This is the accepted manuscript of the article:
Ruiz-Moreno, F., Mas-Ruiz, F. J., & Nicolau-Gonzálbez, J. L. (2007). Two-stage choice process of FDI: Ownership structure and diversification mode. *Journal of Business Research*, *60*(7), 795-805. https://doi.org/10.1016/j.jbusres.2007.02.013

TWO-STAGE CHOICE PROCESS OF FDI:

OWNERSHIP STRUCTURE AND DIVERSIFICATION MODE

ABSTRACT

The previous literature on foreign direct investment examines single-stage decision making processes based on, either the ownership structure (full versus partial ownership), the diversification mode (Greenfield versus acquisition), or the simultaneity of both of them (with four independent alternatives as a result of combining the ownership structure and diversification mode decisions simultaneously). This study proposes that ownership structure and diversification mode are nested and non independent decisions. However, the sequential order of both decisions, ownership structure and diversification mode, is unknown. Thus, the current study tests the single-stage process used by previous researchers versus the two different hierarchical two-stages processes (ownership structure choice precedes diversification mode choice; and diversification mode choice precedes ownership structure choice). The empirical findings support the existence of a two-stage choice process where ownership structure choice precedes diversification mode choice. The main implication of these findings is that, given the human limited analytical capability, a hierarchical choice process can be useful to handle the information overload and the complexity inherent to the foreign direct investment choices.

Key words: Foreign direct investment, two-stage choice process, diversification mode, ownership structure.

1. INTRODUCTION

The literature traditionally analyzes foreign direct investment (FDI) through two perspectives (Hennart & Park, 1993; Barkema & Vermeulen, 1998). One of these perspectives examines the ownership structure (OS) of FDI –whether firms expand alone or with one or more partners. Therefore, a firm which expands into foreign markets must decide on the percentage of ownership they desire in the foreign venture, that is, the firm chooses between keeping (full) or sharing (partial) control of its subsidiaries (e.g.,Hennart & Reddy, 1997; Brouthers, Brouthers & Werner, 2003). The more recent perspective focuses on another dimension of FDIs, which has been referred to as diversification mode (DM) choice –whether ventures are set up from scratch (start-ups or Greenfield investments) or whether they are acquired (acquisitions) (e.g., Brouthers & Brouthers, 2000; Hennart & Park, 1993). Therefore, the firm must decide whether to build an entirely new organization in a foreign country from scratch (Greenfield) or to acquire an existing local firm (acquisition).

However, previous studies examine both dimensions of FDIs as independent decisions, either through the analysis of the determinant factors of OS choice (e.g., Brouthers et al., 2003; Stopford & Wells, 1986; Zhao, Luo & Suh, 2004) or through the analysis of the determinant factors of DM choice (e.g., Caves & Mehra, 1986; Zejan, 1990). Another research line combines both dimensions generating four entry mode choices (start-up wholly-owned venture, start-up joint venture, acquired wholly-owned subsidiary, and acquired joint venture). The study simultaneously analyses these four choices in a single-stage process in order to choose just one of them (e.g., Barkema & Vermeulen, 1998).

As an alternative to previous research, this paper assumes that DM and OS are nested and non independent decisions, which allows us to construct a two-stage sequential choice process of the two dimensions in a tree shape. The underlying outline in a hierarchical perspective of the choice process is supported by the idea that managers have a limited analytical capacity (Simon, 1955). They often decompose a complex decision into a hierarchical process and adopt a small set of critical variables to monitor at each level (Steinbruner, 1974) to make the decision process more manageable. Specifically, the hierarchical process is suitable for entry choice decision because of the dramatic differences that exist among various entry modes and among the criteria of choice at each level (Gatignon & Anderson, 1988). Thus, in the case of FDI, circumstances that are suitable for a start-up wholly owned venture differ dramatically from those that call for an acquired joint-venture. They are so

different that a comparison at the same level is impossible. Consequently, a sequential nested choice process can help managers to gain a better understanding of complex international expansion behaviour through FDI.

Even though the literature does not devote empirical attention to the non-independent nature of DM and OS choices, some authors suggest that the two dimensions are not independent and suggest a sequential order. However, the literature does not agree on this matter. Chang & Rosenzweig (2001), Harzing (2002), and Brouthers & Brouthers (2000) consider that DM and OS are different but related decisions. They suggest that the OS decision precedes the DM decision. This process entails a first stage decision between full and partial ownership. Firms which choose full ownership in the first stage go on to a second stage choice between a start-up wholly-owned venture and an acquired wholly-owned subsidiary. Firms which choose partial ownership in the first stage go on to a second stage choice between a start-up joint venture and an acquired joint venture.

Cho & Padmanabhan (1995) and Hennart & Park (1993) also consider that DM and OS are basically two separate and sequential decisions faced by a firm that wishes to enter foreign markets. But they assume that DM decision precedes the OS choice. This process entails a first stage decision between Greenfield and acquisition. Firms which choose Greenfield in the first stage go on to a second stage in which they decide between a start-up wholly-owned venture and a start-up joint venture. Firms which choose acquisition in the first stage go on to a second stage in which they choose between an acquired wholly-owned subsidiary and an acquired joint venture (Barkema & Vermeulen, 1998).

Keeping the above in mind, the aim of this work is to test different FDI processes with independent decisions and with nested and non-independent decisions. To do this, the methodology estimates and compares the following models: i) separated single-stage models (using two different binary logit models), for the OS and DM decisions; ii) a simultaneous single-stage model with four entry mode choices (using a random coefficient multinomial logit model); iii) a two-stage model with the OS decision preceding the DM decision using a random coefficient multinomial logit model; and iv) a two-stage model with the DM decision preceding the OS decision using a random coefficient multinomial logit model. The study uses the transaction-cost-related factors in determining these FDI decision processes. This study carries out the empirical analysis ~~is carried out in Spain~~ using a Spanish sample of 252 FDI entries by 141 firms.

The remainder of this paper is organised as follows: the second section analyses the superiority of a sequential two-stage choice process of entry through FDI in foreign markets over a single-stage choice process. Section three presents the design of the study and justifies the sample, methodology and variables used. The fourth section presents the results and finally, the fifth section presents the conclusions.

