Internationalization and Firm Performance:
The S-Curve Hypothesis under the Eurozone context

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Abstract: In this article, we analyse the gains in performance of international diversified firms applied to the Eurozone, taking into account the impact of the interactive effect of both product and international diversification on this performance. We test all the conflicting relations explored in the literature of international diversification (linear, quadratic and cubic), and found that the S-curve is a more complete approach, since it considers different stages of different firms, regarding the international diversification-performance relation. Another important contributions of this article are: i) the fact we take into consideration not only account based measures of performance, but also market based measures; ii) different from previous studies, our sample is multi country and European; iii) we take into account not only manufacturing or service firms exclusively, but both together.

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INTRODUCTION

Nowadays, the degree of economic interdependence among countries is growing enormously, an experience known as globalization. This growth in interdependence is confirmed by increases in the cross-border flow of goods, services, capital, and knowledge (Hitt et al, 1999).

By introducing a new set of competitors, especially in the growing economies, local companies might face more disruptive competition. Those foreign companies, usually owner of significantly different sources of competitive advantage (such as access to lower cost factor markets, and different technologies and capabilities), increase competition in such a way that compels the domestic firms to rise a 'world class' level to remain competitive (Lucas, 1993; Bowen and Wiersema, 2005). On the other hand, despite this apparent advantage to the foreign firms such as cited above, local uncertainties are always present, featuring to the international arena both opportunities and threats for firms seeking strategic competitiveness in global markets (Hitt et al, 1999).

Based on this flick environment, the best understanding of the relation international diversification – performance is fundamental. Managers and scholars must understand which variables most affect the firm performance behaviour. Knowing that, firms can best determine how to apply their resources and capabilities efficiently. Additionally, firms must understand how those resources and capabilities can be a constraint to their increasing expansion to new markets (international diversification) and new product areas (product diversification), configuring this expansion in a way that best optimize this expansion, and: (1) improve their learning curve to reduce the low results in the first stages of internationalization, and (2) make compatible their expansion to their capabilities, to postpone or avoid thresholds of internationalization, where the costs surpass the benefits. Governments can also benefit from this knowledge, since it can create favourable conditions to attract those multinational to their countries.

Despite the large amount of researchers dealing with the international diversification – performance relation, and it has become one of the mayor topics of the management literature, a general consensus hasn't been reached yet, reason for why this research stream is still moving so much efforts in the academic world. To Palich et al (2000), a research stream can be considered as mature when (1) a substantial number of empirical studies have been conducted, (2) these studies have generated reasonably consistent and interpretable findings and (3) the research has led to a general consensus concerning the nature of key relationships. Analysing the main researches done up to date, we are able to see

that the international diversification – performance relationship does not come up to scratch, since the last two criteria was not fully satisfied.

Considering that the large amount of studies that deals with the link international diversification – performance propose different pattern of relation, in this article we analyse the gains in performance of international diversified firms applied to the Eurozone, testing all those conflicting relations explored in the literature (linear, quadratic and cubic). Our findings suggest the S-curve as a more complete approach, since it considers different stages of different firms, regarding the international diversification-performance relation.

Additionally we investigate the influence of the most explored moderator in the international diversification – performance literature: the product diversification. According to Hitt et al (2006), product diversification as a corporate strategy has been considered more than a risk-reduction tool. It has been recognized as a means for increased market power (Hitt et al., 1994), capitalizing on economies of scale (Teece, 1982), using excess resources (Penrose, 1959), and reducing transaction costs (Amit and Livnat, 1988).

Nevertheless to examine those essential relations is not an easy job. When a company moves out of its borders, it frequently faces new competitors with new competitive dynamics (Ramírez, 1997). Beside the intrinsic risk inherent of an international diversification move, a new set of factors appear. Economic factors can make the foreign environment differ enormously from the domestic one (e.g.: economic development, market size to the company's products, etc). Jointly with economic factors, political factors (e.g.: government ideology) and culture factors, are also aspects as relevant as the competitive ones.

The relationship between profitability and diversification may be more complex than postulated in empirical settings (Mathur et al, 2004), and the source of so much divergence is abundant. Most of scholars have found a positive relationship among international diversification and performance (Aggarwal, 1979; Grant, 1987; Johansson and Yip, 1994; …). In a smaller manner, there are still approaches that have not found significant differences in the results of domestic and multinational companies (Brewer, 1981; Rugman, 1983; Aggarwal and Soenen, 1987; Talman and Li, 1996; …).

Results of extensive empirical analysis of both product and geographic diversification effects on performance also remain contradictory (Talman and Li, 1996; Ramírez, 1997). Some researches, like Grant, Jammine and Thomas (1988) and Geringer, Beamish and da Costa (1989), found a positive relation between international diversification and performance. On the other hand,

researchers like Sambharya (1995) found no performance superiority, caused by firm diversification (Ramírez, 1997). Several authors also point out a quadratic (Geringer et al, 1989; Hitt et al, 1997) or a cubic relation (Contractor et al, 2003; Lu and Beamish, 2004) between degree of internationalization and performance, with an u-shaped or s-shaped configuration, what means that must be thresholds of internationalization, above which the costs of internationalization can be superior or inferior to its benefits. Table 1 summarizes some empirical studies of the relationship between international diversification and firm performance. We believe so much divergence is partly due to past studies' samples (industry or size biased, capturing just part of an entire model), or the authors just ignored the possible existence of a more complete approach like the sigmoid model. We also believe that this recurrent conflict postpones the evolution of the international diversification theory.

Furthermore, most of the bibliography developed, predominantly dealt with US samples (Rugman, 1976; Aggarwal, 1979; Ramaswamy, 1993; Talman and Li, 1996 and others), with few exceptions (Mathur et al, 2004: Grant, 1987: Grant, et al, 1988 and others), what can lead to affect the generalization of the results, since US companies profile vary in size and behaviour from European firms, for example, when decide to move out of its borders. Additionally, the samples of those studies, even the non U.S.'s, deals with single countries. From the Eurozone perspective, we can depict the behaviour of a large community with several countries, which regardless of the common currency and some common politics, has its own behaviour and idiosyncrasies.

European's companies differ from U.S.'s in several aspects, influential in the international diversification results. In contrast to the common sense that U.S. productivity outperforms European productivity, and this confusion is in part due to higher U.S. GDP, Gordon (2002) showed it does not suffice to look at growth rates of aggregate income, but we have to consider growth rates of per-capita incomes or at growth rates of output per hours worked. Doing so, Gordon's numbers suggest that the European's annual productivity has growth faster than U.S.' since the middles 50', reaching the U.S. levels by the mid 1990s. On the other hand, even producing similar, the U.S incomes per-capita are superior. Foellmi and Zweimüller (2003) attribute those differences to: the labor force participation is much lower in Europe than in the U.S., the average European worker has a shorter working week, takes more vacation and enjoys more work-free holidays. Another important aspect to consider is the higher U.S. R&D investments in high technology, what in a long run means more value to the firm's products and foreign demand to those products, creating a real stimulus to internationalization.

Based on that, in this study we develop a conceptual framework, seeking to contribute to the international diversification – performance literature. To perform this, we analyse this framework from the Eurozone perspective, because of its position of one of the main actors in the international market and increasing importance in the global economy, nowadays competing in a stronger manner for the same markets than U.S. and Japanese companies.

Another important contribution of this article is the fact we take into consideration not only account based measures of performance, but also market based measures. Most of the diversification literature deals with accounting based measures to capture the firms' performance. Despite this dominance of accounting based studies, Hoskisson et al (1993) call the attention to the risk of using solely accounting based measures, neglecting the market based measures, since accounting-based performance is oriented through the past, while market-based is oriented to expected future value. They found that market measures tended to be more highly intercorrelated than were typical accounting-based performance. At the same time, they defend the use of both measures, since accounting measures are the most applied in the literature and because of the large amount of literature that advocate for the use of those measures (e.g. Holzmann et al, 1975). To Palich et al (2000), market-based measures can present greater consistence, since it can escape from the influence of managerial manipulations that may lead to short term distortions reflected in other measures of performance. As Hitt and Ireland (1986, 407) observe *"(…) the market evaluates a firm's present and prospective earning flow, the timing and risks of this flow and the firm's dividend policies. As such, the market price of a firm's stock reflects the organization's long-run performance potential on behalf stakeholders."*

Further, from this different standpoint, we seek to compare the results from previous researches, and observe if it sustains the main findings from others non European studies.

