INTANGIBLE RESOURCES AS A KEY FACTOR IN THE INTERNATIONALISATION OF SPANISH FIRMS[*].

2.1 Market entry and locational strategies

COMPETITIVE PAPER

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Abstract

In this paper we analyse the effect of the availability of intangible resources (measured by way of Tobin's q) on the decision of Spanish firms to increase their international diversification. We find that this impact is positive and statistically significant. We also observe that the direction of this international expansion (concentration in current markets versus new markets or greater scope) depends on the accumulation of intangible resources on the part of the firm.

Key Words: Intangible Resources, International Diversification, Spanish Firms.

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INTANGIBLE RESOURCES AS A KEY FACTOR IN THE INTERNATIONALISATION OF SPANISH FIRMS.

Most of the firms coming from developed countries are nowadays widely internationalised. During the last decade, the empirical evidence in support of this phenomenon has generated an important debate, which has focused on the motives that have led these firms to choose this strategy, as well as on the competitive and performance implications of such diversification.

Against this background, the aim of this paper is to deepen our knowledge of the motives for the internationalisation of the firm, given these have been less empirically studied due to the difficulty of measuring and testing them. The literature has offered numerous explanatory factors for this internationalisation, but as yet there is no consistent theoretical structure that explains its antecedents. However, the significance acquired by the Resource-Based View in the 1980's has led researchers to base their explanations on a set of resources called *intangible resources*. Intangible resources are understood as those assets, know-how or abilities that are difficult to formalise and reproduce by competitors; as those converted into strategic assets, generators of competitive advantages for the firm; and as those which cannot be transferred through a contract.

However, the empirical analyses that are based on this approach are somewhat limited in number. Thus, in this paper, the aim is to analyse the importance that the availability of the intangible resources of a firm has on its decision to increase its presence in foreign markets; that is to say, its effect on international diversification. We understand international diversification or internationalisation as the expansion towards new geographical locations beyond national frontiers by way of foreign direct investments (FDI). In this regard, we use a sample of firms quoted on the Spanish Stock Markets during the period 1991-1997.

There are three main differences with respect to previous papers. First, we use Tobin's q as a measurement of intangible resources whilst the literature supports this measurement, the

majority of researchers have not used it. Instead, they have used simple variables that reflect some of the intangible resources, such as annual R&D expenditures or annual advertising expenditures. Secondly, we present which is the process of international expansion of firms depending on their availability of intangible resources; and how this internationalisation provides firms to accumulate or generate intangible resources that allow firms to increase again their international expansion. Finally, earlier studies have focused on countries with firms that are highly diversified in international terms, such as the United States and, to best of our knowledge, there are no studies from countries, such as Spain, whose firms have begun this process at a later stage. Spanish firms are smaller and have less tradition in this internationalisation and these characteristics allow us to study this process step-by-step.

The rest of the paper is organised as follows. We first review the different arguments given in the literature, and upon which we base our hypotheses. Secondly, we describe the variables and measures, and explain both the methodology employed and the sample studied. Thirdly, we present and discuss the results. Finally, we close the paper with a brief review of the contributions and limitations of our paper.

THEORETICAL ARGUMENTS AND PROPOSAL OF THE HYPOTHESES

As Hoskisson, Hitt, Johnson and Moesel (1993) indicate, there is as yet no consistent theoretical structure that explains the antecedents of diversification. However, important theoretical contributions base their explanations on a set of factors closely related to the characteristics of the firm, and on the imperfections of the markets in which that firm operates. These factors allow the firm to obtain sustainable competitive advantages. In particular, it has been argued that a fundamental factor is the existence of a set of resources within the firm that are defined as specific or intangible resources (i.e. Buckley and Casson, 1976). Thus, the availability of the intangible resources of a firm is one of the most commonly found explanations in the literature on product or/and international diversification.

Intangible Resources: The Concept

In the past, as Jacobson (1992) notes, researchers have restrictively defined the firm's assets,

including only those that could be measured, such as the plant and equipment that the firm uses for production. However, during the 1980's the so-called Resource-Based View acquired significant importance. This theory offers a different perspective of the firm, considering it to be a unique set of tangible and intangible resources, rather than a business portfolio (Penrose, 1959; Peteraf, 1993). This set of resources includes all the assets, organisational processes, information, knowledge, attributes and abilities of the firm, etc. that enable it to conceive and implement strategies that improve its efficiency and effectiveness (Barney, 1991).

Some authors, such as Prahalad and Hamel (1990) or Grant (1991), distinguish between two types of resources: capital goods or assets and competencies or capacities. **Capital assets** can be classified in four categories: *Physical resources of capital* (Williamson, 1975), *Human resources* (Becker, 1964), *Organisational resources* (Tomer, 1987) and, *Marketing Resources* (Biggadike, 1981). **Competencies** are defined as a set of abilities and technologies necessary in order for a firm to offer, by means of a set of assets, a benefit to the consumer (Hamel and Prahalad, 1995).