2. SINGLE-STAGE VERSUS TWO-STAGE PROCESS OF FDI CHOICE

The previous literature assumes that the foreign entry mode is a single-stage rational analytic decision made by managers (Kumar & Subramaniam, 1997): i) the assumption is that managers consider all the entry modes at the same time; and ii) that managers consider all the factors at the same time (Pan & Tse, 2000), hence, all the factors have the same level of relevance for all the entry modes. However, according to Simon (1955), due to its limited analytical capability, the human brain does not always try to obtain a rational solution to a problem by considering all the alternatives and optimizing. Hence, when confronted with a complex problem the "limited" human brain "satisficessatisfics" rather than optimizes (Kumar & Subramaniam, 1997). Steinbruner (1974) combinesd the notions of satisficessatisfics ???and models cognitive processes to propose the cybernetic model of decision making. The "cybernetic" decision maker decomposes the problem and the environment into stable subsystems. The decision maker eliminates the variety inherent in the decision problem by ignoring it and monitoring only a small set of critical variables before making the final decision by a sequential heuristic based process.

Specifically, given the presence of multiple types of entry modes, some of them are more similar to one another compared to others, and therefore, do not compete with each other at the same level (Kumar & Subramaniam, 1997). In consequence, the choice of entry modes can follow a hierarchical process to reduce uncertainty and complexity in the decision task: i) managers would first structure various entry modes into a multi-level hierarchy; and ii) managers would define a set of evaluation criteria for each level, keeping in mind that managers consider only a few critical factors at each level of the hierarchy, and that managers consider different factors at different levels of hierarchy (Pan & Tse, 2000).

Following this hierarchical (or cybernetic) strategy of decision making, Kumar & Subramaniam (1997) and Pan & Tse (2000) consider a natural hierarchy among the various entry modes, which distinguishes equity and non-equity modes in the first stage based on the amount of resource commitment necessary to establish

operations in the foreign market. In the second stage, they classify non-equity modes as exporting and contractual agreements, while they classify equity modes by different options (e.g., joint venture, acquisitions and Greenfields, following Kumar & Subramaniam (1997); or equity joint ventures and wholly-owned subsidiary, following Pan & Tse (2000)).

Focusing on the entry modes through FDI, this study proposes to analyze this choice ~~this choice~~ from a hierarchical perspective, where OS and DM are nested and non independent decisions. In fact, Harzing (2002) and Cho & Padmanabhan (1995) consider OS and DM to be two related but distinct issues of a decision of expansion into foreign markets. Also, and in line with Pan & Tse (2000), a hierarchical process will be suitable for FDI choice because of the dramatic differences that exist among various FDI modes and among the criteria of choice at each level (OS and DM) detected by Barkema & Vermeulen (1998). Thus, circumstances that are suitable for a start-up wholly-owned venture operation differ dramatically from those that call for an acquired joint venture. They are too different for comparison at the same level.

Regarding the superiority of this two-stage decision process over the single-stage decision process, the following aspects are important: Initially, single-stage rational analytic decision strategies are most likely to yield correct or optimal decisions (by considering all the alternatives and optimizing). Therefore, the single-stage rational analytic decision strategy would be superior to the hierarchical strategy. However, the optimality of the solution using the single-stage rational analytic strategy is dependent on the amount and the quality of the information available. In cases with too many factors for consideration and if obtaining reliable and accurate information is too difficult and expensive, the manager will use a hierarchical strategy to simplify the structure of the decision problem (Kumar & Subramaniam, 1997). Given that the specific case of FDI has numerous factors for consideration in the OS and DM decisions, and the problems related with available information, a more likely situation is that the two-stage decision strategy is superior to the single-stage decision strategy.

First, the literature proposes numerous factors from different theoretical approaches to explain both the OS choice (e.g., evolutionary process logic, the knowledge-based perspective, transaction cost, bargaining power, internalization theory, and OLI paradigm (Zao et al., 2004)) and the DM choice (e.g., transaction cost, mergers and acquisition, growth of the firm, capital imperfections, cultural context, institutional context, and organizational learning (Hennart & Park, 1993; Barkema & Vermeulen, 1998; Brouthers & Brouthers, 2000)).

These factors foment a hierarchical decision making process. Second, problems with information. Some managers operate in an environment where accountability (publicly reporting companies) is very important (Kumar & Subramanian, 1997). However, this secondary data is subject to the usual problems of data integrity and reliability associated with such sources (Cho & Padmanabhan, 1995), which foment a hierarchical decision making process. Many other managers in small and medium size companies do not have the time nor the resources to collect exhaustive information regarding the host country (Kumar & Subramaniam, 1997), and they may use the hierarchical strategy for their FDI choice to reduce the uncertainty to a certain manageable level.

Comentado [W1]: Dado que la frase está en negativa, ahí debería ser "or", no?

To sum up, a decision made by the manager depends on characteristics of the decision task, such as the number of factors considered to make the decision and expectations around the quality of the information available to make the decision. If a manager faces a decision with few alternatives/determinant factors and with reliable information, the manager faces a simple decision and he uses a single stage decision process. However, if the manager faces a very complex decision with a high number of alternatives/determinant factors and with non reliable information, the manager will try to use hierarchical decision strategies that are less formal and transparent but easier to use. Keeping the above in mind, the latter situation characterizes the OS and DM decisions, and hence, this study proposes:

Hypothesis 1: A hierarchical decision process is superior to a single-stage process in the FDI choice.

Although several authors consider that OS and DM are two separate and sequential decisions, they do not achieve a consensus on the sequential order. Brouthers & Brouthers (2000), Harzing (2002), and Chang & Rosenzweig (2001) suggest that the OS decision (whether to own full or part of the investment) is previous to the DM choice (whether to set up a new investment from scratch or acquire an existing entity). Following these authors, firms must first decide on the percentage of ownership they desire in the foreign venture (Brouthers & Brouthers, 2000). Second, firms must decide whether to acquire an existing venture or create a new one. Therefore, if the decision in the first stage is for full ownership, the firm can achieve this through either Greenfield investment, which denotes setting up a subsidiary from scratch, or through acquisition, which denotes the purchase of a controlling interest in a local firm. If the decision in the first stage is for partial ownership (or

joint venture[1]), the firm can set up a new operation similar to a Greenfield investment, or use a partner's existing assets, similar to a partial acquisition (Chang & Rosenzweig, 2001). This sequential order (OS before DM) follows the proposal of Kumar & Subramaniam (1997) and Pan & Tse (2000), which supports the existence of the following strong rationale to view OS choice as the first level in the hierarchy: the amount of resource commitment necessary in the foreign market. This aspect, resource commitment required, jointly with the investment risk involved and organizational control over foreign operations, is an important implication of one of the most critical decisions in international expansion ownership[2] based on entry mode choice (Zhao et al., 2004).