This article is organized as follow: on the second section we review some important findings of previous literature and present the hypothesis; section three introduces the methodology; section four presents our empirical results and main findings; on section five we discuss the results found on the previous section; and finally on section six we provide a review of this article, commenting its main contributions, implications, limitations and possible future directions.

THEORETICAL BACKGROUND AND HYPOTHESES

Expanding Internationally – Advantages to the Firm

International diversification is the primary international corporate-level strategy. It can be understood as a strategy through which a firm expands the sale of its goods or services across the borders of global regions into different geographic locations or markets (Hitt et al, 1999). Thus, one of the main motives for firm's international expansion outside its borders is that international markets shall represent an important source of new opportunities, and exploiting those opportunities is a significant source of performance improving. Some of those key opportunities are: *economies of scale and scope, learning (and innovation) opportunities, access to key resources, risk reduction, and bargaining power.* As can be seen, most of those opportunities are derived from the resource-based view of the firm, since an international and product expansion gives the firm the possibility to explore the interdependencies between business units, fostering the development of knew capabilities, improvement of existing ones, prompting innovation and competitive advantage. We briefly resume those opportunities below:

Economies of scope: expanding internationally favor the firm exposure to a wide source of new advantages, and the most known are the economies of scope and scale, above and beyond the potential of product diversification (Grant et al, 1988; Kim et al, 1993, Caves, 1996). Economies of scope are the result of a common production factor (e.g.: specialized and indivisible physical assets, technological know-how, organizational know-how, brand names). It occurs when the costs of the joint production of two or more products are cheaper than producing each product individually. Another source of scope economies is greater returns on mayor capital investments in new product and process developments (Hitt et all, 1999). To Ghoshal (1987), the strategic importance of scope economies arises from an aptitude, when comparing diversified firms with their not diversified counterparts: the ability to share investments and costs across the same or different value chains. According to Rumelt (1982), three conditions must be met if there are to be economies of scope: (1) increasing returns (or indivisibilities) to scale in the use of one or more essential factors of production, (2) transaction costs prevent an efficient market in relevant factors, forcing integration, and (3) there are limits on obtaining increased factor utilization by expanding the output of any single end-product.

Economies of scale: occurs when a higher activity level increases the benefits through a higher production factor's specialization (technological know-how, organizational know-how, brand names). According to Ghoshal

(1987), despite of being a static concept, the scale can foster dynamic benefits like experience and learning effect, when the higher volume that helps firms to exploit scale benefits allows it to accumulate learning and this leads to a progressive cost reduction.

Learning (and innovation) opportunities: the diversity of national markets exposes firms to a variety of stimuli which provides firms with a broader learning opportunity and the ability to develop more diverse capabilities that can be deployed across the organization. Thus, international diversity fosters innovation and prepares firms to achieve good results in a dynamic environment (Kogut, 1983; Ghoshal, 1987; Kim et al, 1993).

Access to key resources: another important source of opportunities to the internationally diversified firm is the possibility to access to the key resources of each location (country specific resources, technology, raw material, lower labor costs, etc.), configuring it in a way that minimizes the overall costs.

Risk reduction: Hamel and Prahalad (1985) and Kim et al (1993) point out that market diversification provides a firm with multiple national market bases from which it can retaliate against aggressive moves made by competitors, reducing the risk of aggressive challenges from its competitors.

Bargaining power: reduction of the effect of adverse changes in a country's political and economical environment or demand fluctuation. Compared to their local counterparts or other local actors such as unions and governments, large multinationals can have more bargaining power due to their ability to move assets quickly between countries (Thomas and Eden, 2004)

Expanding Internationally – Costs to the firm

As depicted above, expanding into new markets and products presents several advantages, most of them arising from the resource based view, which affirms that international diversification will benefit from the use of international resources and capabilities to exploit market imperfections.

Despite those benefits, performing operations across countries usually raise several new costs to the firm. According to Rumelt (1982), diversification occurs when a firm expands to make and sell products having no market interaction (zero cross price- elasticity) with each of the firm's other products. In other words, the firm's products are not substitutes of each other. Because of this lack of interaction, the firm must have its focus on the shared factor of production and organizational efficiency. Hence, the proper level of product

diversity must make the balance of economies of scope and diseconomies of organizational scale.

In general, the costs faced by the firm will vary depending on the experience of the firm in past international expansions. In other words, early internationalizers will face different costs from high internationalized firms. In the first stages of internationalization, the main costs associated to the international expansion are those deriving from the liability of foreignness. Liability of foreignness can be understood as every cost a foreign firm incurs in an international market that their host counterparts will not incur. Those costs can arise from those related to the distance (transportation, coordination over distance and time zones, and others), from the unfamiliarity of the company with the local idiosyncrasies or from establishing the companies legitimacy abroad (Zaheer, 1995). The degree of those liabilities of foreignness that a firm will face will depend in part of the structural dimension of the foreign market this company is inserted (cultural values, levels of development or institutions), and their skills in managing past entries and operations in foreign markets (Hill et al, 2006). The ability in managing a company in a diverse country is a fundamental variable of success and the experience of the managers in previous diverse environment also influence this adaptation process.

Despite the costs of being new and foreignness tend to reduce with increasing international experience, some new costs appears with increasing international diversification. From the TCE view, the geographic dispersion, up to a point, increases managerial information and processing demands. The coordination between units, essentially to the exploitation of economies of scope and scale, becomes much more difficult, and firms must develop a strong ability to manage the global needs. The distance from the sourcing decision can raise problems of coordination and information asymmetries among the subsidiaries.

Tallman and Li (1996) suggest that the ability to manage this complex system of international subsidiaries at a low transaction cost level is the key capability of successful multinational firms, and adds that although international diversification may have governance cost limits to its scope, this limits can be expanded with the increasing of firm capabilities.

Geographic Diversification and Firm Performance

Following the Rugman's (1979) logic that a firm diversify its operations internationally to explore market imperfections, many empirical studies were developed in the sense of proving a linear and positive relation between geographic diversification and performance (Lu and Beamish, 2004). Not surprising and despite some mix results (Brewer, 1981; Rugman, 1983;

Aggarwal y Soenen, 1987, …), most of the studies found a positive relationship between international diversification and performance (Vernon, 1971; Aggarwal, 1979; Ramaswamy, 1993, …). What is not considered in most of those studies, and vital to explaining the international diversification – performance relation is the fact that every diversification is affected by some costs, partially caused by product diversification. Product diversification, related or unrelated, in spite of its benefits of economies of scope, scale, share of R&D resources and others, favor costs generated by coordination and information. Taking this on reflection, researches start to consider in their studies the effect of product diversification, sometimes as a common independent variable and sometimes moderating the international diversification effect on performance (Miller and Pras, 1980; Grant, 1987; Grant et al, 1988; Geringer et al, 1989, Talman and Li, 1996, …). As a result of those studies, non linear models were developed.

The inverted u-form (Geringer et al, 1989; Hitt et al, 1997) calls attention to the existence of a threshold of internationalization. Hill et al (1997) indeed recognize the benefits of performing activities internally on the international diversification move (like economies of scale, scope, learning, …, all of them explored on the preceding items), but they believe there are significant costs associated to the international expansion that must be considered. To them, international diversification is complex and difficult to manage, and escalating geographic dispersion can enormously enhance transaction costs and managerial information-processing demands. As a result of the transaction costs and processing demands, the costs of international diversification will sometimes exceed the benefits of the diversification, suggesting an inverted U-shaped form between multinationality and performance relation. According to those authors, the point it happens (the threshold) will vary from firm to firm depending on the managerial skills contained in a firm.

