be that the model should be modified to better capture these effects. Also, the interaction effects could be more prevalent in certain industries, which could further support the rationale of why some industries have a global diversification discount and others have a diversification premium. This would be very helpful for firms that were considering global diversification, as they could reference this information to determine if global diversification would likely be beneficial for their specific firm. It would also assist firms as to which areas they should invest (i.e. tacit knowledge, marketing capability, and/or information technology systems) in order to yield the greatest return when expanding internationally.

Finally, an analysis similar to this study could be undertaken by replacing the industry classifications with firm size classification. One could hypothesize that in order for a firm to have the necessary complementary assets to compete effectively on a global scale and/or reach certain economies of scale, that a firm must reach a certain size. Therefore, analyzing the sample to determine if there is a positive correlation between firm size and a diversification premium could be very helpful. The results of this research might also be helpful to a firm that is considering global diversification, as it could provide an indicator that unless the firm is or has plans to reach a certain size, it may not receive a benefit by going global.

REFERENCES CITED

- Adler, Nicole and Niron Hashi, 2007, Knowledge flows and the modeling of the multinational enterprise, *Journal of International Business Studies* 38: 639-657.
- Berger, Philip G. and Eli Ofek, 1995, Diversification's effect on firm value, *Journal of Financial Economics* 37: 39 – 65.
- Bharadwaj, Anandhi S., Sundar G. Bharadwaj and Benn R. Konsynski, 1999, Information Technology Effects on Firm Performance as Measured by Tobin's q , *Management Science* 45 No. 6: 1008-1024.
- Boutellier, Roman, O. Gassman, H. Macho and M. Roux, 1998, Management of Dispersed Product Development Teams: The Role of Information Technologies, *R&D Management* 28 No. 1: 13-25.
- Blomstermo, Anders, Kent Eriksson, Angelika Lindstrand, and D. Deo Sharma, 2004, The Perceived Usefulness of Network Experiential Knowledge in the Internationalizing Firm, *Journal of International Management* 10: 355-373.
- Brock, David M., Tal Yaffe, and Mark Dembovsky, 2006, International diversification and performance: A study of Global Law Firms, *Journal of International Management* 12: 473–489.
- Campa, Jose Manuel and Simi Kedia, 2002, Explaining the Diversification Discount, *The Journal of Finance* 52 (August): 1731–1762.
- Cantwell, John, and Rajneesh Narula, 2001, The Eclectic Paradigm in the Global Economy, *International Journal of the Economics of Business* 8: 155–172.
- Capar, N. and Maasaki Kotabe, 2003, The relationship between international diversification and performance in service firms, *Journal of International Business Studies* 34: 345–355:

- Carpenter, Mason A. and James W. Fredrickson, 2001, Top Management Teams, Global Strategic Posture, and the Moderating Role of Uncertainty, *Academy of Management Journal* 44 No. 3: 533-545.
- Chang, Sea Jin, 1995, International Expansion Strategy of Japanese Firms: Capability Building Through Sequential Entry, *Academy of Management Journal* 38: 383–407.
- Chang, Shao-Chi and Chi-Feng Wang, 2007, The effect of product diversification strategies on the relationship between international diversification and firm performance, *Journal of World Business* 42: 61-79.
- Chari, Murali D. R., Sarv Devaraj, and Parthiban David, 2007, International diversification and firm performance: Role of information technology investments, *Journal of World Business* 42: 184-197.
- Christophe, Stephen E., 1997, Hysteresis and the Value of the U.S. Multinational Corporation, *Journal of Business* 70: 435–461.
- Chung, Kee H. and Stephen W. Pruitt, 1994, A Simple Approximation of Tobin's q , *Financial Management* 23 No. 3: 70-74.
- Click, Reid W. and Paul Harrison, 2000, Does Multinationality Matter? Evidence of Value Destruction in U.S. Multinational Corporations, *U.S. Federal Reserve Board's Finance & Economic Discussion Series* (2000): 1-38.
- Cohen, Wesley M. and Daniel A. Levinthal, 1990, Absorptive Capacity: A New Perspective on Learning and Innovation, *Administrative Science Quarterly* 35 No. 1: 128-152.
- Coles, Jeffrey L., Naveen D. Daniel and Lalitha Naveen, 2008, Boards: Does one size fit all? *Journal of Financial Economics* 87: 329-356.
- Collinson, Simon and Alan M. Rugman, 2008, The Regional Nature of Japanese Business, *Journal of International Business Studies* 39 No.2: 215-230.

- Comment, Robert and Greg Jarrell, 1995, Corporate Focus and Stock Returns, *Journal of Financial Economics* 37: 67-87.
- Contractor, Farok J., Sumit K. Kundu and Chin-Chun Hsu, 2003, A three-stage theory of international expansion: the link between Multinationality and performance in the service sector, *Journal of International Business Studies* 34: 5-18.
- Cuervo-Cazurra, Alvaro and Mehmet Genc, 2008, Transforming disadvantages into advantages: developing-country MNEs in the least developed countries, *Journal of International Business Studies* 39: 957-979.
- Danzon, Patricia M. and Li-Wei Chao, 2000, Cross-national price differences for pharmaceuticals: how large, and why? *Journal of Health Economics* 19: 159-195.
- Danzon, Patricia M. and Michael Furukawa, 2003, Prices and Availability of Pharmaceuticals: Evidence from Nine Countries, *Health Affairs* 3 (October): 521-536.
- Dastidar, Protiti, 2009, International corporate diversification and performance: Does firm self-selection matter? *Journal of International Business Studies* 40 No.1: 71-85.
- Defusco, Richard A., George C. Philappatos, and Dosoung Choi, 1988, Risk, return, and international investment by US Corporations, *Applied Economics*: 1199-1209.
- Delgado-Gomez, Jose M., Marisa Ramirez-Aleson, and Manuel Antonio Espita-Escuer, 2004, Intangible Resources as a key factor in the internationalization of Spanish firms, *Journal of Economic Behavior and Organization* 53: 477-494.
- Delios, Andrew and Paul W. Beamish, 1999, Geographic Scope, Product Diversification, and the Corporate Performance of Japanese Firms, *Strategic Management Journal* 20: 711-727.

