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Direct Competition, Number of Partners and the Longevity of Stakes in Joint Ventures

Abstract

- In this paper, we draw attention to the interaction between the number of partners and the direct competition between these when explaining the longevity of stakes in joint ventures (JVs).

- We argue that increases in the number of partners have a positive effect on the longevity of stakes in JVs only when all of these are competitors, especially if the JV includes marketing activities. In contrast, if not all of the partners are competitors, the effect of the number of partners will be the opposite. Our hypotheses are empirically tested via several estimates of proportional hazard regressions, using a sample of JVs carried out by Spanish firms.

Key Results

- Our results allow us to shed light on the influence of the number of partners on the longevity of stakes in JVs. Specifically, the contradictory results obtained in prior research may be explained by the moderating role that competition among the partners plays.

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Introduction

What are the determinant factors of the duration of strategic alliances between firms? Numerous studies have been carried out with the aim of answering this research question, mainly in the field of JVs (Kogut 1989, Blodgett 1992, Barkema et al. 1996, Park/Russo 1996, Park/Ungson 1997, Delios/Beamish 2001, Hennart/Zeng 2002, among others). Initial research was aimed at analyzing JV performance, simplistically considering (Gomes-Casseres 1987) JV duration or instability to be good proxies of its performance. Later on, the study of JV longevity became a research question *per se*, constituting a field of study in its own right. At the same time, researchers began to use more precise statistical techniques, such as econometric duration models. Numerous empirical studies have tried to analyze the impact on JV longevity of factors such as cultural distance (Barkema et al. 1996, Barkema et al. 1997, Barkema/Vermeulen 1997, Park/Ungson 1997), experience – either in the host country of the venture or in the management of alliances – (Li 1995, Barkema et al. 1997, Delios/Beamish 2001), the number of partners (Park/Russo 1996, Hennart/Zeng 2002), the share of equity (Blodgett 1992, Pennings et al. 1994, Park/Russo 1996, Park/Ungson 1997, Dussauge et al. 2000, Hennart/Zeng 2002), previous alliances among the partners (Kogut 1989, Park/Russo 1996, Park/Ungson 1997) or size (Barkema et al. 1997, Hennart et al. 1998, Delios/Beamish 2001, Hennart/Zeng 2002). Table 1 synthesizes the results of the main empirical studies based on duration models, highlighting the evidence for the analyzed factors. It can be seen that for certain factors the empirical results have not been conclusive and have even been contradictory.

Given the lack of conclusive results regarding the aforementioned factors, it would seem that the influence of most of these may well be more complex than what might be expected. In this paper we focus our attention on one of these factors, the number of partners, whose interaction with direct competition has not yet been explored. We argue that its in-depth analysis will help us to better understand the dynamics of JVs. In particular, we argue that increases in the number of partners reduce the longevity of stakes in JVs when they are formed by partners from different industries. However, when all of the partners belong to the same industry, the longevity of the stakes increases, especially if the JV includes marketing activities. These predictions are tested using empirical evidence from the results of a survey carried out on a group of Spanish firms that have participated in JVs.

The paper is organized as follows. A theoretical framework for analyzing the interaction between number of partners and direct competition is presented in the first section. The empirical propositions derived from our framework are then tested. After discussion of the empirical results, we present a summary of our main conclusions.

Table 1. Results of Previous Research on the Determinant Factors of the Longevity of Joint Ventures in Terms of Likelihood of with Drawing

	Factors	Positive influence	Negative influence	No significant influence
Expansion of activity	Cultural distance	Barkema et al. (1996), Barkema et al. (1997), Barkema/Vermeulen (1997)	Park/Ungson (1997)	Fey/Beamish (2001)
	Multi-country scope	Park/Ungson (1997)		
	Diversification	Hennart et al. (1998)[a], Li (1995)[a]		
	Relational diversification		Pennings et al. (1994)[a]	
	International/domestic joint ventures	Makino/Beamish (1998), Hennart/Zeng (2002)	Park/Ungson (1997)	Park/Russo (1996)
Intangibles	Technology transfer of the partner to the joint venture	Park/Ungson (1997)[c]		
	I+D activities in the joint venture		Park/Russo (1996)*	Park/Russo (1996), Kogut (1989)
	Partner has intangible technological assets		Delios/Beamish (2001), Kogut (1989)	
	Partner has intangible advertising assets			Delios/Beamish (2001), Kogut (1989)
	Product/market overlap between partners and joint venture	Park/Ungson (1997)		
Experience	Experience in domestic joint ventures		Barkema et al. (1997)	
	Experience in international joint ventures			Barkema et al. (1997)
	Experience in joint ventures		Delios/Beamish (2001)	Park/Russo (1996)
	Experience in alliances			Dussauge et al. (2000)[b]
	Experience in international w.o.s.		Barkema et al. (1997)	
	Experience in host country		Delios/Beamish (2001), Li (1995)[a]	Hennart et al. (1998)[a]
	Previous or concurrent alliances		Park/Ungson (1997), Park/Russo (1996), Kogut (1989)	Dussauge et al. (2000)[b]