Less diffused but also consistent are the advocators of a regular U-curve. Lu and Beamish (2001), analyzing a sample of 164 small to medium Japanese enterprises (SMEs) found the opposite from Hill and colleagues, since for that sample, a regular U-shaped form relationship between international diversification and performance was established. To those authors, different from big and well internationalized firms (where the main concerns are related to the downward exerted on performance by increasing governance and coordination costs on high internationalization levels), to SMEs the primary concern is related to the liability of foreignness. Because of those liabilities, SMEs may not capture the benefits of foreign direct investment in the first stage of internationalization. At later stages, those liabilities can be reduced as firm increases it experience on FDI, and the effect on performance start to grow positively, configuring the regular U-form. The same U-form was found by

Capar and Kotabe (2003) when testing for German service firms. According to them, in the first stages of international expansion service firms must undertake much higher investment than their manufacturing counterparts, which generally start their international expansion by exporting to host countries. Other reasons presented by the authors to the declining initial performance of the internationally diversified service firms are: (1) host country restrictions and regulations in the service industries to the foreign involvements (e.g.: ownership restrictions, domestic preference policies, unfavorable tax treatments, …), (2) service firms must be more adapted to the client culture and language comparing to the manufacturing firms, since the service sector requires intensive customer contact and extensive customization, and (3) while in the manufacturing sector the goods are generally first produced and than sold and than consumed, in the service sector the product is first sold and there is an inseparability between the produce and consume stages. Because of that, very often the buyer must have intimate contact with the production process, what requires a local facility.

Those apparent conflictive but in reality complementing results, conduced some researches to a three stage theory of international expansion, the S-curve. Lu and Beamish (2004), analyzing data from Japanese firms during a period of 12 years, found a horizontal S-shaped relation between those variables. The same S-curve relation between international expansion and performance was found by Contractor et al (2003), when analyzing the service sector and recently confirmed by Chang and Wang (2007). The idea under the S-curve formulation is a combination of the arguments of both regular and inverted U advocators. In fact, as our results will demonstrate, those studies that suggest the regular or inverted U captured part of a complete model, being it the first or second stage of an S-curve, respectively. The reasons for this could be (1) the samples were industry or size biased, capturing just part of the entire model, since in the first U-case samples of large manufacturing firms with past international experience were used to capture the effects and in the second U-case samples of small and medium enterprises was applied or (2) the authors just ignored the possible existence of a cubic term on their models.

Some of the main benefits of an international expansion are the exploitation of scale economies, learning and innovation opportunities, access to key resources, and bargaining power. On the other hand, at early stages of international expansion the firm faces liabilities of foreignness and (1) are not able to best explore the economies of scale and learning opportunities, (2) does not possess the ability to configure local key resources in a way that minimizes the overall costs, because of company's unfamiliarity with the local idiosyncrasies and (3) has not the sufficient bargaining power, since it has not established its legitimacy in the host country. Summarizing, in the first stages of international expansion those liabilities will hinder the full exploitation of the

international expansion benefits in such a way that will engender a declining of performance (see Figure 1).

With increasing international experience, development of new capabilities, diminishing costs of being new and foreign, and expansion of the international operation, the firm starts to benefit from the international expansion. But when this expansion starts to grow to more and more countries and subsidiaries, the costs of governance and coordination rises up to a point that the costs involved supplant its benefits.

Based on the aforementioned and taking in consideration our sample profile, we construct the S-hypothesis below:

H1: The relationship between international diversification and firm performance is sigmoid, with the slope negative at low stages of geographic diversification, positive at moderate levels and negative at high levels of geographic diversification.

Interaction of Product and International Diversification

Product diversification is defined as the firm's expansion into product markets new to that firm (Hitt et al, 1997), and has become one of the most investigated interactions in the diversification-performance literature. The impact of the product diversification on performance, jointly with the international diversification construct, is a relation still far from consensus and the literature has examined this relation by several ways.

Kim et al (1989) suggest that the impact of product diversification on performance may be contingent to the extent of a firm's international market diversification. To Kim et al (1993), it is difficult to achieve a favourable performance with solely product diversification, being it related or unrelated, when controlling for the global market dimension. Sambharya (1995) also suggests that both product and international diversification are not profitable individually. On the other hand, the interaction of both variables would be beneficial to firm performance, since it can exploit advantages of both strategies, like globally economies of scale and scope, resource sharing and core competencies across business units, transfer skills across markets and products and gain from organizational learning.

To Tallman and Li (1996), for one side, the relation among product diversity and performance is positive, significant and squared, which suggests a threshold of the benefits of product diversification on performance. By the other side, when examining the combined effect of international diversification and

product diversity, they found only weak effects. Geringer and colleagues (1989, 2000), found no strong interactive effects of product diversification and international diversification on performance.

Hitt et al (1994) suggest that international diversification is positively related to performance and positively moderates the relationship between product diversification and performance. To him, related and unrelated diversified firms benefit from internationalization: the first because it facilitates exploitation of business unit interdependencies and the last because it produces economies of scale and scope (Hitt et al, 2006).

The long-term performance of internationally diversified firms may be based, at least partially, on their ability on developing product and process innovation (Hitt et al, 1997). Based on that, to those authors, product diversification plays an important moderating role in their model. From a resource-based perspective, the experience with product diversification is a key on developing managerial capabilities. Those built capabilities will in the future provide the required ability to deal with complex challenges on the international business. Similarly to the international diversification strategy, some important reasons for a firm to assume both international and product expansion are the better opportunities to exploit the economies of scope and scale, learning and bargaining power, since prior experience in product diversification gives experience in the management of multiple product-markets, which can result on positive interactive effects of both product and international diversification (Hitt et al, 1997). Hitt and colleagues suggest that international diversification is negatively related to performance in non-diversified firms, positively related in highly product diversified firms and curvilinear in moderately product diversified firms.

More recent studies like Chang and Wang (2007), in line with Hitt et al (1997), also considered product diversification as a moderator in the international diversification-performance relationship, considering the greater opportunities to achieve synergies (or scope economies) as product diversified firms expand into multiple regional markets. Achieve synergies and economies in product and geographic markets simultaneously provide firms greater ability to compete efficiently in those markets (Hill et al, 1997). They conclude for a positive influence of related product diversification strategy on the multinational firm's performance, while unrelated product diversification strategy negatively moderates this relationship.

Based on those arguments we formulate our next hypothesis considering that: managing an international business requires intense development of knew capabilities and managerial skills; the development of those capabilities is

enhanced by the exploitation of business synergies; different from single business firms, product diversified firms can explore the inputs of multiple business (knowledge, physical and financial assets, managerial skills, …) to construct and develop internal capabilities; international diversified firms that are also product diversified can use their experience and managerial skills in handle multi- product business to overcome some liabilities in a new and foreign environment.

H2: Product diversification will positively moderate the relationship between international diversification and firm performance in a way that the effect of international diversification on performance will be more favourable under the presence of product diversification

To capture the model and check if our hypothesis holds on different specifications, we test it under the three models: linear, quadratic and cubic. Our sample ranges from non-product or non-internationally diversified firms to highly product and internationally diversified firms, is sector and size varied, and all composed by Eurozone's firms. Doing so, we believe we can partially address in our study the sources of the empirical conflicting results from previous literature. To test if our results are sensitive to size or industry specific effects, and also check if there is a specific model to each sample, in a second stage we test subsamples of manufacturing and service firms and smaller and larger firms independently.

METHODOLOGY

Sample

Our hypotheses are tested using a sample of European firms, applying data from several Eurozone[1] countries. Initially, our database was composed by 12 countries. Latter, Luxemburg, Portugal, Netherlands and Italia were removed from sample because of missing data. The source of our data comes from the Worldscope international database. The sample period ranges from 2001 to 2003. To be included in our regressions, a firm must present either international or product diversification or both, to capture the benefits of diversification as cited above.

To overcome the temporal limitation in our study, and following previous researches (Geringer, Beamish and da Costa, 1989; Hitt et al, 1997), we decided

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[1] In the period that comprises this study the Eurozone was composed by twelve countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, and Spain. From 2007 on, Slovenia was also included.

to adopt a 3 years average for each variable in this study. We adopt this average (especially to the performance variable) to ensure that the account strategy decisions does not affect the results, since those decisions can make that in one year the performance variable changes excessively because of extraordinary benefits. We also ensured that the international diversification profile remain unchanged during the period of study.

The procedures cited above results in a sample of 291 firms, classified into sectors of manufacturing (SIC 20–39), service (SIC 15–17, 40–88) and others (SIC 01–14), in accordance with previous researches (Capar and Kotabe, 2003; Contractor et al., 2003; Chang and Wang, 2007). See Table 2.