However, the DM decision also has important implications such as the resources that must be committed to the foreign operation and the risks that must be borne to enter the foreign market (Cho & Padmanabhan, 1995) and also the control over the local affiliate and the time of entry into a foreign market (Chang & Rosenzweig, 2001). In this sense, Cho & Padmanabhan (1995) and Hennart & Park (1993) consider that the DM decision is previous to the OS mode choice. This sequence is supported by the fact that most of the studies on the DM treat new venture (Greenfield) and acquisition as representing alternative foreign entry modes, with joint venture being only a matter of degree of ownership (Kogut & Singh, 1988). Specifically, Barkema & Vermeulen (1998) indicate that when a firm expands into a foreign market by establishing a local subsidiary, management has to decide whether to start a Greenfield investment or acquire an existing local firm. In the case of Greenfield, firms often establish start ups by sending over expatriates who carefully select and hire employees from the local population (Hofstede, 1991) and gradually build up the business (Simmonds, 1990), alone (start-up wholly-owned venture) or with a local partner (start-up joint venture) with knowledge of local institutions and local business practices. In the case of acquisitions, the expanding firm buys at least part of the equity of an existing firm in a foreign country (partial or full acquisition).

Keeping in mind this lack of consensus on the sequential order in the decision making process of an FDI, and that this is actually an empirical question, this paper will test the question.

3. RESEARCH DESIGN

[1] A joint venture is the pooling of assets of two or more firms in a common and separated organization.
[2] Chu & Anderson (1992) focus exclusively on the order of the entry mode along the dimension of ownership structure, assuming that the different choices "minority share", "balanced ownership", "majority ownership", and "wholly-owned" have an ordinal nature.

Several theoretical approaches analyze foreign entry mode choice. This study focuses on the transaction cost theory, which is helpful in explaining the extent of both the OS (full vs. partial) and the DM choices (Greenfield vs. acquisition) (Chang & Rosenzweig, 2001; Brouthers & Brouthers, 2000; Brouthers et al., 2003; Zao et al., 2004).

3.1. Determinant Factors

A) Regarding the OS decision, full vs. partial ownership. Brouthers et al., (2003) show that the transaction cost theory leads to better performing mode choices. The transaction cost theory posits that the full versus partial ownership choice is influenced by the core attributes of a transaction: uncertainty (internal and external) and asset specificity (including specificity-related free-riding risk) (Zhao et al., 2004).

Comentado [T2]: O better ….choices o a better …..choice

First, external uncertainty connotes the inability of an organization to predict future events, often resulting from the volatility of environmental conditions in a host country. Internal uncertainty arises when a firm is unable to accurately assess the performance of partner firms. A proxy of uncertainty is cultural distance. In highly cultural distant countries, firms prefer full ownership because the costs associated with cooperative agreements (partial ownership) may be higher than the costs of direct control (full ownership), due to several factors: volatility in host country environment (external uncertainty) and internal uncertainty (Brouthers & Brouthers, 2000). Other proxies frequently used in measuring internal uncertainty are international experience and host country experience, given that internal uncertainty also manifests itself in a firm's deficient experience or knowledge of foreign markets. Firms lacking international experience are hesitant to pursue foreign market entry aggressively (Zhao et al., 2004), and are more likely to partial ownership (Kogut & Singh, 1988; Mutinelly & Piscitello, 1998). Also, a lack of host country experience justifies the additional costs of investment through a partial ownership (López & García, 1998). Target market knowledge is usually accessible through a partial ownership when the firm combines its firm specific resources with those of local partners.

Second, asset specificity concerns a broad scope of resources particularly tailored to a relationship and reflects a firm's ability to differentiate its strategy and products. In general, intangible assets (knowledge –or information – based assets) generate monopolistic advantages for firms to exploit in foreign markets. However, proprietary and specialized knowledge (nature of specialized assets) are subject to maladaptation and opportunism (Hennart, 1988). which ~~It~~requires safeguarding exchanges to reduce behavioural uncertainty

ranging from honest disagreement to opportunism. Thus, and keeping in mind that R&D intensity is used as a proxy for physical asset specificity (Zhao et al., 2004) when protecting proprietary technologies is difficult, a firm will prefer entry through full ownership than partial ownership (Chang & Rosenzweig, 2001).

Third, transaction cost theory also suggests that higher control modes are more efficient where the potential for free-riding is higher. The free-riding risk concerns the probability that a firm's reputation or image overseas is tempered by its local partner's misconduct, unilateral pursuit, or wanton behaviour. Free riding potential is usually separated from physical asset specificity (often measured by R&D) to specifically manifest the risk side (free-riding of reputation) of asset specificity. Local partners seldom would be interested in managing a foreign entrant's reputation as they have less to lose from degrading a foreign firm's reputation than does the latter (Caves, 1982). Thus, the entrant uses entry mode control to protect its name. Advertising intensity is a proxy found in the literature. High control is appropriate for heavily advertised brands (Zhao et al., 2004).

Finally, the study includes a variable to control for firm size due to the general acceptance of the importance of partial ownership in the internationalization strategies of small firms; strategies through which they attempt to obtain complementary resources and assets (Kogut & Singh, 1988). Financial and management restrictions, along with a lack of complementary assets, leave small firms with few means of reducing the uncertainty of an FDI and oblige them to use partial ownership.