However, as Barney (1991, p. 105) notes, not all firm resources hold the potential of sustained competitive advantages. A resource must have four attributes to be considered as strategic: *'a) it must be valuable, in the sense that it allows the firm to exploit opportunities and/or neutralise threats in a firm's environment; b) it must be rare among a firm's current and potential competition; c) it must be imperfectly imitable; and d) there cannot be strategically equivalent substitutes for this resource that are valuable but neither rare or imperfectly imitable'*. Intangible resources comply with these requirements and are thus determinants of the competitive advantage of a firm (Hall, 1993).

Although no limit has been fixed with respect to which resources can be accepted as intangible, most authors agree on the principal elements. Thus, Helpman (1984), Rugman and Verbeke (1992), and Dunning (1995) include the availability of a superior technology,

innovative capacity, managerial or production skills, organisational and marketing systems, experience of the human capital, finances, know-how, branch image, etc. It is difficult to enumerate every intangible resource, and that is why Salas (1996) defines them as the set of resources different to the primary "inputs" (capital and labour resources) that are used in the production or sale of goods and services. They are exclusive or specific to the firm at least for a period of time, and provide it with a certain superiority in comparison to its competitors.

In this paper, we have chosen to consider intangible resources in their wider sense. That is to say, we understand them to be the knowledge and capacities or abilities of the firm that are very difficult to reproduce or imitate by competitors; that are generators of competitive advantages for the firm; and that cannot be transferred through a contract.

Intangible Resources: Their Role in International Diversification

International diversification or internationalisation is the process that implies a growing implication of the firm in international activities (Johanson and Vahlne, 1977). As international diversification, Ansoff (1989) establishes the entry of the firm into a new market and the introduction of a new technology in its markets. However, in general, researchers have only considered the first requirement. Therefore, international diversification is understood as the expansion of activities of the firm (current or new activities) towards new geographical locations beyond national frontiers (see Hitt, Hoskisson and Kim, 1997).

There is currently no unique and integrating theory that justifies the international diversification of firms. However, many researchers are offering new ideas and arguments that clarify and enable us to better understand what international diversification actually consists of. In this paper, we are not trying to justify international diversification, but simply to establish the importance that the availability of intangible resources has on the decision to increase the presence of the firm in foreign markets. That is to say, we try to illustrate the role of intangible resources as determinants of a higher level of international diversification.

Thus, Internalisation Theory (Hymer, 1976) posits that international expansion should take

place in the circumstances where a firm can increase its value by internalising markets for certain of its intangible assets. Following this theory, Dunning (1977, 1979, 1995) introduced his Eclectic Approach or OLI Paradigm. This perspective examines how ownership, internalisation and location advantages explain the direct foreign investment of an enterprise.

It is under the heading of *ownership advantages* where this author deals with the availability of intangible resources in a firm, which not only give the firm a certain superiority over its competitors, but are also exclusive or specific to that firm. As Rugman and Verbeke (1992) note, these advantages emerge and are developed in the country of origin, but are easily transferable to other different countries. Therefore, following Dunning, the firm's subsidiaries could achieve advantages that allow them to obtain a better competitive position than new firms. These advantages come from the size, the productive diversification and the learning experience (specialisation, scope and learning economies), in such a way that sharing management allows firms to achieve additional advantages for the explotation of intangible resources, given that these could be organised with other complementary assets. Moreover, firms might also obtain advantages from their multinationalization. As Morck and Yeung (1991) point out, a multinational firm has an advantage due to the firm-specific intangible resources or assets that allow it to overcome the adversity of doing business in a foreign location. Indeed, if these resources are information based, such as production and marketing skills, then they have some of the characteristics of public goods, in that their value increases as the firm becomes more multinational in nature.

For their part, the *internalisation advantages* or transaction advantages are based on the benefits coming from for the joint coordination and control inside the firm of a set of resources located in different markets, instead of their sale/purchase in the external market. Thus, firms avoid the imperfections of the market and reduce their transaction costs. It would therefore be more profitable to internalise the ownership advantages by means of FDI than by

means of licences and contracts with other firms.

Finally, the *location advantages* arise from the combination of the two previous advantages with some available factor or inputs in the host market that would allow firms to obtain higher profits. Under this condition, firms with available intangible resources (ownership advantages) would expand their activities beyond national frontiers, instead of increasing their presence in the domestic market.

In summary, the theoretical arguments confirm that the accumulation of intangible resources in a firm would be an important motive to increase its international expansion. Therefore, we formulate:

Hypothesis 1: *Firms with a high level of intangible resources accumulated at a given time will increase the degree of internationalisation in the subsequent periods*

and test whether an accumulation of intangible resources in a firm, which are not used and are not susceptible to sale, can lead the firm towards greater internationalisation in subsequent periods in order to exploit the competitive advantage that they provide to the firm.