- Denis, David J., Diane K. Denis, and Keven Yost, 2002, Global Diversification, Industrial Diversification, and Firm Value, *The Journal of Finance* 57 (October): 1951–1979.
- Di Benedetto, C. Anthony, Wayne S. DeSarbo and Michael Song, 2008, Strategic Capabilities and Radical Innovation: *An Empirical Study in Three Countries*, *IEEE Transactions on Engineering Management* 55 No. 3: 420-433.
- Doz, Yves and C.K. Prahalad, 1984, Patterns of Strategic Control Within Multinational Corporations, *Journal of International Business Studies* Fall: 55-72.
- Dunning, John H., 1988, The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions, *Journal of International Business Studies* 19 (Spring): 1–31.
- Dunning, John H., 1995, Reappraising the Eclectic Paradigm in an Age of Alliance Capitalism, *Journal of International Business Studies* 26 (Third Quarter): 461–492.
- Errunza, Vihang, R. and Lemma W. Senbet, 1981, The Effects of International Operations on the Market Value of the Firm: Theory and Evidence, *The Journal of Finance* 36: 401–417.
- Errunza, Vihang, R. and Lemma W. Senbet, 1984, International Corporate Diversification, Market Valuation, and Size-Adjusted Evidence, *The Journal of Finance* 39: 727-746.
- Fang, Yulin, Michael Wade, Andrew Delios and Paul W. Beamish, 2007, International Diversification, Subsidiary Performance, and the Mobility of Knowledge Resources, *Strategic Management Journal* 28: 1053-1064.
- Fang, Yulin, Guo-Liang Frank Jiang, Shige Makino, and Paul W. Beamish, 2009, Multinational Firm Knowledge, Use of Expatriates and Foreign Subsidiary Performance, *Journal of Management Studies* 47 No. 1: 27-54.

- Fauver, Larry, Joel F. Houston, and Andy Naranjo, 2003, Capital Market Development, International Integration, Legal Systems, and the Value of Corporate Diversification: A Cross-Country Analysis, *Journal of Financial and Quantitative Analysis* 38 No. 1: 135-157.
- Fauver, Larry, Joel F. Houston, and Andy Naranjo, 2004, Cross-Country evidence on the value of corporate industrial and international diversification, *Journal of Corporate Finance* 10: 729–752.
- “The Five Hundred by Industry” *InformationWeek*, September 9, 1996.
- Gande, Amar, Christoph Schenzler, and Lemma W. Senbet, 2009, Valuation effects of global diversification, *Journal of International Business Studies* 40 No. 9: 1515-1532.
- Garrod, Neil and William Rees, 1998, International Diversification and Firm Value, *Journal of Business Finance & Accounting* 25: 1255-1281.
- Goerzen, A. and Paul W. Beamish, 2003, Geographic Scope and Multinational Enterprise Performance, *Strategic Management Journal* 24: 1289-1306
- Gomes, Joao, and Dmitry Livdan, 2004, Optimal Diversification: Reconciling Theory and Evidence, *The Journal of Finance* 59: 507–535.
- Gomes, Lenn and Kannan Ramaswamy, 1999, An Empirical Examination of the Form of the Relationship Between Multinationality and Performance, *Journal of International Business Studies* 30 No. 1: 173-188.
- Graham, John R., Michael L. Lemon and Jack G. Wolf, 2002, Does Corporate Diversification Destroy Value? *The Journal of Finance* 57 No. 2: 695-720.
- Gupta, Anil K. and Vijay Govindarajan, 2000, Knowledge Flows Within Multinational Corporations, *Strategic Management Journal* 21: 473-496.

- Hadley, Richard D. and Heather I. M. Wilson, 2003, The network model of internationalization and experiential knowledge, *International Business Review* 12: 697-717.
- Hennart, Jean-Francois, 2007, The Theoretical Rationale for a Multinationality-Performance Relationship, *Management International Review* 47 No. 3: 423-452.
- Herrmann, Pol and Deepak K. Datta, 2005, Relationships Between Top Management Team Characteristics and International Diversification: an Empirical Investigation, *British Journal of Management* 16: 69-78.
- Hitt, Michael A., Robert E. Hoskisson and R. Duane Ireland, 1994, A Mid-Range Theory of the Interactive Effects of International and Product Diversification on Innovation and Performance, *Journal of Management* 20 No. 2: 297-326.
- Hitt, Michael A., Robert E. Hoskisson and Hicheon Kim, 1997, International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms, *Academy of Management Journal* 40 No. 4: 767-798.
- Hitt, Michael A., Leonard Bierman, Klaus Uhlenbruck and Katsuhiko Shimizu, 2006, The Importance of Resources in the Internationalization of Professional Service Firms: The Good, the Bad, and the Ugly, *Academy of Management Journal* 49 No. 6: 1137-1157.
- Hitt, Michael A., Laszlo Tihanyi, Toyah Miller and Brian Connelly, 2006, International Diversification: Antecedents, Outcomes, and Moderators, *Journal of Management* 32 No.6 (December): 831-867.
- Hitt, Michael A., R. Duane Ireland, and Robert E. Hoskisson, 2007, *Strategic Management: Competitiveness and Globalization* (7th edition). Mason, Ohio: South-Western College.
- Hyland, David C., and J. David Diltz, 2002, Why Firms Diversify: An Empirical Examination, *Financial Management* (Spring 2002): 51 – 81.