Table 1. (continued)

	Factors	Positive influence	Negative influence	No significant influence
Ownership structure	Equity ownership	Park/Ungson (1997), Pennings et al. (1994)[a]	Park/Russo (1996)*, Hennart/Zeng (2002)	Park/Russo (1996)
	Majority partner	Blodgett (1992), Dussauge et al. (2000)[b*]	Makino and Beamish (1998)	
Complexity	Competitive partners	Park/Russo (1996), Park/Ungson (1997)		Hennart/Zeng (2002)
	Multiple activity			Kogut (1989)
	Number of partners	Hennart/Zeng (2002), Dussauge et al. (2000)[b]	Park/Russo (1996)	
	Differences between partners (size, age, scope)			Park/Ungson (1997)
	Conflicts between partners	Steensma/Lyles (2000)		
Size and scale	Size of the joint venture		Delios/Beamish (2001), Li (1995)a	
	Partner's size	Barkema et al. (1997), Hennart et al. (1998)[a], Delios/Beamish (2001), Hennart/Zeng (2002)	Li (1995)[a], Pennings et al. (1994)[a]	
	Search for scale economies	Park/Russo (1996)*, Kogut (1989)	Dussauge et al. (2000)[b*]	Park/Russo (1996)
Industry	Industry growth		Hennart et al. (1998)a, Li (1995)a, Hennart/Zeng (2002)***	Kogut (1989)
	Mean industry concentration	Kogut (1989)		Li (1995)[a]

[a] Results relative to subsidiaries (joint ventures or wholly owned subsidiaries)
[b] Results relative to all types of alliances
[c] Only for Japanese-American joint ventures
* Only for abandonment due to acquisition
** Only for abandonment due to dissolution
*** Only for abandonment due to liquidation and sale to a third party
The results of the estimates relative to the analysis of longevity have been taken from the work by Dussauge et al. (2000).

Theory and Hypotheses

Value creation is at the core of JV formation and survival (Zajac/Olsen 1993, Doz/Hamel 1998, Dyer/Sing 1998, Madhok/Tallman 1998). JV formation requires partners to expect the value they will derive from it to be greater than the value derived from any alternative organizational arrangement. According to Doz and Hamel (1998), there are three sources of value creation in any JV. First, by acting as a single firm in several markets, firms can achieve critical mass to improve their competitive position in specific markets (cooption). Second, firms can create value through higher-order resource combinations, i.e. combinations of complementary resources that allow the firms to exploit new market opportunities (cospecialization). Third, firms can improve their resource endowment by internalizing their partners' skills through learning. JV survival obviously requires the accomplishment of at least one of these sources of value. This accomplishment is far from easy most of the times. Several factors, such as coordination problems or conflicts of interest, can cause a malfunctioning of the agreement that may hinder value creation (Park/Ungson 2001).

However, JV longevity also requires the maintenance of at least one source of value creation. The critical factors for this maintenance will differ depending on the source of value creation. In the case of JVs aimed at coopting partners, the longevity of the JV will be dependent on the possibilities that one single firm acting alone has to replicate this critical mass on its own (Ariño et al. 1999). In cospecialization JVs, the key factor for the duration of the JV – apart from the success of the market opportunity defined by the combination of complementary resources – is the substitutability and replicability through learning of the partners' resources (Dussauge et al. 2000). Finally, in the case of learning JVs, the key factor for the perdurability of the relationship is the evolution of the JV to what Doz (1996) calls learning cycles, a situation in which the partners find advantages in developing new projects through which all of the parties reinforce their own capabilities.