As Barney (1986) notes, resources vary in their utility to generate value in their application to different products or business, depending on their higher or lower flexibility (lower or higher specificity). Thus, the nature of the under-used resources is one of the determinants of the direction taken by the diversification of the firm (Chatterjee and Wernerfelt, 1988, 1991; Montgomery and Hariharan, 1991). Financial resources are the most flexible and, therefore, could be used for all purposes or ways of internationalisation, but they generate less value for the firm. The remaining tangibles or physical resources could be easily interchangeable between business and markets, so that, this type of resources would promote internationalisation by way of direct exports. Finally, intangible resources, when considered as strategic resources, are characterised by their high specificity (or low flexibility), with this promoting internationalisation by means of licences or foreign direct investments.

These intangible resources are easily transferable to other different countries, but more to

those markets that firms already known or have similar characteristics to the domestic market. The firm, with activity in a market, will have greater information about consumers, suppliers, competitors and, in general, about the characteristics of the market. That is to say, it would overcome more easily the entry barriers. Therefore, this expansion to similar or related markets not only provides firms with scope economies, because it allows them to share costs between a greater number of markets, as well as learning economies derived from the transfer of knowledge between business or markets (Chatterjee and Wernerfelt, 1988, 1991), but also allows firms avoiding high information and accommodation costs. Therefore, in these markets firms would achieve greater advantages by exploiting their intangible resources. Thus, we formulate:

Hypothesis 2: *Firms with a greater availability of intangible resources accumulated at a given time that decide to increase their international expansion would choose those markets in which they have a previous presence.*

Thus, once firms decide to increase their internationalisation, they would concentrate their activities in those markets that are already known, or in those with similar characteristics.

However, the international process does not finish with the entry into one country, since the experience and knowledge obtained in this process frequently facilitates the expansion of the firm towards other countries in order to continue with a progressive global expansion (Welch and Luostarinen, 1988). But, as Delios and Henisz (2000) notes, the capabilities required to complete successfully in a new market can differ significantly from the ones required for success in existing markets. Then, firms have to develop new capabilities suited to the host market. The internationalisation of firms allows them to obtain new intangible resources (mainly information, knowledge and experience) from sharing management between several business, from their bigger size or provided by the multinationalization process itself (Dunning,1995). Moreover, the accumulation of international experience allows firms to reduce the degree of foreignness faced on entry into a new country (Hymer, 1976), because they can more quickly absorb the disadvantages of acting in a new economic, legal and cultural environment (Beamish, 1988). Therefore, this generation of new intangible resources in a firm provided from the internationalisation process allows it to be in the best competitive position to enter into new and different

markets.

Thus, the greater the presence of the firm in different markets, the more the opportunities to have higher levels of information, knowledge and experience. Subsequently, under this condition, firms would expand their activities in new, different, international markets that might or might not be similar to the original or previous markets. Therefore, we formulate:

Hypothesis 3: *Firms with the highest level of intangible resources accumulated (due to their international experience) at a given time will exploit it by means of FDI in new international markets.*

VARIABLES, MEASURES, METHODOLOGY AND SAMPLE

In this section we consider the variables, their justification, measurement and calculation, as well as the sample and the methodology used in the statistical analyses.

Variables and Their Measurement

The key variables used are the increase in the degree of international diversification (dependent variable) and the available intangible resources of the firm (independent variable).

Increase in the Degree of Internationalisation

Our paper focuses on the international expansion of the firm by way of *foreign direct investments* (FDI): that is to say, we only consider the foreign subsidiaries of the firm. In this regard, it should be noted that we have only been able to consider the subsidiaries and/or associated firms in which a significant participation is held, due to the lack of complete information available for Spanish firms.

As we have just stated, as dependent variable we use the increase in the degree of international diversification. This variable will be binary, taking the value one when the value of the international diversification increases during the period under study, and zero otherwise. This variable results from the information taken from four different measures: the Global Market Diversification index (GMD), the number of foreign subsidiaries of the firm (SUBS), the number of countries where the firm has foreign subsidiaries (SCOPE), and the mean number of subsidiaries in every country (CONC), with these reflecting the different dimensions of the international diversification.

The Global Market Diversification index was developed by Miller and Pras (1980), following

Hirsch and Lev (1971), and it reflects the dispersion of the activities carried out by firms between heterogeneous geographical regions. Here, it is necessary to group the world environment into different homogenous regions, with the aim being to maintain the homogeneity within each group, as well as the heterogeneity between them. The majority of authors construct such a grouping on the basis of political and economic conditions, a criteria that has been followed in this paper. Thus, the six areas so defined correspond to the European Union, North America[i], Tax Havens[ii], other Developed Countries, Iberoamerican, and other Developing Countries[iii]. The formulation of this measurement, which is based on the percentage of subsidiaries owned by a firm in region *a* over the total number of foreign subsidiaries (f_a), is as follows:

$$GMD = -\sum_{a=1}^{A} f_a \ln f_a . \qquad (1)$$

The value it takes increases with the degree of international diversification of the firm: thus, if this increases during the period analysed, it takes the value one, and zero otherwise. This new binary variable is called ***dGMD***.