- Jung, Jaemin and Sylvia M. Chan-Olmsted, 2005, Impacts of Media Conglomerates' Dual Diversification of Financial Performance, *Journal of Media Economics* 18 No. 3: 183-202.
- Kaplan, Steven N. and Michael S. Weisbach, 1992, The Success of Acquisitions: Evidence from Divestitures, *Journal of Finance* 47 No. 1: 107-138.
- Katrishen, Frances A. and Nicos A. Scordis, 1998, Economies of Scale in Services: A Study of Multinational Insurers, *Journal of International Business Studies* 29, 2: 305-324.
- Kim, Wi Saeng and Esmeralda O. Lyn, 1986, Excess Market Value, the Multinational Corporation, and Tobin's q -Ratio, *Journal of International Business Studies* (Spring): 119-125.
- Kobelsky, Kevin, Starling Hunter and Vernon J. Richardson, 2008, Information Technology, Contextual Factors and the Volatility of Firm Performance, *International Journal of Accounting Information Systems* 9: 154-174.
- Kotabe, Masaaki, Srini S. Srinivasan, and Preet S. Aulakh, 2002, Multinationality and Firm Performance: The Moderating Role of R&D and Marketing Capabilities, *Journal of International Business Studies* 33: 79 – 97.
- Lang, Larry H P and Rene M Stulz, 1994, Tobin's q , Corporate Diversification, and Firm Performance, *Journal of Political Economy* 102: 1248-80.
- Lins, Karl and Henri Servaes, 1999, International Evidence on the Value of Corporate Diversification, *The Journal of Finance* 54 (December): 2215 – 2239.
- Lins, Karl and Henri Servaes, 2002, Is Corporate Diversification Beneficial in Emerging Markets?, *Financial Management* (Summer): 5-31.
- Lu, Jane W. and Paul W. Beamish, 2004, International Diversification and Firm Performance: The S-Curve Hypothesis, *Academy of Management Journal* 47,4: 598-609.

- Lu, Yuan, Eric W.K. Tsang and Mike W. Peng, 2008, Knowledge management and innovation strategy in Asia Pacific: Toward and institutional view, *Asia Pacific Journal of Management* 25: 361-374.
- Mancusi, Maria Luisa, 2008, International spillovers and absorptive capacity: A cross-country cross-sector analysis based on patents and citations, *Journal of International Economics* 76: 155-165.
- Mansi, Sattar A. and David M. Reeb, 2002, Corporate Diversification: What Gets Discounted? *The Journal of Finance* 52 No. 5: 2167-2183.
- Martin, John D. and Akin Sayrak, 2003, Corporate diversification and shareholder value: a survey of recent literature, *Journal of Corporate Finance* 9 (January): 37-57.
- Mathur, Ike, Manohar Singh and Kimberly C. Gleason, 2004, Multinational Diversification and Corporate Performance: Evidence from European Firms, *European Financial Management* 10 No. 3: 439-464.
- Mitra, Sabyasachi, 2005, Information Technology as an Enabler of Growth in Firms: An Empirical Assessment, *Journal of Management Information Systems* 22, No. 2: 279-300.
- Morck, Randall, Bernard Yeung, 1991, Why Investors Value Multinationality, *Journal of Business* 64: 165-187.
- Morck, Randall, Bernard Yeung, 1998, Why Firms Diversify: Internationalization versus Agency Behavior, SSRN: <http://ssrn.com/abstract=100928>.
- Mudambi, Ram, 2002, Knowledge Management in Multinational Firms, *Journal of International Management* 8: 1-9.
- Nachum, Lilach, 2003, Does nationality of ownership make any difference and, if so, under what circumstances? Professional service MNEs in global competition, *Journal of International Management* 9: 1-32.

- Nachum, Lilach, 2004, Geographic and Industrial Diversification of Developing Country Firms, *Journal of Management Studies* 41 No. 2: 273-294.
- Nachum, Lilach and Srilata Zaheer, 2005, The Persistence of Distance? The Impact of Technology on MNE Motivations for Foreign Investment, *Strategic Management Journal* 26: 747-767.
- Nesta, Lionel and Pier-Paolo Saviotti, 2006, Firm knowledge and market value in biotechnology, *Industrial and Corporate Change* 15 No. 4: 625-652.
- Nesta, Lionel, 2008, Knowledge and productivity in the world's largest manufacturing corporations, *Journal of Economic Behavior and Organization* 67: 886-902.
- Palich, Leslie E., Gary R. Carini, and Samuel L. Seaman, 1996, Internationalization as a Moderator in the Diversification-Performance Relationship: An Empirical Assessment, *Academy of Management Proceedings* 96: 171-175.
- Penrose, Edith, 1966, New York, *The Theory of the Growth of the Firm*, Oxford University Press.
- Qian, Gongming, Lee Li, Ji Li and Zhengming Qian, 2008, Regional Diversification and Firm Performance, *Journal of International Business Studies* 39 No. 2: 197-214.
- Ravichandran, T., Yu Liu, Shu Han, and Iftekhar Hasan, 2009, Diversification and Firm Performance: Exploring the Moderating Effects of Information Technology Spending, *Journal of Management Information Systems* 25, No. 4: 205-240.
- Rugman, Alan M., 2003, Regional Strategy and the Demise of Globalization, *Journal of International Management* 9 No. 4: 409-417.
- Ruigrok, Winfried, Wolfgang Amann and Hardy Wagner, 2007, The Internationalization-Performance Relationship at Swiss Firms: A Test of the S-Shape and Extreme Degrees of Internationalization, *Management International Review* 47 No. 3: 349-368.