Variables

International Diversification Measure

As our measure of geographic diversification, we applied the Entropy Index. The diversification Entropy Index was originally created by Jacquemin and Berry (1979) to capture the relation between corporative diversification and growing. Since there, a wide range of researches of different areas have applied it into their studies. Hitt et al (1997) developed the entropy measure of international diversification to capture the extension of sales outside the domestic market. For this purpose and in presence of the lack of sales data in the country level, he used the sales of regional markets, thus capturing with his measure the regionalization.

The entropy measure of international diversification is defined by:

International Diversification $= \sum_i [P_i \times \ln(1/P_i)]$,

where P_i is the sales attributed to the global market region i and $\ln(1/P_i)$ is the weight given to each global market region. This measure takes into account both the number of global market a firm operates and the relative importance of each global market to total sales.

Product Diversification Variable

Following previous research (Grant et al, 1988; Tallaman and Li, 1996; Geringer et al, 2000; Doukas and Lang, 2003), we adopted as our product diversification measure the sales based Herfindahl Index. This index was adapted by Berry (1971) to be applied to the firm's industrial activity distribution. Berry's index takes value 0 when a company is active in only one

industry and comes close to 1 when a company produces equally in a big amount of different industries (Ramírez, 1997)

The index is calculated based on the share of a firm's sales in each four digit SIC industry:

Product Diversity = 1- $\sum Sj^2$,

where *Sj* is the proportion of a firm's sales reported in product group *j*.

Performance Variables

Three accounting measures are most employed in the literature: Return on Sales (ROS), Return on Assets (ROA) and Return on Equity (ROE). On this research we will adopt the Return on Sales (ROS) as our accounting measure and first dependent variable, because of its vast use (e.g. Tallman and Li, 1996; Gearinger et al, 1989) and because, as argued by Geringer et al (1989), sales are expressed in more currently monetary terms that are assets. Further, asset based ratios can compromise the performance measure if investments undertaken during the studied period are not generating rents so far.

To capture our market-based dimension we have chosen as our second dependent variable the Tobin's q ratio, originally expressed as:

Tobin's q= Market value (MV) of company/Replacement cost of assets

To Lang and Stulz (1994), the advantage of Tobin's q is that it incorporates the capitalized value of the benefits of diversification. The Tobin's ratio has raised several criticisms, and one of them is that it does not offer information about invested resources to generate value do the company and, in some cases, some markets can present inefficient behavior (Ramírez and Espitia, 2000). Despite the criticisms raised, it's the most applied financial-market-based measure in the management literature and serves to the scope of this study.

The approach we used to calculate the Tobin's measure is the simpler approximation developed by Chang and Pruitt (1994). The Chang and Pruitt q uses the sum of the market value of common stock, the liquidating value of preferred stock and book values of debt divided by the book values of total assets of the firm. Chang and Pruitt show in their study that at least 96,6% of the total variability in the Lindenberg and Ross Tobin's q is explained by the approximated q.

Control Variables

Additionally, we added to our model some control variables, recognized in the literature to affect firm performance:

Firm size, measured as the natural logarithm of total sales, to control for differences in size from our sample companies;

Leverage, measured as the ratio of long-term debt to total assets (%) (Grant et al, 1988; Tallman and Li, 1996; Hitt et al, 1997). We applied this measure because the literature has demonstrated that the financial structure of a firm may play a role in affecting the firm performance. It is also a key determinant of risk (Grant et al, 1988)

R&D intensity is measured as the ratio of R&D expenses to net sales (Delios and Beamish, 1999; Lu and Beamish, 2004). To Kotabe et al (2002), firms with superior product design or innovative product process can achieve greater returns compared to its competitors; at the same time, international diversification can helps firm's to generate resources (whatever greater returns or improved capabilities) for highly R&D investments (Hitt et al, 1997).

Gross Domestic Product (GDP): we applied the gross domestic product in our regression since we are working with a multi country sample, and because the diversity-performance relationship is affected by the economic conjuncture. The macro-economic variable GDP is selected to capture the "country effect", considering that because of incentives of the European Community, the smaller countries presented in the last years, in general, a growing tax proportionally superior than that of the biggest European countries. Another alternative to control for the country effects are the inclusion of a country dummy. The only issue is that the inclusion of a dozen of dummies variables always imply in a consumption of precious degrees of freedom.

Growth, measured as the annual growth rate of total assets (%),

Industry, measured by 2-digit industry sic group. According to Rumelt (1991) and Powell (1996), industry effect can explain up to 20% of the firm performance variance. To Palich and colleagues (2000), diversification is more strongly related to performance in studies that considered and controlled for the industry effects.

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RESULTS

First we performed a correlation analysis to check whether our sample presents some noteworthy problem of multicollinearity. High collinearity among variables implies on unstable and low efficient estimation parameters. Table 3 reports means, standard deviations and correlations among all variables used in the study. We also performed the variance inflation factor (VIF) in our analysis, to evaluate major problems of multicollinearity. Both calculations suggest no major problems of multicollinearity in our regressions. Exceptions are the linear, squared and cubic term of international diversification, for obvious reason, since these are variables generated by the transformation of a single term. Apart from that, we run our regressions robust to heteroskedasticity, applying to all regressions the White's heteroskedastically consistent covariance matrix estimator.

As can be seen, the regressions was performed to the two performance variables of our study: regressions 1 to 5 refer to the impact of international diversification on the market based measure of performance (Tobin's Q), and regressions 6 to 10 refer to the firm return on assets (ROA).

Table 4 reports the regression analysis, where we compare and assess the best fit among the linear, quadratic and cubic model (hypothesis 1). Models 1 and 6 test the linear relationship. Our results suggest that geographic diversification analysed by this way was not significant on both models. Models 2 and 7 test the impact of geographic diversification on performance using a quadratic model. Here we found some differences between the Tobins's Q and the ROA's model. The first was not significant but the ROA's model shows a quadratic relation between international diversification and performance. This result is in accordance with several studies that advocates for the quadratic relationship, but for instance, it's just a primary result, since we are looking for a more complex relation among those variables. In fact, it may represent the first stage of the curve, as postulated in our first hypothesis. The negative signal of the linear term and the positive signal of the squared term mean that our curve starts as a regular U-curve, but let's analyse the following model to see if it sustains our hypothesis1. The models 3 and 8 test the sigmoid curve, and in both models the quadratic term is significant, confirming this way our first hypothesis. The improving of the R-squared, observed from the first to the third model, corroborates our hypothesis that the sigmoid model is a more complete approach to explain the effect of firm international diversification on performance.

Table 4 also shows regressions 4, 5, 9 and 10, where we compare to the regressions 3 and 6 and test the impact of product diversification and also test the interaction effects of both product and international diversification on firm performance.

As we can see, on model 4 (the market based one), product diversification has a negative impact on firm performance. That was not confirmed on model 9 (ROA), since the coefficient was not significant. On models 5 and 10, despite positive, as we have predicted in our hypothesis 2, the interactive effect has no contribution on our models, since its coefficients were not statistically significant. That does not refute a possible interactive effect of both product and international diversification on firm performance, but just could not be confirmed with our sample. Anyway, hypothesis 2 could not be accepted.

Based on past studies conflicts and to further investigate our first hypothesis, we performed other regressions, first splitting our sample in manufacturing and service firms and than splitting it again, but now based on size, using the median to separate the firms in samples of small and large firms. In those regressions we examine whether the U-curve inflection is driven by certain effects such as industry or size effects. The results of empirical tests of a possible industry effect does not reveal any statistically significant difference from the full sample, when analysing solely manufacturing or service firms (results not presented here). This leads us to conclude that our findings are not sensitive to industry effects. We also split the sample based on the firms' size, since we believe there is a size effect that conduced past researchers to conclude for a regular or inverted U-shape in the relation between international diversification and performance.

As shown on Table 5, our results suggest a size based effect, which indicates that small firms tend to present a regular U configuration and the large ones an inverted U. This conflicting result are in consonance with previous literature if we observe that the advocators of the inverted U-curve often deals with big manufacturing and well internationalized firms (Geringer et al, 1989; Hitt et al, 1997). On the other hand, researches that advocate for a regular U generally works with service firms (usually smaller than their manufacturing counterparts) (Capar and Kotabe, 2003), or smaller and newly internationalized firms (Lu and Beamish, 2001).

Regarding our control variables, we can observe a similar result to the market based measure and to the account based measure. Gross Domestic Product has an inverse impact of firm performance: this does not mean that big economies perform worse, but from the European Community view we can note

that in the last years the growing of the smaller economies of the Eurozone are more expressive and can explain this negative factor.