However, the Global Market Diversification has some problems when the firm has not spread its activities in different areas, in that the value of this index for one firm that has all its subsidiaries in a unique area or country would be the same as for another with no subsidiaries; that is to say, the value in both cases would be zero. To solve this problem, we also use the number of foreign subsidiaries of the firm (SUBS). Several authors, such as Errunza and Senbet (1984) or Sambharya (1995) have used this measure. If the number of subsidiaries of a firm increases in a year, the dummy variable used (***dSUBS***) takes the value one, and zero otherwise.

Therefore, both variables (dGMD and dSUBS) reflect the increases in the degree of international diversification of the firm and we use them in order to test the first hypothesis.

The ratio of the number of subsidiaries over the number of countries (CONC) reflects the

strategy or direction of international diversification followed by the firm. Thus, it would reflect if the firm chooses to concentrate its activities in a few markets, or to spread its business in several firms with a low presence in those markets. That is to say, a high value of this variable would mean that the firm chooses to locate its subsidiaries in the same countries (high concentration), whilst a low value would mean that the firm spreads its activities in more countries (low concentration). The third dummy variable is obtained from CONC: if this variable increases in a given time, the variable ***dCONC*** takes the value one, and zero otherwise. Therefore, dCONC is the dependent variable used to test the second hypothesis.

Finally, the number of countries where the firm has foreign subsidiaries (SCOPE) reflects the scope of the internationalisation of the firm (i.e. Tallman and Li, 1996). That is to say, we try to analyse if the firm chooses to locate its subsidiaries in a high number of different markets. Following the same criteria to the previous variables, when the firm decides to increase the number of countries, then, the variable ***dSCOPE*** takes the value one, and zero otherwise. This variable (dSCOPE) is used to test the third and last hypothesis.

Intangible Resources Measurement

Intangible resources are the most difficult to observe and measure by an external agent because they are not included in the Accounting Statements of firms. For this reason, they are considered as "invisible" assets (Itami, 1987). Due to the difficulty in measuring intangible resources, most empirical studies have used simple variables, such as R&D expenditures over sales (i.e. Dunning, 1980), or/and advertisement expenditures over sales (i.e. Heeley, Matusik and Hansen, 1999). The first is an approximation to capture the firm-specific assets that are generated form research and development activity; the second assumes that money spent on advertising and marketing generates firm-specific assets in the form of brand recognition and product differentiation. However, most of researchers uses both in their analyses to reflect intangible resources (see, for example, Montgomery and Wernerfelt, 1988; Montgomery and Hariharan, 1991; Allen and Pantzalis, 1996).

Other authors have argued that the market (economic) value of the firm will reflect both tangible and intangible factors (i.e. Hirschey and Wichern, 1984). So, Ross (1983) and Hirschey and Weygandt (1985), recommend a marked-value-based approach as an attractive means for determining the asset-like characteristics of advertising, R&D, and other such expenditures.

Following Hirschey and Weygant (1985) and Morck and Yeung (1991, 1992), the market value of the firm [MV(F)] can be expressed as the capitalised values of profits attributable to tangible assets [MV(T)], plus the capitalised values of profits attributable to intangible assets [MV(I)]:

$$MV(F) = MV(T) + MV(I) \quad (2)$$

While the market value of the firm is observable, subcomponents MV(T) and MV(I) are not. However, accounting book values and replacement cost values can be viewed as useful, as though imperfect, measures of the market value of tangible assets. Using these accounting data, one can in principal isolate the market value effects of tangible assets from any additional influences of intangible assets such as goodwill, market power, brand loyalty, patents, etc.

We can obtain a measure commonly referred to as the "***q ratio***" or Tobin's q by dividing the previous approach [MV(F)] among the replacement cost of tangible assets [RC(T)]:

$$q = MV(F) / RC(T) \quad (3)$$

Ignoring measurement errors, a value of *q* greater than one indicates valuable intangible assets not reflected in replacement cost data. Therefore, by considering the effects of advertising and R&D on *q*, we can learn whether or not such expenditures give rise to intangible capital. Since MV(T) = RC(T), for testing purposes:

$$q = 1 + [\, MV(I) / MV(T) \,] + e = f_1 (AD, R\&D, X) + e \quad (4)$$

where AD is advertising expenditures, R&D is research and development costs, and X is a vector of additional factors with influence q. Other X important factors are market structure, future investments expected to earn above-normal rates of return and the degree of stability such returns exhibit. Similarly, Montgomery and Wernerfelt (1988) define Tobin's q ratio as[iv]:

$$q = MV(F) / RC\,(P) = 1 + (V_I + V_C + V_R + V_E\,) / V_P \quad (5)$$

where MV(F) is the market value of the firm; RC(P) is the replacement value of physical assets; V_I, the value of intangible assets purchased by the firm; V_C, the value of collusive

relationships with competitors; V_R, the capitalised Ricardian rents; and V_E, disequilibrium effects.