Taking this into account, we can see that the number of partners is a factor that can have an ambivalent effect on the longevity of stakes in JVs. A high number of partners can hinder the good functioning and development of the agreement, making it difficult to create value, thus negatively affecting its longevity. In fact, as the number of partners increases, the interests to harmonize will be greater and problems of coordination will increase (García-Canal 1996). Furthermore, as the number of partners increases, the incentives for free-riding behavior will be higher (Alchian/Demsetz 1972, Stigler 1974, Grandori 1987). Agreements thus become more complex and the possibility of ex-post disagreements with respect to the initial objectives increases (Park/Russo 1996). However, an increase in the number of partners can also positively affect the sustainability of the generated value and hence the longevity of the agreement, although this potential positive effect will be dependent on the

source of value creation that the JV is intended to exploit as well as the degree of competition between the partners.

As the number of partners increases, the possibilities that a single firm has of replicating on its own the value created by the JV diminish. However, the relationship between the number of partners and value creation is not as simple as the previous sentence suggests. If the JV is aimed at coopting partners to achieve critical mass, this goal is easier to achieve if all of the partners compete in the same industry and the pooled resources can be oriented towards improving the partners' competitive position in a specific market. Moreover, the higher the number of competing partners, the higher the difficulties for a single firm to replicate, on its own, the critical mass that the JV may provide. In the case of cospecialization and learning JVs, increases in the number of partners do not automatically lead to increases in the potential value of the JV. In the case of cospecialization JVs, the key factor is not the amount of resources pooled, as happens in cooption JVs, but rather the synergy associated with complementary resources. Having more resources *per se* in this case does not increase the potential value of the JV. In the case of learning JVs, the key to developing a long lasting relationship is to evolve towards a learning cycle situation, as mentioned above. In order to do so, having more partners is an obstacle, since it is easier to increase the scope of JV in the dyadic case than in the multiparty case (García-Canal et al. 2003).

We can see that only in the intra-industry case increases in the number of partners can lead to increases in JV longevity, via increases in the sustainability of the potential synergies of the JV. In effect, when partners compete in the same industry, there are more activities that can be shared by increasing the potential scale economies (Doz/Hamel 1998). Moreover, if all the partners are competitors, it will be possible to obtain benefits associated with the establishment of standards (Hwang/Burgers 1997) or with the formation of constellations or strategic blocks to reshape the industry (Nohria/García-Pont 1991, Gomes-Casseres 1996). Additionally, all this potential of value creation will remain over time, since, as stated above, the greater the number of partners, the greater the difficulty for a single firm to achieve this critical mass. Thus, for example, it would become difficult for one single firm acting alone to obtain the same efficiency gains derived from the attainment of scale economies or the reordering of industry rivalries as those achieved in a JV by pooling the resources of different firms. All of this positively affects the longevity of the JV. Therefore, as the number of partners increases, if these are all competitors, the problems derived from conflicts of interests will be counteracted by the greater potential for generating value from the JV and the maintenance of such value over time. None of these advantages can be achieved when partners compete in different industries.

For all the above reasons, we thus formulate the following hypothesis:

Hypothesis 1. As the number of partners increases, the likelihood of withdrawing stakes in JVs will diminish when all the partners are competitors.

The benefits of coopting partners thus increase with the number of partners, when these are all competitors. However, these multiparty JVs entail problems of value appropriation, as well as other conflicts of interest that may reduce the partners' commitment to the JV (Stigler 1974, Grandori 1987). One way to overcome these problems as well as to align the incentives of the partners is to include marketing activities within the scope of the JV. In that case, all of the conflicts of interest associated with the distribution of value are internalized within the management of the JV. In contrast, if the partners sell their products separately, their incentives to coordinate R&D and production activities will be lower due to rivalry in the final markets. For all these reasons, we thus propose the following hypothesis:

Hypothesis 2. The negative impact of the number of partners on the likelihood of withdrawing stakes in JVs will be stronger in JVs entailing marketing activities.