Investments on R&D are also negatively related to performance, especially to the account based measure. That can be easily explained because of the short time period of our study: R&D shall be fruitful to the companies' results in the long run, but this we can not infer from our results. Unfortunately our market based measure was not significant to this variable. If it was, we could analyse how the market evaluate those kinds of investments.

Firm size (measured as log of net sales) was significantly related to performance, but in different ways between the account and the market measures. As can be seen, it was negatively related to performance in the market based regression (model 3, Table 4) and positively to the ROA's case (model 8). In the first case, we can suppose that the European market in our sample best valuate the smaller companies, which probably had higher growth rates in the last years, and could invest more deeply in export or foreign operations. European's small and medium companies were really benefited by the unification, since the free circulation of goods and capital favored the increasing of companies' foreign sales with less bureaucracy and costs. From a learning perspective, it also a good start point to develop the required skills to compete on more diverse international markets. From the ROA's standpoint, firm size was positive related to performance and that is not surprising, since large firms can benefit from its superior previous performance and its internal capital markets to reinvest in the internationalization process.

As expected, firm leverage was negatively related to performance and firm growth presented a positive impact on firm results.

DISCUSSION

Our main purpose in this article was to examine how the firm's international diversification could affect the performance, in the Eurozone context. To achieve this main purpose and based on past literature conflicts, we examined how behaves this relationship, particularly dealing with four conflicting approaches, that in different moments holds for the linear relation, U-model (regular and inverted) or the sigmoid form.

As we can see on figures 2 and 3, the linear relationship does not hold in any case. According to our empirical results, the S-curve seems to be a more appropriate and complete approach. To test it and advance a little forward a more complete understanding of this important strategic decision, we worked

with a split sample of manufacturing and service firms and we have found amazing results.

Using this three stage theory of international diversification, we can see that in the early stages of international diversification, in general, the extent of international diversification is negatively related to performance. That could be explained by the firm' smaller ability to transfer knowledge, negotiate contracts, reduced knowledge of relevant cultural aspects, lack or reduced ability to handle with institutional practices in the host country and reduced or null experience in previous foreign operations.

At moderate levels of geographic diversification, according to our results, firms tend to enjoy the benefits of diversification and consequently improve performance. At this stage, not only based on the knowledge theory, which says firms become more experienced with the evolution of the international operation process, but also from the transaction cost theory. From the TCE perspective, at medium stages of international diversification, firms experience an increasing of transaction costs, required to coordinate the different geographic units and benefit for example, from the economies of scope with internal resources. However these benefits can only be achieved up to a certain point. When moving from moderate to high levels of international diversification, firms tend to experience an increasing of coordination costs that can be destructive to firm performance, explaining the negative tendency in the third stage of figures 2 and 3. This is also confirmed if we analyse Table 4: in the cubic models, the linear term of international diversification is negative, the quadratic term is positive (confirming the first stage regular U) and the cubic term is negative.

To further investigate the sigmoid model and because we believed there were some root causes to the conflicting past studies, especially those that found regular or inverted U relationship between international diversification and performance, we tested the quadratic model to samples of manufacturing and service firms independently (not shown here). The results were not conclusive. In the following step we split our sample between small and large companies, based on the median of firms' sales (log). The results are interesting and can explain in part the previous mixing results in the literature (Table 5). To the smaller companies, we found a positive quadratic form and to the larger ones, a negative quadratic or inverted U. From this we can infer, based on this size effect, that past studies are not conflicting but complementary. Even with no conclusive results to the industry splitting, we can make some conjectures from the size sample splitting. Past studies that found an inverted U, generally works with large manufacturing companies, commonly the most internationalized firms (Geringer et al, 1989; Hitt et al, 1997). Those firms normally have solid experience with foreign operations, presence on several countries, an important

amount of developed capabilities, strong internal capital markets that support the entry costs, in resume, a solid background that offer the best conditions to a successful geographic diversification. Based on that, we conclude that the advocators of the inverted U-shape captured on their researches the mid-second and third stage of our model.

On the other hand, the advocators of the regular U, working predominantly with service firms (generally smaller than manufacturing firms) (Capar and Kotabe, 2003), or smaller and newly internationalized firms (Lu and Beamish, 2001), captured the first stage and mid-second stage of our model.

We also investigated were product diversification can affect the relationship between international diversification and performance. Our results partially proved a negative effect of product diversification on performance, when analysing from the market based measure. The interaction of both product and international diversification was not statistically significant, despite the signals are in accordance with our prediction.

CONCLUSION

This study investigates the impact of international diversification on firm performance, based on past conflicts in the literature. To the best understanding of this important relationship, we developed a framework that deals with important gaps of previous works. Here we deal with two measures of performance: the market measure (Tobin's q) and the account measure (ROA). The market measure offers us a long term view and greater consistence, since it's free of the managerial manipulations often present on account based measures (Palich et al, 2000).

Another important contribution of our paper is that we work with a sample of multi country and multi industry European firms, adding a different standpoint to the common manufacturing-U.S. based studies. We also address in our models the three principal divergent models in the literature (linear, squared and cubic models), with interesting findings.

Our results show that previous works on the international diversification-performance arena are not concurrent, but complementary. We find that the three stage model of international diversification (Contractor et al, 2003; Lu and Beamish, 2004; Chang and Wang, 2007) are a more complete approach comparing to the regular or inverted U-model. Our results are consistent to both Tobin`s q and ROA models, and reveals that at low stages of internationalization, partly due to its lower international experience and low developed capabilities, a firm's international diversification can be harmful to

performance. At moderate levels of geographic diversification, greater diversity conduces to a better performance, but at the time the firm continue increasing its geographic diversification up to a threshold, high coordination costs and managerial complexity can conduce to a declining of firm performance.

Our tests also show that both regular and inverted U from previous studies, that we integrate in our S-form to construct this integrative perspective, are size based: studies that deals only with big manufacturing firms tend to find an inverted U-form. The opposite occurs when one handle with smaller companies and a regular U is found.

In this paper we control for several variables that are known to affect firm performance like size, leverage, R&D intensity and growth. Since we handle with a multi country sample, we incorporate in our regressions the Gross Domestic Product, to control the country effect. Another important variable controlled in our framework is the industry effect that can explain a lot of firm performance variable.

We test on this research the effect of product diversification on performance, finding for the Tobin's q case that product diversification has a negative effect on performance. The interaction of both product and international diversification was not conclusive.

To conclude, we call researches to think the international diversification-performance relationship with caution, as we can see that the performance behaviour of a firm is dynamic, changing considerably from early stages to advanced stages of internationalization. A more complete approach can be developed with the inclusion of dynamic panel data models that can evaluate the firm during different steps of internationalization. The adoption of those models can best control also the possible endogeneity between the international diversification and performance variables.

This study presents also important managerial implications. Comprehending that the relationship between international diversification and performance is dynamic, managers can best assess what resources and capabilities must be enhanced to reduce or overcome some of the costs that the fact of being new and foreign can suppose to the firm. Doing so, the negative costs of the first stage can be diminished. Managers can as well control the limits of its diversification and the managerial and coordination implications of their expansions, in a way that the threshold of the third stage can be avoided.

This study is not free of limitations. Despite controlling that the companies' international diversification profile remains unchanged during the

period of this work, it could be interesting to work with a panel data, and observe if the main findings can be sustained. Another important limitation is that, in function of data limitations, we do not control for the relatedness of the product diversification. The same could be said to the geographic scope. Further investigations are encouraged to address those issues, and also investigate other countries, especially on emerging economies, and see if our main findings can hold on different contexts.

REFERENCES

Aggarwal, R. (1979). "Multinationality and stock market valuation: an empirical study of US markets and companies". *Management International Review*, 29: 5-21

Aggarwal, R. & Soenen, L.A. (1987). "Changing benefits of internacional diversification of real assets". *Rivista Internazionale di Scienze Economiche e Commerciali*, 34 (11-12): 1103-112

Amit, R., & Livnat, J. (1988). "Diversification strategies, business cycles, and economic performance". *Strategic Management Journal*, 9: 99-110.