- Rumelt, Richard, 1974, *Strategy, Structure, and Economic Performance*, Cambridge, Harvard University Press.
- Rumelt, Richard P, 1982, Diversification Strategy and Profitability, *Strategic Management Journal* 3: 359-369.
- Sambharya, Rakesh, 1996, Foreign Experience of Top Management Teams and International Diversification Strategies of U.S. Multinational Corporations, *Strategic Management Journal* 17: 739-746.
- Sanders, Wm. Gerard and Mason A. Carpenter, 1998, Internationalization and Firm Governance: The Roles of CEO Compensation, Top Team Composition, and Board Structure, *Academy of Management Journal* 41 No.2: 158-178.
- Shin, Namchul, 2006, The impact of information technology on the financial performance of diversified firms, *Decision Support Systems* 41: 698-707.
- Thomas, Douglas E. and L. Eden, 2004, What is the shape of the Multinationality-performance relationship? *Multinational Business Review*, 12 No.1: 89-110.
- Thomas, Douglas E., 2005, Top Management Team International Dominant Logic: A New Linkage in the International Diversification-Performance Link, *Problems and Perspectives in Management* 2: 54-63.
- Thomas, Douglas E., 2006, International Diversification and Firm Performance in Mexican Firms: A Curvilinear Relationship?, *Journal of Business Research* 59: 501-507.
- Thornhill, Stewart, 2006, Knowledge, innovation and firm performance in high- and low-technology regimes, *Journal of Business Venturing* 21, 687-703.
- Tihanyi, Laszlo, Alan E. Ellstrand, Catharine M. Daily and Dan. R. Dalton, 2000, Composition of the Top Management Team and Firm International Diversification, *Journal of Management* 26 No. 6: 1157-1177.

- Tihanyi, Laszlo, Richard A. Johnson, Robert E. Hoskisson, and Michael A. Hitt, 2003, Institutional Ownership Differences and International Diversification: The Effects of Boards of Directors and Technological Opportunity, *Academy of Management Journal* 46: 195–211.
- Tihanyi, Laszlo, David A. Griffith and Craig J. Russell, 2005, The Effect of Cultural Distance on Entry Mode Choice, International Diversification, and MNE Performance: A Meta-analysis, *Journal of International Business Studies* 36: 270-283.
- Tongli, Lin, Er Jwee Ping, and Winston Kwok Chee Chiu, 2005, International Diversification and Performance: Evidence from Singapore, *Asia Pacific Journal of Management* 22, 65-88.
- Townsend, Janell D., Sengun Yenyurt and Mehmet Berk Talay, 2009, Getting to global: An evolutionary perspective of brand expansion in international markets, *Journal of International Business Studies* 40 No. 4, 539-558.
- Villalonga, Belen, 2004, Diversification Discount or Premium? New Evidence from the Business Information Tracking Series, *The Journal of Finance* 59 (April): 479–506.
- Villalonga, Belen, 2004, Does Diversification Cause the “Diversification Discount”?, *Financial Management* (summer): 5-27.
- Wagner, Hardy, 2004, Internationalization speed and cost efficiency: evidence from Germany, *International Business Review* 12: 447-463.
- Wagner, Judith L. and Elizabeth McCarthy, 2004, International Differences in Drug Prices, *Annual Review of Public Health* 25 No. 1: 475-495.
- Wally, Stefan and Manuel Becerra, 2001, Top Management Teams Characteristics and Strategic Changes in International Diversification: The Case of U.S. Multinationals in the European Community, *Group and Organization Management* 26 No. 2: 165-188.

Yung, Kenneth K., 2002, Value of Multinationality: Internalization, Managerial Self-interest and Managerial Compensation, *Journal of Business Finance & Accounting* 29 (January/March): 55–75.

Zaheer, Srilata, 1995, Overcoming the Liability of Foreignness, *Academy of Management Journal* 38 No. 2: 341-363.

Zaheer, Srilata, and S. Manrakhani, 2001, Concentration and Dispersion in Global Industries: Remote Electronic Access and the Location of Economic Activity, *Journal of International Business Studies* 32 No. 4: 667-686.

Zhang, Yan, Haiyang Li, Michael A. Hitt, and Geng Cui, 2007, R&D Intensity and International Joint Venture Performance in an Emerging Market: Moderating Effects of Market Focus and Ownership Structure, *Journal of International Business Studies* 38 No. 6: 944-960.

**APPENDIX I
DEFINITIONS**

Corporate Diversification	Corporate diversification is defined as a firm that reports sales in more than one business segment. More specifically, a firm is classified as diversified when it reports sales in two or more business segments (at the two digit SIC Code level) and the most important segment accounts for less than 90% of the total sales of the company (Lins and Servaes, 2002; Hyland and Diltz, 2002; Fauver, et al., 2003).
International Diversification	<p>International diversification is defined as the expansion of the firm's activities across the borders of global regions and countries into different geographic locations and markets (Hitt, et al., 1997). It is the geographical breadth of a firm's international presence (Goerzen and Beamish, 2003) and refers to the portion of operations outside of the home country (as reported by sales, profits, assets or subsidiaries) within the MNE's business portfolio, thus capturing the level of the firm's international involvement (Tihanyi, et al., 2005; Hennart, 2007). Other terms used synonymously with international diversification are:</p> <ul style="list-style-type: none"> • Internationalization • Geographic diversification • International Expansion • Global Diversification • Globalization • Multinationality.
Service Industry	In a service industry professional knowledge is the core resource, and it is both the input and output in the production process (Nachum, 2003). Also, the customer is integrally involved with the production and use of the service.