B) Regarding the DM decision, acquisition vs. Greenfield investment, the transaction cost theory stresses the distinction between exploiting existing resources and acquiring new resources (Chang & Rosenzweig, 2001). As firm-specific advantages that firms could exploit or acquire, the study includes the following: First, firms enter into foreign markets to acquire general knowledge of the local economy. Securing this key resource may be best accomplished through acquisition (Chang & Rosenzweig, 2001). Thus, Hennart & Park (1993) associate the investor's lesser experience of the host country with an acquisition. In the same way, an acquisition provides a less internationally experienced firm with the capacity to deal with the local environment and, therefore, the less internationally experienced firm views acquisition as a mechanism to reduce uncertainty and risk associated with the foreign environment (Zejan, 1990; Cho & Padmanabhan, 1995). Second, when firms seek to exploit their superior organizational and technical expertise (measured by R&D

intensity), they often prefer Greenfield entry as a way to install their managerial practices from the outset (Hennart & Park, 1993).

Third, firms can build product (brand) differentiation capabilities through large advertising investments. Caves & Mehra (1986) recognize that acquisition could be unattractive when a multinational transfers its own product (brand) differentiation capabilities built through large advertising investments. However, Hennart & Park (1993) associate a larger investor's *advertising intensity* with an acquisition. They consider that in some countries (origin country of the investor) average advertising expenditures are a good proxy of marketing skills, and acquisitions (in the host-country) allow foreign entrants to acquire local brand names and to combine them with their firm-specific marketing skills.

Country factors. Although firm-level variables (the firm transfers its specialized assets) are usually related to the concept of transaction costs, Kogut & Singh (1988) suggest that transaction cost explanations for DM should also consider country factors stemming from the cultural context. This is due to the fact that differences in cultures among countries influence the perception of managers regarding the costs and uncertainty of DM. Managers will choose the DM which minimizes the perceived costs attached to the DM and subsequent management of the subsidiary. Investing in ~~C~~culturally distant countries will entail ~~attach~~ greater costs to the management of acquisitions relative to Greenfield investment than acquiring firms from culturally similar countries.

Finally, *firm size* may also influence the DM decision. Caves & Mehra (1986) and Kogut & Singh (1988) indicate that an acquisition generally requires more financial and managerial resources than a Greenfield investment, so that a parent firm with a large amount of assets is more likely to have a greater capacity to carry out an acquisition (Chang & Rosenzweig, 2001).

3.2. Variables measurement.

With regard to the definition of the variables, the study includes the following: **Independent variables**. (1) Cultural distance between Spain and the different host-countries is measured through the index of Kogut & Singh (1988), which is based on the four cultural dimensions (power distance, uncertainty avoidance, masculinity/femininity and individualism) of Hofstede (1991). Kogut &

Singh's index is defined as: $CD_j = \sum_{i=1}^{4} \left[\left(I_{ij} - I_{iSP} \right)^2 / V_i \right] / 4$ Where I_{ij} is the index of the cultural dimension i in country j, V_i is the variance of the index of the dimension i, and CD_j is the cultural distance between country j and Spain (SP). (2) International experience is based on the number of countries in which the parent firm has subsidiaries (Caves & Mehra, 1986; Kogut & Singh, 1988). Information from the firms' annual reports. (3) Host-Country experience is measured through a dummy variable which assigns 1 if the firm has invested previously in the host-country and 0 otherwise (Andersson & Svensson, 1994). Information from the firms' annual reports. (4) R&D Intensity is the ratio of average R&D expenditures over sales of the firm's industry in the year of entry. The study uses this variable because of the lack of information on firm-level R&D expenditures. This variable takes different values according to the firm's industry and firm size (firms with more than 200 employees, and firms with between 10 and 200 employees). (5) Advertising Intensity is the ratio of average advertising expenditures over sales of the firm's industry in the year of entry. The study uses this variable because of the lack of information on firm-level advertising expenditures. This variable takes different values according to the firm's industry and firm size (firms with more than 200 employees, and firms with between 10 and 200 employees) (Rabanal, 2001). The data on advertising intensity and R&D intensity is from the Encuesta Sobre Estrategias Empresariales (*Survey on Managerial Strategies*), conducted by Fundación Empresa Pública. (6) Size. This variable is approximated by investor firm assets (Kogut & Singh, 1988; Cho & Padmanabhan, 1995) taken from annual reports.

Dependent variable. To test the two-stage models and the single-stage simultaneous model, this study uses a polytomous variable with four alternative entry modes: 1) Start-up wholly-owned venture; 2) Start-up joint venture; 3) Acquired wholly-owned subsidiary; and 4) Acquired joint venture. The codification scheme (1, 2, 3, 4) of the 252 news items on FDI comes from a self administered questionnaire completed by a group of judges, using the following definitions: i) Start-up wholly-owned venture implies starting a new subsidiary without partners; ii) Start-up joint venture implies starting a new subsidiary with partners; iii) Acquired wholly-owned subsidiary implies acquiring 100% of the equity of the foreign firm; and iv) Acquired joint venture implies acquiring only a part of this equity. The judges answer the question: "I think this foreign expansion of (name of firm) has been made through: i) starting a new subsidiary without partners; ii) starting a new subsidiary

with partners; iii) acquiring 100% of the equity of the foreign firm; or iv) acquiring part of the equity of the foreign firm. To carry out this scheme, the judges (four academics, all experts in international marketing) evaluate the 252 news items by analysing the information provided by newspapers. Each judge receives the news releases randomly and they reach an agreement ratio of 93%. Finally, the four judges meet to consolidate the results. Alternatively, to test the separated single-stage models, the study uses two dummy variables: i) OS choice, where 1 is full ownership of the subsidiary, and 0 is partial ownership of the subsidiary; and ii) DM choice, where 1 is Greenfield investment, and 0 is acquisition.

3.3. Sample

This study focuses on Spanish FDIs between 1998 and 2000. An important characteristic of this period is that multinational firms cover practically every country and economic activity in the world economy (UNCTAD, 2000). This temporal horizon is part of a larger, 20 year, period which is marked by a large increase in multinationals (UNCTAD, 2000).