Bowen, H.P. & Wiersema, M.F(2005). "Foreign-based Competition and Corporate Diversification Strategy". *Strategic Management Journal*, 26: 1153–1171

Brewer, H. L. 1981. "Investor benefits from corporate international diversification". *Journal of Financial and Quantitative Analysis*, 16: 113–126.

Buckley, P., Dunning, J. & Pearce, R. (1978). "The influence of firm size, industry, nationality and degree of multinationality on the growth and profitability of the world's largerst firms 1962-72". Review of World Economics, 114(2): 243-257

Buckley, P., Dunning, J. & Pearce, R. (1984). "An Analysis of the Growth and Profitability of the World's Largest Firms, 1972 to 1977". Kyklos 37: 3-26

Buhner, R (1987). "Assessing International Diversification of West German Corporations". Strategic Management Journal, 8 (1): 25-37

Capar, N., & Kotabe, M. (2003). "The relationship between international ldiversification and performance in service firms". *Journal of International Business Studies*, 34: 345–355.

Caves, R. E. (1996). *Multinational enterprise and economic analysis.* Cambridge, MA: Harvard University Press.

Chang, S. & Wang, C. (2007). "The effect of product diversification strategies on the relationship between international diversification and firm performance". *Journal of World Business*, 42: 61–79

Chung, K. H & Pruitt, S.W. (1994). "A simple approximation of Tobin's q". *Financial Management* 23(3): 70-74

Collins, J. (1990). "A market performance comparison of u.s. firms active in domestic, developed and developing countries". Journal of International Business Studies, 21: 271-287

Contractor, F. J., Kundu, S. K., & Hsu, C. C. (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.

Daniels, J. D. and J. Bracker (1989). "Profit performance: Do foreign operations make a difference?". *Management International Review*, 29(1): 46–56.

Delios, A., & Beamish, P. (1999). "Geographic scope, product diversification, and the corporate performance of Japanese firms". *Strategic Management Journal*, 20: 711–727.

Denis D. J., Denis D. K & Yost, K. (2002). "Global Diversification, Industrial Diversification, and Firm Value". The Journal of Finance 57 (5): 1951–1979.

Doukas, J. A., & Lang, H. P. (2003). "Foreign direct investment, diversification and firm performance". *Journal of International Business Studies*, 34(2): 153–172.

Doukas, J. A. & Travlos, G. (1988). "The Effect of Corporate Multinationalism on Shareholders' Wealth: Evidence from International Acquisitions". The Journal of Finance, 43 (5): 1161-1175

Errunza, V. & Senbet, L. (1981). "The Effects of International Operations on the Market Value of the Firm: Theory and Evidence". The Journal of Finance, 36 (2): 401-417

Errunza, V. & Senbet, L. (1984). "International Corporate Diversification, Market Valuation, and Size- Adjusted Evidence". The Journal of Finance, 39 (3): 727-743

Foellmi , R. & Zweimüller , J. (2003). "Inequality and economic growth: European versus U.S. experiences". *CESifo Working Paper* n. 1007.

Geringer, J. M., Beamish, P. W., & da Costa, R. C. (1989). "Diversification strategy and internationalization: Implications for MNE performance". *Strategic Management Journal*, 10(2): 109–119.

Geringer, J. M., Tallman, S., & Olsen, D. M. (2000). "Product and international diversification among Japanese multinational firms". *Strategic Management Journal*, 21: 51–80.

Ghoshal, S. (1987). "Global strategy: An organizing framework". *Strategic Management Journal*, 21(1): 51–80.

Gomes, L., & Ramaswamy, K. (1999). "An empirical examination of the form of the relationship between multinationality and performance". *Journal of International Business Studies*, 30(1): 173–188.

Gordon, R. (2002). "Two Centuries of Economic Growth: Europe Chasing the American Frontier". *Economic History Workshop*, Northwestern University.

Grant, R. M. (1987). "Multinationality and performance among British manufacturing companies". *Journal of International Business Studies*, 18(3): 79–89.

Grant, R. M., Jammine, A. P., & Thomas, H. (1988). "Diversity, diversification, and profitability among British manufacturing companies". *Academy of Management Journal*, 31: 771–801.

Haar, J (1989). " A comparative analysis of the profitability performance of the largerst US, European and Japanese multinational enterprises". Management International Review, 29 (3): 5-19

Han, K. Lee, S. & Suk, D (1998). "Multinationality and firm performance". Multinacional Business Review 6 (2): 63-70

Hamel, G. & C. K. Prahalad (1985). "Do you really have a global strategy?", *Harvard Business Review*, 63(4): 139–140.

Hitt, M. A. & R. D. Ireland (1986). "Relationship among corporate level distinctive competencies, diversification strategy, corporate structure and performance", *Journal of Management Studies*, 23: 401–416.

Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1994). "A mid-range theory of the interactive effects of international and product diversification on innovation and performance". *Journal of Management*, 20: 297–326.

Hitt, M. A., Hoskinsson, R. E., & Kim, H. (1997). "International diversification and firm performance in product-diversified firms". *Academy of Management Journal*, 40(4): 767–798.

Hitt, M. A., Ireland, R. D. & Hoskisson, R. E. (1999). *Strategic Management: Competitiveness and Globalization* (3rd Ed), Cincinnati: South-Western College Publishing.

Hitt, M.A., Tihanyi, L., Miller, T. & Connelly, B. (2006). "International Diversification: Antecedents, Outcomes, and Moderators". *Journal of Management*, 32: 831-867

Holzman, O. J., R. M. Copeland and J. Hayya (1975). "Income measures of conglomerate performance". *Quarterly Review of Economics and Business*, 15: 67–78.

Hoskisson RE, Hitt MA, Johnson RA, Moesel DD. (1993). "Construct validity of an objective (entropy) categorical measure of diversification strategy". *Strategic Management Journal* 14(3): 215–236.

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

Johansson, J. K. and G. S. Yip (1994). "Exploiting globalization potential: U.S. and Japanese strategies". *Strategic Management Journal*, 15(8): 579–601.

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

Kim, W. C., Hwang, P., & Burgers, W. P. 1993. "Multinationals' diversification and the risk-return trade-off". *Strategic Management Journal*, 14: 275–286.

Kim, W.S. & Lyn, E.O. (1987). " Foreign direct investment theories, entry barriers, and reverse investments in US manufacturing industries". Journal of International Business Studies 18(2): 53-67

Kogut, B., "Foreign direct investment as a sequential process", in, K. P. Kindelberger and D. Andretsch (eds), *The Multinational Corporations In 1980s*: MIT Press, Cambridge MA, 1983: 38–56.

Kotabe, M., Srinivasan, S. S., & Aulakh, P. S. (2002). "Multinationality and firm performance: The moderating role of R&D and marketing capabilities". *Journal of International Business Studies*, 33(1): 79–97.

Lang, H. P.,&Stulz, R. M. (1994). "Tobin's q, corporate diversification and firm performance". *Journal of Political Economy*, 102(6): 1248–1280.

Lu, J. W., & Beamish, P. W. (2001). "The internationalization and performance of SMEs". *Strategic Management Journal*, 22: 565–586.

Lu, J. W., & Beamish, P. W. (2004). "International diversification and firm performance: The S-curve hypothesis". *Academy of Management Journal*, 47(4): 598–609.

Lucas RE JR. (1993). "Making a miracle". *Econometrica*, 61: 251–272.

Mathur, I., Singh, M. & Gleason, K. (2004). "Multinational Diversification and Corporate Performance: Evidence from European Firms". *European Financial Management*, 10 (3): 439–464

Michel, A. and I. Shaked (1986). "Multinational corporations vs. domestic corporations: Financial performance and characteristics". *Journal of International Business Studies*, 16: 89–106.

Morck, R. & Yeung, B. (1991). "Why Investors Value Multinationality". The Journal of Business, 64(2): 165-187

Palich, L.E., Cardinal, L.B. and Miller C.C. (2000). "Curvilinearity in the Diversification-Performance Linkage: An Examination of Over Three Decades of Research". *Strategic Management Journal*, 21(2): 155-174

Penrose, E. (1959). *The theory of the growth of the firm.* New York: John Wiley.

Powel, T.C (1996). "How much does industry matter: an alternative empirical test". *Strategic Management Journal*, 17 (4): 323-334.