Lack of competition among the partners will strengthen the negative effect on the longevity of stakes when the number of partners increases. On the one hand, as the number of partners increases, it is more difficult to achieve a critical mass to compete in a specific field, as the partners have developed resources in different industries. Thus, fewer possibilities will exist to achieve scale economies, as it is less likely that the contributions of the partners will be similar. Moreover, if competition does not exist among the partners, it will not make much sense to aim at obtaining norms or standards applicable to an industry, at coordinating industry rivalries or at forming constellations or strategic blocks. Being less is better than being more if the JV includes partners from different industries and this also holds for cospecialization and learning JVs. The advantages of cospecialization are not necessarily reinforced by increases in the number of partners even if they belong to different industries. The key point in these JVs is the complementarity between partners' resources and being more guarantees neither the existence of a synergy nor a new market opportunity among the partners. In addition, increases in the number of partners makes the existence of a convergence of interests among them increasingly difficult. In the case of learning JVs, being more is an obstacle to the development of a long lasting JV, since the key point in these JVs, as previously mentioned, is to evolve to a learning cycle situation in which each partner shows an increasing adaptability to the alliance just to meet the requirements of the new projects carried out (Doz 1996). It becomes more and more difficult to reach this adaptability as the number of partners increases (García-Canal et al. 2003). In contrast, when the partners are just two non-competing firms, it is easier to adapt to the requirements of the other partner and the lack of direct competition reduces the conflicts of interest. For all these reasons, we thus propose the following hypothesis:

Hypothesis 3. As the number of partners increases, the likelihood of withdrawing stakes in JVs will increase if competition does not exist among all the partners.

Methodology

Sample

In order to test our hypotheses, we carried out a survey of Spanish companies that had participated in the creation of JVs. These JVs were identified through press clippings published in the Spanish economic press between 1986 and 1992. We chose the end of 1992 as the closing point in order to ensure that a sufficient amount of time had passed between the creation of the JV and the moment the study was undertaken. Moreover, we only considered press clippings related to JVs with at least one Spanish member. Since our analysis unit is not the JV itself, but rather the participation of a partner in such a venture, we focused on the participation of Spanish firms in order to homogenize the sample and avoid biases. We thus identified 438 Spanish firms that had participated in JVs, with a total of 656 participations.

Spanish firms provide an interesting setting for this study due to the pressures for JV formation they experienced in previous decades. After the processes of economic opening and integration that operated in Spain during the 1970's and 1980's, Spanish companies were forced to carry out a substantial number of JVs (as well as other alliances) in order to gain access to new technologies and/or markets. Hence by focusing on JVs created by Spanish companies, we have been able to obtain sufficient empirical evidence of the new types of JVs that have arisen worldwide since the end of the 1970's.

A survey was mailed to the previously identified companies to obtain information concerning the characteristics of their participation in JVs and the circumstances that had surrounded the formation of the JV, as well as on the situation of these participations on February 28th, 2002. Each questionnaire referred to the participation in a specific JV, a questionnaire being sent out for each identified JV. Some of the identified firms had formed more than three JVs. In these cases (20 firms) we restricted the number of questionnaires to three. The criterion used to choose the three JVs was the importance of the project, measured by the number of news items identified in the press, although we also tried to include dyadic and multiparty JVs as well as domestic and international JVs within the group of three JVs. The questionnaires were addressed to the company's CEO. The first mailing was followed by a second one about two months later, along with a phone follow-up.

A total of 609 questionnaires were sent to 431 Spanish companies, 99 completed questionnaires being returned, of which 82 were considered valid for this study. The rest were discarded for various reasons, basically because they referred to forms of cooperation other than JVs, or because they contained insufficient information regarding our independent variables. Table 2 presents the industry groups of the firms included in the sample and of those who responded to the questionnaire. In order to test the existence of non-response bias with respect to JV effectiveness,

Table 2. Industry Group Distributions of Firms in the Sample and Responses

Industry Group	Sample (percent)	Responses (percent)
Agribusiness	14.6	14.8
Metals and minerals	1.0	
Energy and water	6.2	6.2
Construction	3.6	2.5
Textiles, leather, clothing and shoes	4.5	2.5
Paper and wood	3.8	1.2
Chemical	4.8	8.6
Computers and semiconductors	1.9	
Other electric and electronic products	6.2	8.6
Automobiles	1.2	
Aerospace	0.7	3.7
Other machinery	3.1	6.2
Other manufacturing	6.0	3.7
Transportation	1.7	3.7
Communication and advertising	1.4	
Distribution	6.0	2.5
Finance	18.9	19.8
Services	12.2	12.3
Computer software	2.2	3.7

we tested the existence of significant differences with regard to all of the variables in the study between the first and last groups of questionnaires returned, with no significant difference being observed.