Spain is no exception to this globalisation process, although Spanish firms' involvement begins, in the 60s and 70s, from a position of scarce presence in international markets compared to firms from other European countries (Campa & Guillén, 1999). In fact, the history of Spanish FDIs starts in the 70s, with their most important objectives being the following: 1) to guarantee the supply of certain raw materials; 2) to create their own distribution channels for the commercialisation of certain products; 3) to carry out construction and engineering projects; and 4) to establish financial branches (Campa & Guillén, 1996). Their real consolidation does not arrive until Spain's entry into the European Union (EU) in 1986 accelerating the internationalisation of Spanish firms and resulting in a notable increase in commerce and two-way FDI between Spain and the EU (Durán, 1999). However, 1993 sees the start of the period of greatest FDI expansion and the highest degree of multinationalisation of Spanish firms. This period also sees a different geographical configuration of the FDI, although still dominated by Spanish FDIs in Latin America as, which was the case before Spain joined the EU (Durán, 1999). In any case, Spanish firms are characterised by their reduced international presence due to the late liberalisation of FDIs in Spain, which contributes to Spain's image as a late investor or a nation whose volume of FDIs does not correspond to its economic development (López & García, 1998).

Obtaining the target population of the study involves the construction of a database from news items on Spanish FDIs published in two newspapers: *Expansión* and *Cinco Días*, which follows the approach of López & García (1998). The method of operating is initiated by finding FDI news items in these newspapers by selecting news items which contain expressions such as "process of internationalization" or "international expansion", etc. The process finds 558 FDI news items of firms from different industries. However, the lack of enough information on a large number of industries leads us to choose firms from the manufacturing industry. In this sense, the final sample drops to 252 FDIs by 141 Spanish firms in 45 foreign countries during the period 1998-2000. This final sample is judgement, but the reliability of this sample is verified by matching its time and geographical distribution with the information published by the State Office of Commerce and Investment of the Spanish Ministry of Industry, Tourism and Commerce. Finally, a group of judges examines the content of this sample of news items and the judges classify them according to the ownership structure and diversification mode (see Section 3.2). Thus, the sample is subdivided into 105 (42%) foreign entries through acquisition (of which 44 are acquired wholly-owned subsidiary and 61 acquired joint venture) and 147 (58%) entries through Greenfield investment (of which 104 are start-up wholly-owned venture and 43 start-up joint venture).

3.4. Statistical Method

To test if the two-stage is superior to the single-stage decision process in the FDI choice (Hypotheses 1), the study estimates the following models: First, estimation of the separated single-stage models (using two different binary logit), one for the OS choice (full vs. partial ownership), and the other for the DM choice (acquisition vs. Greenfield). Second, a simultaneous single-stage model with four different entry modes (start-up wholly-owned venture, start-up joint venture, acquired wholly-owned subsidiary, and acquired joint venture), using a random coefficient multinomial logit. Third, a two-stage model is estimated with the OS decision preceding the DM decision. The choice in the first stage is between full and partial ownership. Firms which choose full ownership in the first stage go on to a second stage in which they decide between a start-up wholly-owned venture and an acquired wholly-owned subsidiary. Firms which choose partial ownership in the first stage go on to a second stage in which they choose between a start-up joint venture and an acquired joint venture. Finally, estimation of another two-stage model with the DM decision preceding the OS decision. The choice in the first stage is between Greenfield and acquisition. Firms which choose Greenfield in the first stage

Comentado [T3]: Me ha dicho el editor que el pasivo vale en esta seccion. ***¿Sí, y por qué motivo? (Sólo pregunto por curiosidad)***

go on to a second stage in which they choose between a start-up wholly-owned venture and a start-up joint venture. Firms which choose acquisition in the first stage go on to a second stage choice between an acquired wholly-owned subsidiary and an acquired joint venture. Random coefficient multinomial logit (RCL) estimates the earlier specified two-stage models. Specifically, RCL models are an alternative to the more traditional multinomial logit models because of the following reasons: i) flexibility, which allows representation of different correlation patterns among different alternatives; and ii) ability to deal with the unobserved heterogeneity of firms, by assuming that the coefficients of the variables vary among firms (McFadden & Train, 2000).

The flexibility of the RCL model allows us to represent different correlation patterns among non-independent alternatives. This flexibility avoids the assumption of IIA (Multinomial logit model assumes the hypothesis of Independence from Irrelevant Alternatives, which supposes the existence of identical correlation patterns and, therefore, proportional substitutions across choice alternatives). In fact, the RCL model does not have the restrictive substitution patterns of the traditional logit model, as the ratio of probabilities P_{ti}/P_{tj} depends on all the data, including the attributes of alternatives other than *i* and *j*. The flexibility of the RCL model also allows representation of any random utility model. In particular, an RCL model can approximate a Nested Logit (NL), which is appropriate for non-independent and nested choice alternatives (Browstone & Train, 1999).

With regard to the second aspect, the whole sample is unlikely to have the same set of parameter values. This variability implies the need to consider unobserved heterogeneity of firms in parameter estimations. Hence, the utility of alternative *i* for firm *t* is defined as $U_{it} = X_t\beta_t + \varepsilon_{it}$ where X_t are firm characteristics, β_t is the vector of coefficients of these characteristics for each firm *t* (these coefficients β_t vary over firms with density $f(\beta)$); and ε_{it} is a random term. Thus, the non-conditional probability is the integral of $P_t(i/\beta_t)$ over all the possible values of β_t: $P_t(i) = \int_{\beta_t} P_t(i/\beta) f(\beta) d\beta$

Regarding the estimation of the RCL model, the study uses Bayesian procedures, as they give a parameter for each sample firm (Train, 2003). The likelihood *L* of observed choice y_t for a firm *t* conditional on

parameters b and W (average and variance of β_t, respectively) is: $L(y_t / b, W) = \frac{e^{X_t \beta_t}}{\sum_{j=1}^{J} e^{X_t \beta_t}} \phi(\beta_t / b, W)$ where ϕ is the function of Normal distribution.

Calling $k(b,W)$ the prior distribution of parameters b and W, Bayes' rule obtains the posterior distribution $K(b,W,\beta_t/Y)$ for the group of choices Y of the sample firms (t=1,..., T) as: $K(b, W, \beta_t / Y) \propto \prod_{t=1}^{T} L(y_t / b, W) k(b, W)$

The posterior distribution has three parameter types to estimate $\theta=\{b,W,\beta_t\}$: the parameters of each firm β_t, its average, b, and its variance, W, which obtains the utility functions of each firm and, therefore, the preference structure. The estimation of the parameters is ~~aimed~~ through the expression $\hat{\theta} = \int_{\theta} \theta \cdot K(\theta / Y) d\theta$. This integral has no closed solution, which leads us to use a procedure of estimation by simulation. Therefore, θ is estimated as the average of the simulated draws. However, the posterior distribution $K(\theta/Y)$ does not always take the form of a known distribution which could immediately produce draws????from which we could immediately take draws. The study uses Monte Carlo Markov Chains; specifically, the sample simulation algorithms of Gibbs and Metropolis-Hasting for the draws of the function of density suggested by Train (2001).