Qian, G. (1997). "Assessing product-market diversification of US firms". Management International Review 37(2): 127-149

Ramanujam, V. and Varadarajan, P. (1989). "Research on Corporate Diversification: A Synthesis". *Strategic Management Journal*, 10(6): 523-551

Ramaswamy, K. (1993). "Multinationality and performance: An empirical examination of the moderating effect of configuration". *Academy of Management Best Paper Proceedings*, 16: 142-146.

Ramírez, M.A. (1997). Análisis del Comportamiento Estratégico de las Empresas Españolas: Aplicación a la Diversificación Internacional y de Producto, 1991-1995. *Doctoral Thesis*, Zaragoza University

Ramírez, M.A. & Espitia, M.A. (2000). "El Impacto de la Estrategia de Diversificación de Producto e Internacional Sobre los Resultados Corporativos de las Grandes Empresas Españolas". *Cuadernos de Economía y Dirección de la Empresa* (5): 111-131

Ruigrok, W. & Wagner, H. (2003). "Internationalization and performance: An organizational learning perspective". Management International Review 43(1): 63-83

Rugman, A. (1976). "Risk reduction by international diversification". *Journal of International Business Studies*, 7: 75-80.

Rugman, A. (1979). *International diversification and the multinational enterprise*. Lexington, M.A: Lexington Books

Rugman, A. (1983). "The Comparative Performance of U.S. and European Multinational Enterprises, 1970-79". *Management International Review*, 23 (2): 4-14

Rumelt, R. P. (1982). "Diversification strategy and profitability". *Strategic Management Journal*, 3(4): 359–369.

Rumelt, R. P. (1991). "How Much Does Industry Matter?". *Strategic Management Journal*, 12 (3): 167-185

Sambhraya, R. B. (1995). "The combined effect of international diversification and product diversification strategies on the performance of US-based multinational corporations". *Management International Review*, 35: 197–218.

Siddharthan, N.S. Lall, S. (1982) "The Recent Growth of the Largest U.S. Multinationals". Oxford Bulletin of Economics and Statistics, 44(1):1-13

Sullivan, D. (1994a) "Measuring the degree of internationalization of a firm" Journal of International Business Studies, 25(2): 325-342

Sullivan, D. (1994b). "The threshold of internationality: replication, extension, and reinterpretation". Management International Review 34(2): 165-186

Tallman, S., & Li, J. T. (1996). "Effects of international diversity and product diversity on the performance of multinational firms". *Academy of Management Journal*, 39(1): 179–196.

Teece, D. (1982). "Towards an economic theory of the multi-product firm". *Journal of Economic Behavior and Organization*, 3: 39-63.

Thomas, D., & Eden, L. (2004). "What is the shape of the multinationality-performance relationship?" *Multinational Business Review*, 12(1): 89-99.

Vernon, R. (1971). *Sovereignty at Bay: The Multinational Spread of US Enterprises*. Basic Books, New York

Zaheer, S. (1995). "Overcoming the liability of foreignness". *Academy of Management Journal*, 38: 341-363.

FIGURE 1
The idea under the S-curve hypothesis
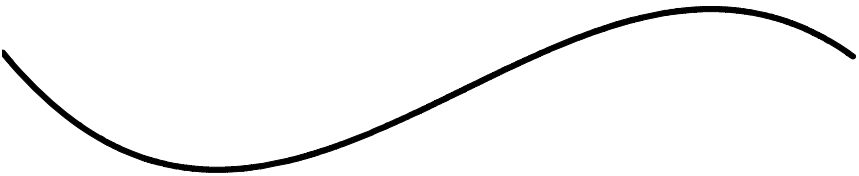
Stage of internationalization	First Stage:	Second Stage:	Third Stage:
Firm Characteristics	. Early internationalizers	. Medium term international diversification	. High international diversification
Characteristics	. Liability of foreignness . Firm not able to best explore the economies of scale and learning opportunities . Firm does not possess the ability to best configure local key resources in a way that minimizes the overall costs, because of company's unfamiliarity with the local idiosyncrasies . Firm has not the sufficient bargaining power, since it has not established its legitimacy in the host country	. Increasing learning experience reduces liabilities of foreignness . Development of capabilities . Exploitation of economies of scope and scale . Increased bargaining power . Increasing international diversity fosters innovation and prepares firms to achieve good results in a dynamic environment	. High transaction costs because of excessive multinationality . Problems of coordination and information asymmetries among the subsidiaries
Performance behavior	. Diminishing results	. Increasing results	. Diminishing results
Curve orientation			

FIGURE 2

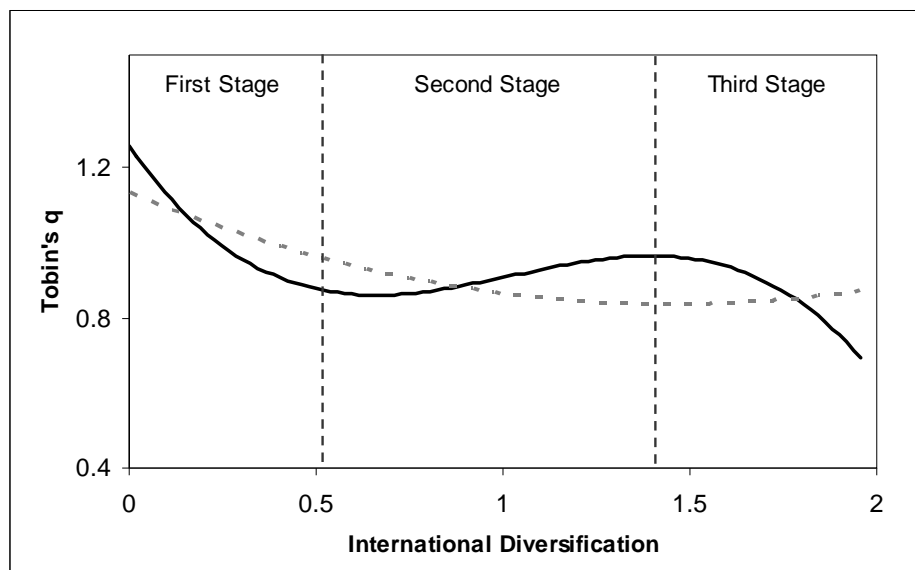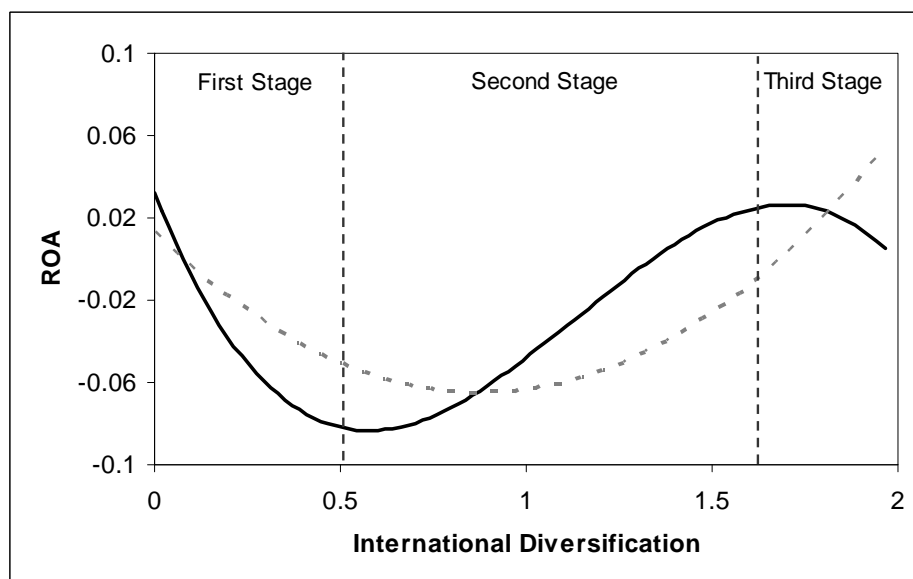**Trend Line of the Relation International diversification x Tobin's q**

FIGURE 3

Trend Line of the Relation International Diversification x ROA

Table 1: Empirical Studies Regarding The International Diversification - Performance Relation