In both cases, the intangible assets value and the expected futures rents influence the market value of the firm and, therefore, Tobin's q.

Grant (1995), basing his arguments on the Resource-Based View, establishes that most of these rents have their origin in the firm's resources, mainly in those with an intangible nature such as scale and experience economies, brand loyalty, patents, etc. Therefore, the capitalisation of these future rents would be a way to value these intangible resources.

Moreover, Teece, Rumelt, Dosi and Winter (1994) point out that the Tobin's q value can reflect the technical and organisational competence of the firm, that is to say, its specific assets. The existence of organisational competence explains why plant and equipment produces more when owned by one firm, rather than another. Lang and Stulz (1994) suggest that the market valuation ratio is a measurement of the contribution of the intangible resources to the market value of the firm.

Therefore, we can conclude that Tobin's q ratio is not only an adequate approximation to the intangible resources, but is also better than the other variables used in the literature: it reflects not only R&D and advertisement expenditures, but also the advantages that come from a better knowledge, experience, human resources, organisational structure and so on. Thus, in this paper, we use Tobin's q as the measurement to reflect such resources. However, it should be noted that we do not purport to quantify in monetary units the amount of intangible resources, but rather to use this data in order to compare it between firms. In this way, we could analyse the impact of the availability of these resources on the internationalisation of the firm.

Although Tobin's q is a relatively simple measurement from the conceptual point of view, in practice its measurement is not easy. It is based both on the accounting information available

from the firm's Annual Report and on market information. The difficulty lies in how to make operative the Market Value of the Firm and the Replacement Value of the Assets measurements. The methodology employed to estimate this ratio is based on Lindenberg and Ross (1981), but its application to the firms in our sample has required that we make some adjustments. First, we have applied an industrial correction factor to the firms in the sample for 1991, with the aim of obtaining an approximation to the replacement value[v]. This problem has, in turn, prevented us from making a calculation of the rate of technical progress of the firms in our sample. Nevertheless, as an approximation, we have considered the average industrial rate obtained from a separate sample[vi] of similar characteristics.

Sample

We have used a sample of 96 non-financial firms, quoted on the Spanish Stock Market during every year during the period 1991-1997[vii]. With this information we take four observations per firm: for the case of international diversification, these correspond to its increase over one year (1993-94, 1994-95, 1995-96 and 1996-97); and for the intangible measure, to the Tobin's q values with respect to 1992, 1993, 1994 and 1995. Therefore, we have a total of 384 observations for each international diversification variable.

Most of the information has been taken from the firm's Annual Reports lodged with the Spanish Securities and Exchange Commission. Annual Reports provide the accounting required data, as well as information on the location and number of subsidiaries of the firm for every year of the sample.

The reasons for concentrating on such firms are twofold. First, this Commission provides the data with some minimum guarantees of reliability and precision; secondly, the Tobin's q calculation requires that we have the market value of the share (the quote).

As regards this market value measurement, we need additional information that has been obtained from the Spanish National Accounting Statistics[viii] and from another sample available to the authors[ix].

Methodology

In order to test whether the availability of the intangible resources of a firm allows for an increase in the degree of internationalisation, we use a general model similar to the investment models. In our model, the increase in internationalisation $(I_t/I_{t-1})^x$ is a function of Tobin's q ratio, i periods lagged (Q_{t-i}). We use it lagged, in particular two years lagged, in order to avoid the endogeneity problem. The internationalisation process may have likely increased the availability of intangible resources of firms, mainly international knowledge and experience (Welch and Luostarinen, 1988; Dunning,1995).

Moreover, we divide the level of intangible resources (Tobin's q) of the firm over the median[xi] value of the Tobin's q obtained for the industry in which this firm is included, in order to avoid the industrial effect in the availability of intangible resources of a firm. As Chatterjee and Wernerfelt (1991) note 'the requirement for intangible assets varies greatly from industry to industry' (p. 41). Some industries require a higher level of intangible resources, or their generation is more costly than others in order to obtain ownership advantages that could be used for the firm in its international expansion. The distribution by industries has been made by reference to the main activity of the parent firm, with these being classified according to the criteria adopted by the OECD (OECD, 1997). The sectors are: 1) Food Products; 2) Textile and Wood Activities; 3) Petroleum, Chemical, Rubber and Plastic Products; 4) Metal and Mechanical Products; 5) Machinery, Communications and Transport Equipment and Motor Vehicles; 6) Electricity, Gas and Water; 7) Construction; 8) Transport and Communication; and 9) Real Estate and Business Activities.

We also introduce a control variable that measures the size of the firm (the natural logarithm of sales). With this variable we try to explain the greater possibility and availability of the large firm to exploit its intangible resources in foreign markets; the expected sign would then be positive.