Comentado [W4]: Sí mejor, esto: "which could immediately produce draws"

4. RESULTS

This section estimates the models of single-stage and two-stage decision processes of a FDI specified in the last section. The descriptive statistics of the variables for the sample are found in Table 1.

Table 1 here.

The test of the alternative decision processes implies the estimation of several Logit-type models. Before carrying out the estimation, the study tests for collinearity among variables and does not appear to find a collinearity problem based on the correlation Table 1. Furthermore, the study calculates the variance inflation factor (VIF) for each of the regression coefficients. They are well below the cut off figure of 10 recommended by Neter, Wasserusan & Kutner (1985), and hence, show no multicollinearity problems. Table 2 shows the results for each alternative model.

Table 2 here.

Alternative model 1: Single-stage structure OS. In the decision full vs. partial ownership, the effect of

host-country experience is positive while the firm size is negative, both significant at 5%. The rest of the variables (cultural distance, international experience, R&D intensity and advertising intensity) are not significant.

Alternative model 2: Single-stage structure DM. In the decision Greenfield vs. acquisition, cultural distance is positive and firm size is negative, both significant at 5%. The rest of the variables (international experience, host-country experience, R&D intensity and advertising intensity) are not significant.

Alternative model 3: Simultaneous single-stage (four entry mode choices) structure. With regard to the decision *start-up wholly owned venture*, the coefficients of cultural distance and advertising intensity are positive and significant at 1% and 0.1% respectively. On the other hand, international experience, host-country experience, R&D intensity and firm size are not significant. As far as the decision for start-up joint venture is concerned, the effects of cultural distance and advertising intensity are positive and significant at 5% and 10% respectively. On the other hand, international experience, host-country experience and firm size are negatively significant at 0.1%, 1% and 0.1% respectively. Finally, R&D Intensity is not significant. Regarding the decision for acquired wholly owned subsidiary, R&D Intensity is positive and significant at 10% and advertising intensity is negative and significant at 1%. However, cultural distance, international experience, host-country experience and firm size are not significant.

Alternative model 4: Two-stage structure OS preceding DM. The parameter of the full ownership nest is significant and shows the existence of correlation patterns among alternatives similar to the one obtained through the NL Model, thus meaning that the choice of foreign market entry is a two-stage process: OS and DM, which are nested non independent decisions. With regard to the first stage of OS (full vs. partial ownership), the coefficients of cultural distance and R&D intensity are not significant. However, international experience, host-country experience and firm size are negative and significant at 0.1%, while the variable advertising intensity is positively significant at 0.1%. In the second stage of DM (start-up wholly owned venture vs. acquired wholly owned subsidiary), the effect of cultural distance is negative and significant at 0.1% and advertising intensity is positively significant at 5%. On the other hand, R&D intensity, international experience, host-country experience and firm size are not significant. Concerning the second stage of DM (start-up joint venture vs. acquired joint venture), cultural distance is negative and significant at 0.1% and host-country experience is positively significant at 1%. However, international experience, R&D intensity, advertising intensity and firm size are not

significant.

Alternative model 5: Two-stage structure "DM preceding OM". The parameter of the Greenfield nest is not significant. This structure is not superior to the non-nested structure. With regard to the first stage of DM (*Greenfield vs. acquisition*), the coefficients of cultural distance, international experience, R&D Intensity and advertising intensity are not significant. However, host-country experience is positive and significant at 0.1%, and firm size is negatively significant at 0.1%. In the second stage of OS (*start-up wholly owned venture vs. start-up joint venture*), the effects of cultural distance and firm size are negative and significant at 5% and 0.1% respectively, while the variable advertising intensity is positively significant at 10%. On the other hand, international experience, host-country experience and R&D Intensity are not significant. Concerning the second stage of DM (acquired wholly owned subsidiary vs. acquired joint venture), cultural distance and advertising intensity are positive and significant at 0.1% and 10% respectively. Conversely, international and host-country experience are negatively significant at 1% and firm size at 10%. However, R&D Intensity is not significant.

Table 3 shows each model's fit. The selection of the best model is done by employing likelihood-based information criteria to find the optimum structure. In particular, the study uses the Akaike and Schwarz Information Criteria, defined as AIC=-2log(L_{ML})/T-2k/T and SIC=-2log(L_{ML})/T-$k$log(T)/T respectively, in which L_{ML} represents the likelihood function of the model evaluated in the ML estimate, T is the number of observations and k the number of parameters in the model. These measures, apart from considering the likelihood function, take the parsimony of the model into account by adjusting for the number of parameters, which are considered as a penalty. The model with the lowest value will be preferred.

Table 3 here.

Both, the Akaike and Schwarz Information Criteria indicate that the two-stage structure OS before DM makes a better fit. Therefore, the OS choice precedes the DM choice. This finding implies that organizations choose the ownership structure full vs. partial ownership in the first stage, and firms which choose full ownership in the first stage go on to the second level, in which they choose from two diversification options: start-up wholly-owned venture and acquired wholly-owned subsidiary; and those which choose partial ownership in the first stage also have two diversification options: start-up joint venture and acquired joint venture. Hence, Hypothesis 1 is accepted as the results show that the hierarchical decision process is superior to the single-stage

process in the FDI choice. To sum up, the high number of alternative/determinant factors and the non reliable information seem to lead managers to use the hierarchical choice process on FDI (where the OS choice precedes the DM choice), which is less formal and transparent but easier to use.

5. CONCLUSIONS

The nested and non-independent character of the OS and DM decisions justifies both, the decomposition of the choice of foreign entry mode (through FDI) into a two-stage process, and the superiority of this hierarchical decision making process in complex situations like FDI over single-stage processes. This decomposition allows analysis of this phenomenon as well as the sequential order of both decisions using a sample of 252 foreign entries by 141 Spanish firms between 1998 and 2000. To do this, the methodology is based on various RCL models which overcome the inconveniences of the models applied to date.