Author(s) and years	Performance variable	Relation
Vernon (1971)	ROI, ROS	Linear +
Aggarwal (1979)	PER, Risk (β)	Linear +
Errunza and Senbet (1981, 1984)	excess return	Linear +
Kim and Lyn (1987)	excess market value, Tobin´s Q	Linear +
Buhner (1987)	ROA, ROE	Linear +
Grant (1987)	ROA, ROE, ROS	Linear +
Grant *et al*. (1988)	ROA, ROE, ROS	Linear +
Doukas and Travlos (1988)	degree of international operations	Linear +
Haar (1989)	ROA	Linear +
Han *et al.* (1998)	ROE, asset turnover, profit margin	Linear +
Delios and Beamish (1999)	operating income/total sales, ROE	Linear +
Brewer (1981)	Stock return	Linear -
Siddharthan and Lall (1982)	Sales growth	Linear -
Michel and Shaked (1986)	Risk-adjusted return	Linear -
Collins (1990)	Total risk, debt to equity ratio, β	Linear -
Geringer,Tallman&Olsen (2000)	ROA, ROS	Linear -
Denis, Denis and Yost (2002)	Variation of excess value	Linear -
Buckley *et al*. (1978, 1984)	ROA	no relationship
Morck and Yeung (1991)	Market value	no relationship
Sambharya (1995)	ROE, ROA, ROS, FROA, FROS	no relationship
Quian (1997)	ROE	U-shaped
Lu and Beamish (2001)	ROA, ROS	U-shaped
Capar and Kotabe (2003)	ROS	U-shaped
Ruigrok and Wagner (2003)	ROA	U-shaped
Daniels and Bracker (1989)	ROA, ROS	Inverted U-shaped
Geringer *et al.* (1989)	ROA, ROS	Inverted U-shaped
Sullivan (1994 a,b)	ROA, ROS	Inverted U-shaped
Hitt *et al.* (1994)	R&D intensity, ROA	Inverted U-shaped
Ramaswamy (1995)	ROA, ROS, ROVA	Inverted U-shaped
Talman and Li (1996)	ROS, ROA	Inverted U-shaped
Hitt *et a*l.(1997)	ROA	Inverted U-shaped
Gomes and Ramaswamy (1999)	ROA, ROS	Inverted U-shaped
Kotabe *et al*.(2002)	sales to operating costs ratio, ROA	Inverted U-shaped
Contractor et al (2003)	ROS, ROA	S-shaped
Lu and Beamish (2004)	ROA	S-shaped
Thomas and Eden (2004)	ROA, ROE, excess and average mkt value	S-shaped
Chang and Wang (2007)	Tobin's Q	S-shaped

TABLE 2

Subpopulation by Country and Industry Group

Country	Manufacturing	Service	Others	Total
Germany	87	46	1	134
Belgium	4	7	2	13
Spain	0	1	0	1
Finland	22	9	0	31
France	50	25	2	77
Greece	6	5	1	12
Ireland	6	3	1	10
Austria	10	3	0	13
Total	185	99	7	291

TABLE 3

Means, Standard Deviations and Correlation Matrix

	Mean	S.D	1	2	3	4	5	6	7	8	9
1. ROA	-3,31	15,14	1,00								
2. Tobin's q	0,92	0,44	0,08	1,00							
3. GDP	1,44	0,81	-0,09	$-0,21^{***}$	1,00						
4. R&D Intensity	6,75	13,12	$-0,40^{***}$	$0,13^{**}$	0,10	1,00					
5. Sales (log.)	12,82	2,22	$0,40^{***}$	$-0,18^{***}$	0,08	$-0,34^{***}$	1,00				
6. Leverage	12,79	11,29	0,00	-0,01	$-0,20^{***}$	$-0,21^{***}$	$0,32^{***}$	1,00			
7. Growth	6,48	49,21	$0,13^{**}$	$0,10^{*}$	0,02	$0,16^{***}$	-0,03	-0,03	1,00		
8. International Diversification	1,00	0,41	$0,17^{***}$	$-0,13^{**}$	0,06	-0,09	$0,39^{***}$	$0,15^{**}$	-0,03	1,00	
9. Product Diversification	0,36	0,25	$0,15^{**}$	$-0,14^{**}$	0,05	$-0,16^{***}$	$0,31^{***}$	$0,18^{***}$	-0,01	$0,13^{**}$	1,00

* $p < .10$

** $p < .05$

*** $p < .01$

TABLE 4
OLS Regression (Averaged data from years 2001 to 2003)

Variables	Tobin's q					ROA				
	Linear	Squared	Cubic			Linear	Squared	Cubic		
	1	2	3	4	5	6	7	8	9	10
1._Intercept	1,38***	1,41***	1,58***	1,59***	1,63***	-21,38***	-17,90***	-14,15***	-14,14***	-13,57**
	8,57	0,17	7,94	8,01	7,36	-4,59	-3,74	-2,63	-2,62	-2,08
2. GDP	-0,11***	-0,11***	-0,12***	-0,11***	-0,12***	-2,58***	-2,29***	-2,40***	-2,40***	-2,42***
	-3,21	0,04	-3,24	-3,15	-3,17	-3,05	-2,59	-2,74	-2,70	-2,78
3. R&D Intensity	0,00	0,00	0,00	0,00	0,00	-0,33***	-0,32***	-0,32***	-0,32***	-0,32***
	1,59	0,00	1,60	1,52	1,48	-3,23	-3,28	-3,30	-3,26	-3,25
4. Sales (log.)	-0,02	-0,02	-0,02*	-0,02	-0,02	2,36***	2,39***	2,32***	2,32***	2,32***
	-1,47	0,01	-1,71	-1,34	-1,35	5,93	6,04	5,77	5,46	5,45
5. Leverage	0,00	0,00	0,00	0,00	0,00	-0,29***	-0,28***	-0,26***	-0,26***	-0,26***
	0,19	0,00	0,53	0,70	0,68	-2,79	-2,70	-2,59	-2,66	-2,65
6. Growth	0,00*	0,00*	0,00*	0,00*	0,00*	0,05**	0,06**	0,06**	0,06**	0,06**
	1,76	0,00	1,93	1,88	1,84	2,04	2,12	2,18	2,17	2,17
7. International Diversification	-0,08	-0,18	-1,05**	-1,12**	-1,11**	-0,43	-12,86**	-31,29**	-31,38**	-31,27**
	-1,15	0,22	-2,32	-2,44	-2,41	-0,24	-2,02	-2,50	-2,43	-2,44
8. International Diversification^2		0,05	1,21**	1,30**	1,24**		6,79**	31,30**	31,42**	30,52**
		0,10	2,39	2,55	2,36		2,22	2,28	2,19	2,24
9. International Diversification^3			-0,42**	-0,45***	-0,43**			-8,79**	-8,83*	-8,51*
			-2,51	-2,69	-2,46			-1,96	-1,88	-1,86
10. Product Diversification				-0,16*	-0,30				-0,22	-2,15
				-1,69	-1,19				-0,07	-0,23
11. Product X International Diversification					0,13					1,85
					0,61					0,25
Obs.	291	291	291	291	291	291	291	291	291	291
R Squared	9,53%	9,61%	11,10%	11,88%	11,97%	36,69%	37,65%	38,22%	38,22%	38,23%
Industry Sic Group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

t-statistics in parentheses
* p < .10
** p < .05
*** p < .01

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TABLE 5
Regression With Split Sample

Variables	< Median		> Median	
	Tobin' q 1	ROA 2	Tobin' q 3	ROA 4
1._Intercept	1,97***	-61,79***	1,36***	7,57
	4,53	-3,66	4,34	1,23
2. GDP	-0,11**	-3,21**	-0,12***	-0,41
	-2,25	-2,32	-2,87	-0,79
3. R&D Intensity	0,00	-0,29***	0,05***	-0,31*
	0,17	-2,86	4,61	-1,74
4. Sales (log.)	-0,06	6,33***	-0,05**	-0,27
	-1,51	4,29	-2,30	-0,80
5. Leverage	0,00	-0,48**	0,00	-0,10**
	-0,35	-2,51	1,00	-2,49
6. Growth	0,00**	0,06**	0,00	0,02
	2,51	2,03	0,32	0,65
7. International Diversification	-0,44*	-18,89**	0,51	2,74
	-1,72	-2,37	1,29	0,47
8. International Diversification^2	0,22	11,98	-0,29*	-0,84
	1,62	2,85	-1,76	-0,36
Obs.	160	160	131	131
R Squared	10,36%	34,09%	30,30%	12,56%

t-statistics in parentheses
* $p < .10$
** $p < .05$
*** $p < .01$