Following this model we present four equations (for the four earlier-defined dependent variables) in order to test the proposed hypotheses:

$$I_t/I_{t-1} = \text{Constant} + Q_{t-2} / Q(\text{industry median})_{t-2} + \text{Size} + \varepsilon \quad (6)$$

where I_t/I_{t-1} is measured by way of the variables dGMD and dSUBS (to test the first hypothesis), and dCONC (the second hypothesis). We expect that the coefficient of the intangible resources of the firm to be positive.

$$\text{dSCOPE} = \text{Constant} + Q_{t-2} / Q(\text{industry median})_{t-2} * \text{Multinational} +$$
$$+ Q_{t-2} / Q(\text{industry median})_{t-2} * \text{No-Multinational} + \text{Size} + \varepsilon \quad (7)$$

where Multinational is a dummy variable that takes the value one when the firm has at least six foreign subsidiaries (a condition established in order to be considered as a multinational firm by Vernon (1971) or Horst (1972)); and the No-Multinational variable representing the opposite case that is to say, taking the value one when the firm has less than six foreign subsidiaries. We use a LOGIT analysis, applying the Newton-Raphsons numerical algorithm of maximisation of the logarithmic function of loglikelihood. As a measure of the goodness of fit, we use the statistical test that compares the loglikelihood value of the model being studied with the one we would have had if the coefficients of the explanatory variables were zero. This test is distributed according to a Chi-squared, with as many degrees of freedom as there are variables introduced in the model. An approximation to an R^2 can be obtained as the relationship between the loglikelihood value when only the constant (L_{null}) and the value of the complete model (L_{model}) are considered:

$$R^2_{Logit} = \frac{(-2 \text{ Log } L_{null}) - (-2 \text{ Log } L_{model})}{-2 \text{ Log } L_{null}} \quad (8)$$

Finally, we would like to remark that our objective is not to determine the factors that have an impact over increasing internationalisation, but to analyse the importance of the availability of intangible resources by part of the firm.

RESULTS AND ANALYSIS

Before analysing the results of the Logit analysis, let us first consider the descriptive statistics of the variable (Table 1). With respect to the independent variable, we can note that, on average, the availability of intangible resources is 1.13 with respect to the industry median.

When we analyse this availability for the multinational or no-multinational firms, we find that multinational firms have a higher value (1.22) than their no-multinational counterparts (1.09). As regards the dependent variables, dGMD, dSUBS, dCONC, dSCOPE, we have detected 48, 86, 76 and 73 increases (events), respectively.

Table 1. Descriptive Statistics

	Mean	S.D.
Q_{t-2}/Q(industry median)$_{t-2}$	1.13	0.57
Q_{t-2}/Q(industry median)$_{t-2}$ * No Multinational	1.09	0.59
Q_{t-2}/Q(industry median)$_{t-2}$ * Multinational	1.22	0.52
Ln(sales)$_{t-2}$	10.27	1.82
dGMD	0.13	0.33
dSUBS	0.22	0.42
dCONC	0.20	0.40
dSCOPE	0.19	0.39

S.D.: Standard Deviation.

The results of the Logit analyses are set out in Table 2. Note that we have obtained a Chi^2 significant at more than 99% for all of them.

With respect to the analyses carried out to test the first hypothesis, we find that the coefficient of the variable that reflects the intangible resources of the firms is 0.70 for the variable dGMD and 0.87 for dSUBS, with both being significant (p-value<0.01). The approximated R^2 obtained are of 15.4% and 20%, respectively.

These results would therefore appear to confirm hypothesis 1. That is to say, firms that possess more intangible resources in relative terms compared to the rest of the firms in the same sector and at a given moment in time, have a greater tendency to increase their degree of internationalisation in subsequent periods. We can find similar results in several empirical studies. Horst (1972), using a sample of firms from U.S. and Canada, obtains that the intangible resources of a firm (measured by means of R&D expenditures) have an important effect on the decision of investing abroad. Subsequently, Grubaugh (1987) repeats the study,

but only for U.S. firms, reaching the same conclusion. Or Denekamp (1995), who expresses the level of U.S. FDI in an industry as a linear combination of three proxies for intangible assets. Recently, Berry and Sakakibara (1999) have demonstrated that an increase in the level of intangible resources produces an increase in the F.D.I. flows by Japanese manufacturing firms.

Table 2. Importance of the Intangible Resources in International Diversification (LOGIT Analyses)[1]

	Hypothesis 1		**Hyp. 2**	**Hyp. 3**
	Equation 1 **dGMD**	Equation 2 **dSUBS**	Equation 3 **dCONC**	Equation 4 **dSCOPE**
Intangible Resources: $\mathbf{q_{t-2}/q(industry\ median)_{t-2}}$	0.70*** (0.26)	0.87*** (0.22)	0.76*** (0.23)	
Intangible Resources$_{\text{No-Multinational firms}}$: $\mathbf{q_{t-2}/q(industry\ median)_{t-2}}$* **No-Multinational**				0.42 (0.26)
Intangible Resources$_{\text{Multinational firms}}$: $\mathbf{q_{t-2}/q(industry\ median)_{t-2}}$* **Multinational**				1.14*** (0.28)
Size: **Ln (sales)$_{t-2}$**	0.59*** (0.11)	0.66*** (0.09)	0.68*** (0.10)	0.57*** (0.11)
Constant	-9.23*** (1.30)	-9.44*** (1.14)	-9.69*** (1.18)	-8.51*** (1.26)
-2 Log L$_{null}$	289.36	408.48	382.08	373.53
-2 Log L$_{model}$	244.93	326.80	306.50	291.04
Chi^2	44.43***	81.68***	75.58***	82.49***
Approximated R^2 (%)	15.4	20.0	19.8	22.1
No. of Observations	384	384	384	384
No. of Firms	96	96	96	96
No. of Events	48	86	76	73