APPENDIX II
INTERNATIONAL DIVERSIFICATION BENEFIT
AND COST SUMMARY

<p>Benefits firms can potentially receive from ID include:</p>	<ul style="list-style-type: none"> • Economies of scale (Kim and Lyn, 1986; Capar and Kotabe, 2003; Nachum, 2003; Brock, et al, 2006) • Economies of scope (Capar and Kotabe, 2003; Gomes and Livdan, 2004) • Intangible assets (Kotabe, et al., 2002; Blostermo, et al, 2004; Brock, et al, 2006; Gande, 2009) <ul style="list-style-type: none"> - Management Skill - Tacit knowledge - Knowledge management (Mudambi, 2002) - Marketing Capability - IT systems (Nachum and Zaheer, 2005)
<p>Areas where international diversification is costly and can potentially reduce firm value include:</p>	<ul style="list-style-type: none"> • Coordination and control (Hitt, et al., 1997; Gomes and Ramaswamy, 1999; Hardy, 2004; Lu, et al., 2008) • Inefficient use of assets (Click and Harrison, 2000) • Liability of foreignness (Zaheer, 1995; Katrishen and Scordis, 1998; Thomas, 2006) <ul style="list-style-type: none"> - Travel, transportation and coordination over distance and across time zones - Unfamiliarity with customs, cultures, and business practices of the host county - Host country nationalism and the lack of legitimacy of foreign firms - Home country costs, such as restrictions on high technology sales

APPENDIX III

INTERNATIONAL DIVERSIFICATION OF NON U.S. FIRMS

There are several studies of non-U.S. based multi-national enterprises that offer contradictory results (similar to the research on U.S. based MNEs). While early research indicates an international diversification discount, more recent research indicates the potential of an international diversification premium. In their study of United Kingdom (UK) firms from 1991 to 1996, Garrod and Rees (1998) find that earnings and net assets are more highly valued for multinational firms than for domestic firms, and that for an MNE there is no difference in the valuation of domestic and multinational earnings and net assets. This indicates that the multinationality makes the entire firm more valuable, not just the firm's international components. However, Lins and Servaes (1999) find contradictory results within their own study. For firms with their headquarters outside of the U.S., they find an international diversification discount of 10% for Japanese MNEs and 15% for UK MNEs, while for German firms there is no diversification discount or premium.

In a specific study of the international diversification of Japanese firms, Chang (1995) finds that with a well planned strategy and strong execution, international diversification can be successful. He studies the sequential entry strategy of Japanese

firms into the U.S. market. By leading with a product that has a strong competitive advantage over their U.S. counterparts, they were able to successfully enter the U.S. market and gain market share. The learning curve the Japanese companies experienced and the reputation they gained put them in a strong position to add other products and/or lines of business to their U.S. operations. The success of this international diversification strategy is indicated by Japanese accumulated foreign direct investment of assets in the U.S. increasing from 19% in 1980 to 31% in 1987⁷. However, while this strategy does appear to have been successful, the study does not investigate the actual international diversification premium or discount as a result of the U.S. market entry.

Similarly, in a European study it was found that the speed at which the international expansion takes place does have an impact on firm performance. A relatively slow speed of foreign expansion leads to performance improvements, as firms can increase their knowledge base and gradually absorb the new complexity level generated by the expansion. However, when a firm expands their internationally operations too rapidly (i.e. enters too many new countries or markets at a rate that exceeds their absorptive capacity (Cohen and Levinthal, 1990)) it can lead to firm value

⁷ Sea Jin Chang, "International Expansion Strategy of Japanese Firms: Capability Building Through Sequential Entry," *Academy of Management Journal*, Vol. 38, No. 2, p. 383.

destruction (Wagner, 2004). This is due to the absorptive capacity of firm management, which has a negative moderating impact on the speed at which the firm can expand. It is this absorptive capacity and the capability of firm management that dictates the time it takes to overcome the liability of foreignness from each new market entered (Zaheer, 1995; Wagner, 2004). Thus, it appears that the Japanese and European studies agree that a well laid out plan for global expansion executed at the proper speed (based on management capability) can lead to improved firm performance (Chang, 1995; Wagner, 2004).

In examining both corporate and international diversification, it is found that performance is enhanced when a firm has a focused product approach (i.e. stays within the same SIC two digit code), but a broad approach to international diversification (Tongli, et al., 2005). In their study of firms based in Singapore, in addition to the previously stated benefits of international diversification, they also suggest that internationally diversified firms are better able to counter aggressive expansion by competitors, take advantage of market imperfections in emerging economies, and not be held hostage to the fluctuations of demand and constraints of supply in any one market.

However, for firms from developing countries, both corporate and international diversifications have been found to improve firm performance (Nachum, 2004). Nachum defines a corporately diversified firm as operating in more than one area of economic activity and having no more than 95% of sales from their main product group, while international diversification is defined as establishing value added activities outside the firm's home country and generating at least 10% of revenues from operations in foreign markets. The rationale for these findings is as follows (Nachum, 2004):

- 1) International diversification benefits from economies of scale are particularly important for firms in developing countries since their local markets are likely to be too small to achieve scale advantages within the home country. Thus, moving outside the home country finally allows them to achieve economies of scale.
- 2) Markets in developing countries are often unstable and typically high risk, thus by diversifying internationally to more stable markets and business opportunities this risk is reduced.
- 3) Developing countries often have poor infrastructure and educational systems, thus they are often unable to provide firms with the necessary resources they require to optimally operate their business and achieve success. Therefore, it is

advantageous for the firm to move into new countries and regions as these sought after capital and human resources can likely be gained from the international markets into which the firm expands.