The empirical analysis carried out shows that the two-stage process is superior to the single-stage process for an FDI decision, with OS coming before DM. In the first stage, the sample firms make their choices (full vs. partial ownership) based mainly on international and host country experience, advertising intensity and firm size. Entry through partial ownership is associated with a lack of international and host country experience, with a high level of advertising intensity and with small firm size; and vice versa for full ownership entry.

Sample firms which choose full ownership in the first stage, then choose between start-up wholly owned venture and acquired wholly owned subsidiary in the second stage, which mainly depends on cultural distance and advertising intensity. In particular, entry through start-up wholly owned venture is linked with a high cultural distance and with a low level of advertising intensity; and vice versa for entry through acquired wholly owned subsidiary. Finally, sample firms which choose entry through partial ownership, go on to a second stage choice between start-up joint venture and acquired joint venture depending on cultural distance and host-country experience. Acquired joint venture is associated with major host-country experience and with a lesser cultural distance; and vice versa for start-up joint venture.

From the point of view of the influence of each dimension during the sequential two-stage process, the following points are of importance: no variable explains the complete sequential choice process (first stage: full vs. partial ownership; second stage when first stage is full ownership: start-up wholly-owned venture vs. acquired wholly-owned subsidiary; and second stage when first stage is partial ownership: start-up joint venture

vs. acquired joint venture). Cultural distance is only a determinant of the second stage DM decision for those firms that choose either full or partial ownership in the first stage. International experience and firm size are determinant of the first stage OS decision. Host-country experience is determinant of the first stage (OS) of the decision and of the second stage (DM) when first choice was partial ownership. Advertising intensity is determinant of the first stage (OS decision) and of the second stage (DM decision) when first choice is full ownership. Finally, R&D intensity is not a determinant of any of the choices in the process.

The results of this study have important managerial implications: first, the results provide a more precise picture of what affects the choice of entry modes and at what level (Pan & Tse, 2000). This can avoid the mistakes of writing off some determinants if they fail to show a significant impact within the OS choice or within the DM choice. In fact, this study shows that cultural distance does not influence at the first level of the decision making process, but rather exerts substantial influence throughout the DM choice in the second stage.

Second, for policy makers, this study highlights country factors, such as cultural distance, which affect the adoption of some entry modes in the host-country. In other words, the host-country government can act to encourage foreign firms to adopt some entry modes (Pan & Tse, 2000). In any case, the host-country government also needs to be aware of the fact that motivations for choosing full ownership entry instead of partial ownership arise mostly from micro level firm-specific factors (international and host-country experience, advertising intensity, and firm size); and then, host-country government is less capable of enticing foreign firms to favour full ownership over partial ownership.

Con formato: Resaltar

Third, for managers, the hierarchical process can be useful to handle the information overload and the complexity of the decision (Pan & Tse, 2000). Managers can focus on any key determinant at the first level (full vs. partial ownership). For example, this study shows that host country experience is relevant at the first level of hierarchy (full vs. partial ownership); but out of this factor, managers also need to be aware of the unconscious influence of firm size on their mode choice to avoid making suboptimal decisions.

The study only considers the manufacturing sectors, which is a relatively small sample, and does not include all of the possible factors of influence of the entry mode choice. Another limitation could be the difficulty in building firm-specific variables such as R&D and advertising intensity due to the nature and size of the database, although such firm-specific factors certainly will add to a better understanding of entry modes.

Despite this, the study is the first to provide data for foreign entry modes through a two-stage sequential process in the context of FDI. Moreover, the paper looks at various factors influencing the choice in each stage of the sequential process.

Important future lines of research are the analysis of entry modes distinguishing different aspects, such as corporative strategy (Harzing, 2002), the existence of firm networks (Pla, 1999), as well as a comparison between entry options such as joint venture and acquired wholly-owned subsidiary (Hennart & Reddy, 2000).

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Table 1
Descriptive Statistics

Variables	Mean/ (%)	St. Dev	Correlation Coefficients 1	2	3	4	5
Start-up Wholly-owned venture	41	49.3					
Start-up joint venture	17	38.0					
Acquired Wholly-owned subsidiary	17	38.0					
Acquired joint venture	24	42.9					
1. Cultural Distance	0.94	0.6					
2. International Experience	5.13	4.1	0.05				
3. Host-Country Experience	0.49	0.50	-0.02	0.29[a]			
4. R&D Intensity	1.21	1.38	0.13[b]	0.01	0.07		
5. Advertising Intensity	2.61	2.37	0.00	0.02	-0.07	-0.15[b]	
6. Firm Size	48252	79064	-0.06	0.51[a]	0.25[a]	-0.10	-0.06

a= prob<0.01; b= prob<0.05; c= prob<0.1

Table 2
Determinant Factors of the Decision Structure of FDI (Standard Errors in Brackets)

INDEPENDENT VARIABLES	Alternative MODEL 1 Single-stage structure OS (Logit Binomial Model) *b*	Alternative MODEL 2 Single-stage structure DM (Logit Binomial Model) *b*
	Decision: full vs. partial ownership	Decision: Greenfield vs. acquisition
Cultural distance	0.042 (0.230)	0.671[b] (0.261)
International Experience	0.053 (0.045)	0.004 (0.052)
Host-Country Experience	0.337[c] (0.168)	-0.019 (0.171)
R&D Intensity	-0.066 (0.113)	-0.070 (0.118)
Advertising Intensity	-0.052 (0.061)	0.096 (0.069)
Firm size	-0.000006[c] (0.00000)	-0.00001[a] (0.00000)
Constant	0.350 (0.374)	0.281 (0.395)

a=prob<0.1%; b=prob<1%; c=prob<5%; d=prob<10%

Table 2
Determinant Factors of the Decision Structure of FDI (Cont.)