Standard deviation in parentheses.
Levels of significance of the coefficients according to the Wald Statistic: *** p < 0.01, ** p < 0.05, * p < 0.10.
[1] We have test the same models introducing other variables of international diversification in the regressions and the variables have the same sign and they are statistically significant. However, our aim is to isolate the impact of the intangible resources on the international process.

The fact that this same result is given for both internationalisation variables indicates that this higher degree of foreign presence is reflected in two ways: first, in an increase in the number of subsidiaries in absolute value (dSUBS) and, secondly, in an increase in the degree of international diversification of the firm (dGMD). As regard this last variable, together with

the greater foreign presence (more direct investments), other characteristics of internationalisation are also implicitly reflected. These take the form of a greater scope in the investments (an increase in the number of countries or areas to which they are directed) and a higher concentration (a consolidation of the areas or countries where the firm was already present, by way of new investments). It is these two characteristics of internationalisation, that appear latent in the GMD variable, that we will now try to isolate through an analysis of the remaining two equations.

By way of equation 3, related to the dCONC variable, we analyse the effect of intangible resources on the concentration of investments in certain determined locations. From Table 2 we can note that, as in the earlier case, the coefficient that accompanies the intangible resources variable is positive and significant (0.76; p-value<0.01) and that the R^2 is of approximately 20%. This indicates that those firms that possess a higher level of intangible resources with respect to the industry median will tend to direct their new international investments to those locations in which there have already been present for some time, in this way increasing their international concentration. The second hypothesis is therefore also accepted. Thus, those firms that accumulate an excess of intangible resources in a given period and make FDI will do so with a greater probability towards international markets in which they already have a presence. Yu (1990), in an analysis of investment decisions by U.S. firms in Japan, found that previous experience in one country induces subsequent investments in the same country. This result is confirmed by Chang and Kogut (1993) and by Hennart and Park (1994) for Japanese firms. That is to say, the firm exploits the intangible resources (international experience included) by means of new investments in the same host country, due to the firm has overcome the entry barriers or the inherent disadvantages of operating abroad in an unfamiliar environment. Moreover, the availability of intangible resources allows firms that focus on similar or related markets achieving high performance by early entry into

markets susceptible to entry barriers and then exploiting these resources to erect such barriers. Thus, firms would benefit from synergies of other types of advantages with the activities carried out using their previous investments. Therefore, the concentration of investments in the country that a firm has previous presence will be profitable.

Finally, by way of equation 4, corresponding to the last of the variables (dSCOPE), our aim is to test the third hypothesis. That is to say, we set out to analyse whether the firms with greater internationalisation, which has allowed them to accumulate more intangible resources (international experience, greater access to the inputs markets, better information on consumers, etc.), have a greater tendency to expand towards new international markets. We similarly consider the contrary situation, whereby less internationalised firms and, therefore, those with a lower availability of intangible assets, will have lower probabilities to carry out such an expansion into new markets. Although there is theoretical support for the argument that internationalisation generates opportunities to accumulate intangible resources, we nevertheless test this starting assumption. Thus, we have carried out an ANOVA analysis that leads us to conclude that multinational firms do indeed have a higher level of accumulated intangible resources (1.22) than non-multinational firms (1.09), and that such a difference is statistically significant (p-value<0.05).

The results obtained from the Logit analysis confirm this third hypothesis. We can see from the Table that the coefficient that accompanies the level of intangible resources for the multinational firms is positive and significant (1.14; p-value<0.01), whilst that corresponding to the non-multinational firms, although positive, is lower and not significant (0.42). Furthermore, the R^2 obtained is the highest, at 22.1%.

The growing foreign presence can be attributed to firms accumulating knowledge about country-specific markets, which is called ‘experiential knowledge’ (Barkema, Bell and Pennings, 1996). This knowledge needed to operate in any country cannot easily be acquired, that is the reason it arises as a key or critical resource. All this would seem to imply that those firms that possess a high level of intangible resources in relation to the industry median will tend to invest in new foreign locations, always provided that these firms already have significant previous experience in the international environment.