In recent studies of European based firms, it is found that international diversification has a positive relationship with firm performance (Wagner, 2004; Mathur, et al., 2004; Delgado-Gomez, et al., 2004). Since individual European countries are significantly smaller from a market standpoint than the United States, it is critical for European firms to successfully go global. Benefits include exploiting market imperfections, internalization of information, portfolio diversification, tax reduction, financial and managerial synergies, economies of scale and scope, and positive growth opportunities (Mathur, et al., 2004). Many of these benefits achieved by European firms are derived from the use of the firm's intangible resources (Delgado-Gomez, et al., 2004) on a European wide basis. These resources include technological know-how, patents, tacit knowledge, management skill, information technology systems and consumer goodwill (Lu and Beamish, 2004).

APPENDIX IV
NON-LINEAR RELATIONSHIP BETWEEN INTERNATIONAL
DIVERSIFICATION AND PERFORMANCE

Numerous studies have found that the relationship between international diversification and performance is non-linear (Hitt, et al., 1997; Gomes and Livdan, 1999; Capar and Kotabe, 2003; Wagner, 2004; Nachum, 2004; Thomas, 2006; Lu, et al., 2008; Ruigrok, et al., 2007). One rationale is that increasing levels of multinationality increases performance up to a point, but beyond this optimal point the costs of international diversification begin to outweigh the benefits, causing a performance decline (Gomes and Livdan, 1999; Ruigrok, et al., 2007). These costs include increasing coordination and control, difficulties managing businesses in multiple markets with diverse cultures, and developing products to meet significant variations in customer needs. Thus, they argue and find that the relationship between international diversification and performance is curvilinear (inverted U-shaped curve), with benefits exceeding costs up to an optimal point, where eventually the costs of ID outweigh the benefits and performance declines (Gomes and Livdan, 1999; Thomas, 2006).

Compounding the impact of the inverted U-shape curve in the international diversification-performance relationship is whether the international expansion is

regional or truly global. It has been found that diversification within regions has a lower cost than diversification across regions, and can thus have a more positive impact on firm performance. This is true up to a certain threshold, when the diversification impact becomes negative (Qian, et al., 2008), thus supporting previous research that found the inverted U-shaped curve. However, they also find that firms optimize their performance when they operate in two or three developed regions and a minimal number of developing regions⁸.

While most studies have been performed on manufacturing firms, Capar and Kotabe, (2003) studied service firms and found a U-shaped international diversification-performance relationship. This is similar to that found by Thomas (2006), who in a study of Mexican firms attributes the U-shaped curvilinear relationship to the liability of foreignness. In their study of German service firms, Capar and Kotabe suggest differences in the nature of service firms versus manufacturing firms lead to the previously discussed inverted U-shaped curvilinear relationship between ID and

⁸ According to the Worldbank (2002) the world is comprised of ten regions. Four regions are considered to consist of developed countries; European Union, North America, other developed countries, and other Western European countries. The six developing regions are East Asia and the Pacific, other European and Central Asian countries, Latin American and the Caribbean, the Middle East and North Africa, South Asia, and Sub-Saharan Africa.

performance to become non-inverted. This is because service industries have the following characteristics:

1. Many governments have restrictions on foreign firms operating in service industries in their country, thus reducing efficiency and increasing costs.
2. Services provided in foreign countries typically have to be adapted more than products, thus increasing costs.
3. Since services are typically produced and consumed at the same time, and they must be produced in the host country, requiring an immediate local presence. This is opposed to product firms that typically first enter a country by the less expensive method of exporting.

Thus, for service industries, upon entering a new country, firm performance initially declines due to these increased costs. Once economies of scale are achieved and organization learning takes place the performance decline should cease and turn into a performance increase. Therefore, for service industries, the result is a U-shaped curvilinear relationship between international diversification and firm performance.

Two more recent studies have actually found that the international diversification-performance relationship is that of an S-curve (Lu and Beamish, 2004; Ruigrok, et al.,

2007). Similar to Capar and Kotabe, this may occur as a firm realizes excessive costs and initial negative returns (or positive returns at a reduced level) when first expanding into foreign markets due to the liability of foreignness (Zaheer, 1995). Zaheer describes the following as costs a firm may encounter when entering a foreign market:

1. Costs associated with travel, transportation and coordination over distance and across time zones.
2. Costs based on a firm's unfamiliarity with the customs, cultures, and business practices of the host country.
3. Costs resulting from host country nationalism and the lack of legitimacy of foreign firms.
4. Costs from the home country, such as restrictions on high technology sales.

These costs diminish as the firm's experience increases and they are able to exploit their intangible assets, which can be comprised of technological know-how, patents, tacit knowledge, management skill, information technology systems (Bharadwaj, et al., 1999; Chari, et al., 2007) and consumer goodwill (Lu and Beamish. 2004). This results in an acceleration of profits and a more positive slope on the international diversification-performance curve. However, like the results of studies that yielded the

inverted U-shaped relationship, eventually coordination and control costs lead to diseconomies of scale and result in a downward slope on the international diversification-performance curve, resulting in an S-shape (Gomes and Livdan, 1999; Ruigrok, et al., 2007). See the Three-Phase Model of the S-shaped curve, Figure 2.