INDEPENDENT VARIABLES	Alternative MODEL 3 (*) Simultaneous single-stage (4 entry modes) structure (Logit Multinomial)					
	b	SD (β)	*b*	SD (β)	*b*	SD (β)
	Start-up wholly owned venture		Start-up joint venture		Acquired wholly owned subsidiary	
Cultural distance	1.036[b] (0.350)	1.216 (1.204)	3.580[c] (1.626)	8.420 (8.038)	-1.128 (0.781)	1.832 (3.540)
International Experience	-0.351 (0.625)	0.555 (0.373)	-1.823[a] (0.365)	0.401 (0.261)	-0.898 (1.142)	11.459 (12.852)
Host-Country Experience	0.070 (1.457)	9.771 (8.964)	-1.456[b] (0.424)	2.644 (2.222)	-12.376 (12.99)	1234.727 (1013.6)
R&D Intensity	1.381 (1.412)	39.904 (61.393)	-2.167 (1.856)	34.987[c] (15.515)	0.860[d] (0.507)	1.123 (0.985)
Advertising Intensity	1.041[a] (0.265)	1.178 (1.333)	0.930[d] (0.491)	1.897 (1.458)	-1.549[b] (0.495)	1.239[d] (0.677)
Firm size	-0.878 (0.667)	1.365 (0.896)	-1.116[a] (0.274)	0.789[d] (0.468)	-0.913 (1.309)	2.695 (3.997)
Constant	-1.446 (2.465)	213.675 (328.5)	0.989[d] (0.538)	0.944[d] (0.534)	-1.687[d] (0.972)	1.915 (2.258)

a=prob<0.1%; b=prob<1%; c=prob<5%; d=prob<10%
(*) The entry mode "acquired joint venture" is used as the reference variable.

Table 2
Determinant Factors of the Decision Structure of FDI (Cont.)

INDEPENDENT VARIABLES	Alternative MODEL 4 Two-stage structure: OS BEFORE DM (Nested Logit Multinomial)		Alternative MODEL 5 Two-stage structure: DM BEFORE OS (Nested Logit Multinomial)	
	b	**SD (β)**	***b***	**SD (β)**
	First Stage: full vs. partial ownership		**First Stage: Greenfield vs. acquisition**	
Cultural distance	0.705	1.367	-0.703	2.093[d]
	(0.820)	(1.308)	(0.693)	(1.255)
International Experience	-1.05[a]	0.96	0.545	0.844
	(0.276)	(0.826)	(0.487)	(0.696)
Host-Country Experience	-2.747[a]	0.825	1.292[a]	0.468
	(0.287)	(0.747)	(0.244)	(0.306)
R&D Intensity	-0.010	1.114[d]	0.528	3.227
	(0.312)	(0.676)	(0.877)	(2.657)
Advertising Intensity	1.115[a]	1.067[c]	-0.153	0.811
	(0.276)	(0.485)	(0.424)	(0.823)
Firm size	-2.422[a]	0.703[d]	-10.946[d]	1028.75
	(0.288)	(0.393)	(5.949)	(1142.6)
	Second Stage (full ownership): start-up wholly owned venture vs. acquired wholly owned subsidiary		**Second Stage (Greenfield): start-up wholly owned venture vs. start-up joint venture**	
Cultural distance	-2.152[a]	2.578	-1.606[c]	1.615
	(0.628)	(3.82)	(0.655)	(1.650)
International Experience	-4.880	622.851	-0.902	33.185
	(3.097)	(391.9)	(1.037)	(38.856)
Host-Country Experience	1.186	0.766	0.411	5.865
	(0.942)	(0.549)	(1.353)	(4.213)
R&D Intensity	0.974	6.720	1.881	27.203[d]
	(0.814)	(10.935)	(2.092)	(14.002)
Advertising Intensity	2.932[c]	10.013[c]	0.964[d]	0.843[d]
	(1.401)	(4.941)	(0.512)	(0.467)
Firm size	0.860	3.11	-4.752[a]	1.407
	(0.652)	(2.572)	(0.511)	(0.875)
	Second Stage (partial ownership): start-up joint venture vs. acquired joint venture		**Second Stage (acquisition): acquired wholly owned subsidiary vs. acquired joint venture**	
Cultural distance	-0.802[a]	0.71	1.203[a]	0.420
	(0.247)	(0.581)	(0.224)	(0.282)
International Experience	0.022	2.513[c]	-0.927[a]	0.205[d]
	(0.416)	(1.193)	(0.22)	(0.116)
Host-Country Experience	0.844[b]	1.531	-1.959[a]	2.945
	(0.302)	(2.220)	(0.560)	(2.736)
R&D Intensity	0.021	1.468	-2.072	16.331
	(0.265)	(0.975)	(1.517)	(16.525)
Advertising Intensity	-0.185	0.686	0.518[d]	0.398[d]
	(0.381)	(0.514)	(0.299)	(0.238)
Firm size	-0.837	1.829	-1.167[b]	0.537
	(0.638)	(1.594)	(0.395)	(0.351)

Constant 1 (Start-up wholly owned venture)	-2.339[a] (0.654)	2.636 (4.037)	0.733[b] (0.256)	0.809 (0.757)
Constant 2 (Start-up joint venture))	1.192 (0.751)	1.663 (1.137)	2.161[a] (0.608)	0.902 (0.976)
Constant 3 (Acquired wholly owned subsidiary)	-1.792[b] (0.658)	3.197 (2.678)	-1.715[a] (0.203)	0.404[d] (0.223)
Nest 1=Full ownership	-0.530 (0.423)	0.486[d] (0.249)		
Nest 2= Greenfield			0.597 (0.431)	1.193 (0.802)

a=prob<0.1%; b=prob<1%; c=prob<5%; d=prob<10%

Table 3
Comparison among structures

	MODEL 1	**MODEL 2**	**MODEL 3**	**MODEL 4**	**MODEL 5**
	Single-stage structure OS (Logit Binomial)	**Single-stage structure DM (Logit Binomial)**	**Simultaneous single-stage structure (Logit Multinomial)**	**Two-stage structure: OS before DM (Nested Logit Multinomial)**	**Two-stage structure: DM before OS (Nested Logit Multinomial)**
Akaike Information Criterion	3.548(*)	3.854(*)	2.552	2.517	2.613
Schwarz Information Criterion	3.561(*)	3.867(*)	2.585	2.551	2.647

(*) To allow comparison of the single-stage choice processes 1 (OS: full versus partial ownership); and 2 (DM: Greenfield versus acquisition) with choice processes 3, 4 and 5, the study calculates the approximated Akaike and the Schwarz Information Criterion for Models 1 and 2 through the combination of various logit binomial models.