By contrast, those firms with a low level of previous international experience will not increase the *scope* of their international presence. In this case, firms that opt to increase their international presence will do so in markets in which they have had an earlier presence, that is to say, they will increase their international *concentration*. As Cohen and Levinthal (1990) note, learning is most efficient in the proximity of the existing knowledge base since a firm's absorptive capacity depended on its prior and related knowledge. Thus, the accumulated knowledge critical by a firm will have an impact on its later growth. Therefore, it can be confirmed that those firms with a certain level of accumulated international experience could exploit that fact by way of new subsidiaries in markets that are different from the current ones. This conclusion confirms the arguments established by Johanson and Vahlne (1977, 1990) who postulated that firms tend to operate in the vicinity of existing knowledge and that once initiated, the internationalisation process proceeds incrementally, regulated by the experience-based accumulation of foreign organising knowledge.

Finally, it should be indicated that the control variable that reflects the size of the firm is positive and significant for all the equations. This is the expected result given that, as indicated throughout the length of the literature, internationalisation and size are highly correlated.

In summary, we can conclude that the presence of intangible resources in a firm in earlier periods leads to greater international diversification in subsequent periods. That is to say, the availability of intangible resources is a key factor in the decision on the part of firms to increase their internationalisation. Furthermore, we can note that firms opt for progressive international expansion in function of the availability of their intangible resources. Thus, at the outset, the firm that possesses a high level of intangible resources in relation to the sector of which it forms a part will tend to improve its competitive position in those markets (which will not be many) in which it has previous experience by way of new investments. This

consolidation of the firm in these new markets will, in turn, allow it to increase its international knowledge, information and experience. That is to say, it will allow it to generate and accumulate greater intangible resources that can be transferred to new markets, thereby generating competitive advantages. Once the firm finds itself in this situation, it will tend to increase its degree of internationalisation both in terms of concentration (the same locations) and scope (new locations).

CONCLUSION

The internationalisation of firms, together with the presence of intangible resources within firms, has become the subject of extensive study during the last decade. A number of internationalisation theories have considered the availability of intangible resources owned by the firm to be the key factor in the internationalisation of that firm. However, only a few empirical analyses have addressed this issue, and even fewer in the case of Spanish firms. Against this background, this paper highlights the relationship between intangible resources and the increase of international diversification of a firm, with specific reference to a sample of Spanish firms. In this regard, we have found that the availability of intangible resources in a firm has a positive effect on its increase in international diversification. This result is in agreement with the theoretical arguments offered in the literature. Moreover, we have obtained that the firm would direct its international expansion towards countries about which it knows either more or less, depending on the degree of accumulated intangible resources of this firm. Thus, the availability of under-used intangible resources would initially lead the firm to consolidate its competitive position in those markets with previous presence. As consequence of this greater international activity, the firm would generate or accumulate a higher level of intangible resources, in such away that it could then direct its investments towards new foreign markets. Therefore, intangible resources have an impact not only on the degree of international diversification, but also on the direction that such diversification takes.

Our paper can be differentiated from earlier studies in several respects. First, the way that intangible resources are measured. In this regard, most authors select one or more variables to reflect some of the intangible resources; by contrast, we use Tobin's q as a unique measure that allows us to reflect these resources. Secondly, we analyse the impact of intangible resources on the decision by the firm to *increase* international diversification, rather than on the degree of internationalisation. Finally, the characteristics of Spanish firms (with less international tradition) allow us to more clearly determine the steps taken by them in their international diversification.

However, this present study has one particular limitation, namely the possible bias in the results coming from the selection of firms for analyses. The firms selected are larger than the average size in Spain because they are quoted on the Spanish Stocks Markets. A broader sample, in terms of size, would be more interesting but required information for smaller Spanish firms is not available. Despite this, we believe that the study represents a useful step in the analysis of the intangible resources and international diversification of Spanish firms.

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[i] In this area we include the United States of America, Canada, Mexico and Puerto Rico.

[ii] The countries included within the Tax Havens area are those considered as such according to Spanish Royal Decree 1080 of 5th July 1991.

[iii] We follow the criteria establishes by World Bank (2000) in order to differentiate between Developed and Developing countries.

[iv] The nomenclature has been changed in order to make comparisons.

[v] The last set of rules for the restatement of asset value that were applicable at a national level in Spain corresponded to 1983. Thus, the accounting statements of the firms in the sample for 1991 are not valued at replacement cost, and therefore the correction factor is applied. This factor is obtained on the basis of an available sample of 101 firms, which were quoted on the Spanish Stock Markets during the period 1961-1991.

[vi] This takes the form of a sample of 101 firms, which were quoted on the Spanish Stock Markets during the period 1961-1991. It allows us to approximate the rate of technical progress of the firm and its market value

[vii] In order to calculate the Tobin's q ratio, historical information is required, making the year 1991 necessary.

[viii] These provide information on inflation, industrial prices index and gross fixed capital stock index.

[ix] See note 6.

[x] Measured by means of each one of the four variables previously: dGMD, dSUBS, dCONC, and dSCOPE.

[xi] We use the median instead of the mean in order to avoid the bias that could come from high or low values in the sample due to the number of firms in every industry is not really high.