APPENDIX V

INTERNATIONAL DIVERSIFICATION IN SERVICE FIRMS

Studies of international diversification and performance in service firms yield similar results. Many of the advantages of service firms going global are the same as those for industrial firms; however there are also some unique differences. The advantages include efficiencies from economies of scale, economies of scope (Kim and Lyn, 1986; Capar and Kotabe, 2003; Nachum, 2003; Brock, et al., 2006) and experiential knowledge (Blomstermo, et al., 2004; Brock, et al., 2006). Many of the costs are also similar, such as coordination and control, travel, transportation, dealing with diverse cultures, varying business practices and host country government regulations (Katrishen and Scordis, 1998).

However, what is different for service firms in international diversification is that legal systems, laws, languages and cultures (Capar and Kotabe, 2003) can become much more significant barriers in service firms than in industrial firms. This is because services often involve the customer interacting with a person (i.e. firm employee, agent, or alliance partner), versus buying a product. It is typically much more difficult and expensive to educate and train employees on how to do business in a different country and/or culture than it is to adapt a product (Brock, et al., 2006) to these same challenges.

This rationale indicates why it can be more difficult for a service firm to diversify internationally than it might be for an industrial firm. Thus, a service firm may initially under-perform an industrial firm when internationally diversifying.

Firms in countries that are endowed with certain resources or circumstances also tend to perform better when going global (Dunning, 1988, 1995). Nachum (2003) finds this to be the case in her study of professional service industries. Professional service firms are defined as service industries where professional knowledge is the core resource, and it is both the input and output in the production process (Nachum, 2003). This study includes firms with service businesses in legal, accounting, technical, advertising, computer, and consulting. Nachum finds that firm investment is driven by exploiting home country characteristics and that, to a large extent, the international diversification of professional service firms are demand driven by following home clients overseas.

Brock, et al. (2006) empirically tested this hypothesis and also found it to be the case in a study of global law firms. This is logical, as following home clients overseas would provide firms with an immediate revenue stream at a minimal cost. Thus, service firms going global via following their clients overseas would be expected to see a positive impact on firm performance; while those firms that merely expand overseas

could be expected to see the U-shaped performance curve found by Capar and Kotabe (2003).

Similar to studies of industrial firms, other studies of service firms have found that the relationship between international diversification and performance has an inverted U-shaped curvilinear relationship (Katrishen and Scordis, 1998; Brock, et al., 2006). In a study of firms in the media industry, Jung and Chan-Olmsted (2005) find that related product expansion and international diversification yield better financial performance. However, similar to Lu, et al. (2008) and Capar and Kotabe (2003), they find that returns from international diversification are initially negative, and then turn positive once a certain threshold of international diversification has been achieved. This indicates the presence of a hurdle level for international diversification. Thus, the overall relationship between international diversification and performance in service firms could take more of the S-curve shape previously discussed for industrial firms.

While Capar and Kotabe (2003) found the U-shaped curvilinear relationship, it would be interesting to extend their study to see if the U-shape was actually the front component of the S-shaped curve found in later studies. It would seem logical that this is

the case since, at some point; diseconomies of scale should set in for service industries and result in a decline in performance.

The media industry is a good example of an industry that should benefit from global expansion. The primary reason is that in certain components of the media industry, economies of scale are very large. This is because in media, production of the product is very expensive, but replication/distribution costs are typically low. In some ways the media industry is actually similar to manufacturing in that it is research and development intensive (Jung and Chan-Olmsted, 2005), where the cost of product development is high, but manufacturing costs are relatively low. An example in the media industry includes newspapers, which have high production costs (i.e. reporters, photographers, editorial staff), but low distribution costs (can be electronically transmitted and printed around the world).

In summary, since international diversification-performance research for service firms tends to be more recent, it largely is in concert with recent international diversification-performance research for industrial firms, which is that depending on the study and industry used, the international diversification-performance relationship is either a U-shaped, an inverted U-shaped or an S-shaped curve. We contend that the S-

shaped curve really incorporates both the U-shaped curvilinear relationship found by Capar and Kotabe (2003) on the front end, with the inverted U-shaped curve making up the latter portion of the S-shaped curve (once diseconomies of scale and coordination and control costs have set in).

APPENDIX VI CORPORATE DIVERSIFICATION

Much of the research on corporate diversification has paralleled that of international diversification and an analysis of CD can offer insights into some of the issues related to international diversification. Corporate diversification is defined as a firm that reports sales in more than one business segment (Berger and Ofek, 1995; Mansi and Reeb, 2002; Martin and Sayrak, 2003). More specifically, a firm is classified as diversified when it reports sales in two or more business segments (at the two digit SIC Code level) and the most important segment accounts for less than 90% of the total firm sales (Lins and Servaes, 2002; Hyland and Diltz, 2002; Fauver, et al., 2003).

In early academic studies, unrelated diversification has typically been associated with a loss of firm value. In his seminal work on diversification, Rumelt (1974) found that firms with the highest levels of profitability employed a strategy of diversifying into areas that utilized the firm's core competencies or key resources (related diversification). Conversely, firms that were vertically integrated and diversified into unrelated businesses showed the lowest levels of profitability. In a later study, Rumelt (1982) additionally finds that firms that are less diverse tend to have larger market shares, and those that have larger clusters of related businesses also have developed highly productive core factors.

Therefore, similar to corporate diversification, internationally diversifying with related business units could yield the benefits of economies of scale and scope (Nachum, 2003; Brock, et al., 2006). This is also supported by Chung (1995), who finds that by entering a foreign market with their leading products, firms are able to have a successful market entry and gain market share.

In examining both corporate and international diversification, it is found that performance is enhanced when a firm has a focused product approach (i.e. stays within the same SIC two digit code), but a broad approach to international diversification (Tongli, et al., 2005). In their study of firms based in Singapore they suggest that internationally diversified firms are better able to counter aggressive expansion by competitors, take advantage of market imperfections in emerging economies, and not be held hostage to the fluctuations of demand and constraints of supply in any one market. However, for firms from developing countries, both corporate and international diversifications have been found to improve firm performance (Nachum, 2004).

Berge and Ofek (1995) study corporate diversification effects using an excess value model that becomes a standard for much of the follow-on research. Their findings indicate that there is a 13% to 15% average loss in firm value as a result of the corporate

diversification. They attribute this value loss to overinvestment in negative net present value (NPV) projects and the cross-subsidization of poor performing business units by ineffectively utilizing the resources of units that are performing well.

These findings are consistent with those of multiple other researchers, as Lang and Stulz (1994) find that there is a negative relation between Tobin's q and diversification. In emerging market countries, diversified firms trade at approximately a 7% discount when compared to single segment firms (Lins and Servaes, 2002). Also, firms that decide to end their corporate diversification efforts and refocus on their core business outperform firms that remain diversified (Comment and Jarrell, 1995). As further evidence of the lack of success of corporate diversification, firms diversifying are four times more likely to divest an unrelated acquisition than firms that stay focused on their core business and acquire related targets (Kaplan and Weisbach 1992), thus agreeing with Rumelt's (1974, 1982) findings.

Mansi and Reeb (2002) study the effect of corporate diversification on the value of the firm from a different angle. They also define corporate diversification as a firm that does business in more than one business segment. In their study they find that while corporate diversification reduces the value of the equity of the firm's shareholders, it does

result in an increase in value to the firm's bondholders. Their results indicated that the lower a firm's leverage, the lower the diversification discount. This is due to the risk associated with the bonds being reduced by the diversification, thus resulting in an increase in bond value. This increase in bondholder value offsets the reduction in the value of the firm's stock. Therefore, the overall impact on total value of the firm as a result of the corporate diversification is zero. This could provide a rationale for why studies on international diversification have provided mixed results and opens the door for future research opportunities on ID.

More recent studies look at how past research has computed the corporate diversification discount and find that the methodology used can have a significant impact on the results. This is evidenced by Campa and Kedia (2002), who suggest that the loss in firm value may not be due to diversification, but to the underlying characteristics of the firm itself. They find that the diversification discount always drops, and sometimes turns into a premium, when the endogeneity of the firm is considered. Therefore, they conclude that it is the firm characteristics (i.e. poor performing firms choose to diversify), and not the diversification itself, that results in a diversification discount.

Hyland and Diltz (2002) cast more doubt on previous diversification studies, as they find that 54 out of 227 firms (24%) in Compustat from 1978 to 1992 that were considered as having diversified, were not really diversifications at all, but were only reporting changes. Therefore, 24% of the data used in some previous research studies may have been invalid. In their study of the remaining 173 firms, their results are inconclusive. They find that corporately diversified firms do have lower Tobin's q s than non-diversified firms, but this could be because diversifiers appear to have traded at a discount (i.e. they were poor performing firms) before they undertook the diversification. Thus, their research concurs with the research findings of Campa and Kedia (2002). It also corresponds with that of Graham, Lemmon and Wolf (2002) who find that the diversification discount occurs because acquiring firms typically acquire business units that are already discounted. Thus, there was no value destroyed by the actual diversification.

Villalonga (2004) suggests that corporate diversification studies have been flawed by improper measurement. Her analysis investigates the possibility that the corporate diversification discount found in previous research is a result of the way segment data is aggregated in Compustat. The issue with the Compustat data is a result of three factors:

- 1) The Financial Accounting Standards Board (FASB) requires firms to report disaggregated information for segments that make up 10% of the firm's sales. As a result, the maximum number of segments that can be observed in Compustat is ten. This arbitrary reporting mechanism will most likely not mirror the actual segment revenue percentages of a firm. Therefore, this can lead to data in Compustat that do not reflect the actual diversified position of a firm.
- 2) The Statement of Financial Accounting Standards (SFAS) 14 defines a segment in a very broad manner. Therefore, what business activities are in a segment can vary significantly from firm to firm, depending on how the individual firm decides to report the information. This leads to inconsistencies in classifying firms as having undergone a corporate diversification.
- 3) Firms frequently change the segments they report even when they do not have a change in their operation. This is consistent with the findings of Hyland and Diltz (2002), where they found this to be the case in 24% of the firms in their sample.

To compensate for these measurement issues, Villalonga uses data from the Business Information Tracking System (BITS) for her corporate diversification analysis.

The advantage of BITS is that it is a new database that covers the entire United States

economy at the establishment level. Therefore, the data in BITS is much more detailed than the information in Compustat and a model using this information should comprise a more accurate representation of a corporately diversified firm. Her findings indicate that, consistent with most previous research, when modeling corporate diversification using Compustat a diversification discount exists. However, when modeling the same firms using BITS data, the discount actually turns into a diversification premium.

These results cast considerable doubt on much of the previous corporate diversification research. While Villalonga's findings could be paradigm breaking, since her research is relatively recent it would be helpful if additional studies also used the Business Information Tracking System and provided further confirmation of his findings.

Finally, Gomes and Livdan (2004) find that corporate diversification allows a firm to increase its economies of scope and explore new opportunities while taking advantages of synergies between business units. This results in a maximization of shareholder value even though corporately diversified firms have a lower Tobin's q than focused firms. This low Tobin's q is due to the firm having a low Tobin's q before undertaking the diversification and, therefore, corroborates with the findings of Campa and Kedia (2002) that poor performing firms choose to diversify.