Dependent variable and method of analysis

Our interest lay in analyzing factors that influence the likelihood of withdrawing the stake in JVs. Therefore, as a starting point for our estimates, we built a variable that quantifies the longevity of the participation in the JV. By this, we mean the number of months that have lapsed from the creation of the JV until the moment in which the cooperation ceases; or for those cases in which this withdrawal has not taken place, the moment in which information was requested from the firm, in our case, February 28th, 2002. The following events were considered as withdrawal from the cooperative venture: dissolution or liquidation of the JV (24 cases), sale

of all of the equity of the respondent firm to another firm (another partner or a third party) (25 cases) or the acquisition by the respondent firm of all of the remaining shares in the JV in such a way that the JV becomes a wholly owned subsidiary of the respondent firm (5 cases). On the basis of this information concerning the agreement's duration, it is possible to build hazard ratios, i.e. the likelihood that the withdrawal (or the considered event) will take place at a moment *t*, provided that said withdrawal has not taken place up until that moment. Econometric models of duration were used to determine the impact on the hazard ratio of the diverse explanatory and control variables defined below. These techniques allow us to exploit the information relative to the censored cases, i.e. those in which the event has not happened, in our case the remaining participations on February 28th, 2002. Specifically, a proportional hazard regression was used (Cox 1972, Morita et al. 1993) that estimates the positive or negative effects of the independent variables on the hazard ratio. This technique assumes that the hazard ratio $[\lambda(t)]$ is proportional to a baseline hazard function $[\lambda_0(t)]$, which need not be specified. This function is multiplied by a function of explanatory variables. The model may be formulated in the following way:

$$(1) \qquad \lambda(t) = \lambda_0(t)\exp(X'\beta)$$

where X is a vector of observations that reflect characteristics of the analyzed cases and β is the vector of the coefficients to estimate for the independent and control variables. The estimates were obtained using the program LIMDEP for WINDOWS, which allows this type of model to be estimated using as input a variable of longevity and another that indicates whether the case is censored or not.

Independent variables

We used the following independent variables in our estimates. Firstly, the following variables were created in direct relationship with the formulated hypotheses:

Number of partners: a variable that measures the number of partners in the analyzed JV.

Competitors: a dummy variable that takes the value 1 when all the partners belong to the same industry, and 0 otherwise. In order to build this variable, we used the CNAE-93 (Clasificación Nacional de Actividades Económicas) industry classification at the four-digit level to classify the primary industry of each firm. If this primary code for all of the partners was the same, this variable took the value 1.

Numberpartners*Competitors: a multiplicative variable of the previous two variables: *Number of Partners* and *Competitors*.

In addition to these variables, we also split the competitors variable into two dummies depending on the inclusion of marketing activities within each JV. As a consequence, we also estimated models including the following variables:

Competitors-Marketing: a dummy variable that takes the value 1 when all the partners belong to the same industry and the JV carries out, among others, marketing activities, and 0 otherwise.

Competitors-Nomarketing: a dummy variable that takes the value 1 when all the partners belong to the same industry and the JV does not carry out marketing activities, and 0 otherwise.

Numberpartners*Competitorsmarketing: a multiplicative variable of the following variables: *Number of Partners* and *Competitors-Marketing*.

Numberpartners*Competitorsnomarketing: a multiplicative variable of the following variables: *Number of Partners* and *Competitors-Nomarketing*.

Control variables

We included several control variables in the estimates carried out. These are factors analyzed in previous studies on the determinant factors of JV longevity. Specifically, the following variables were included:

Cultural Distance: this variable identifies the cultural distance between the countries of the partners in the JV. We used Kogut and Singh's (1988) index, employing updated measurements from Hofstede (2001) as input. If there were more than two partners, we followed the procedure used by Kim/Park (2002). Specifically, we calculated Kogut and Singh's (1988) index for each pair of partners and then calculated the average between these indexes. This is a variable that is commonly used in the literature on JV longevity, though with inconclusive results. While Park and Ungson (1997) found a positive influence on JV longevity, others have found a negative influence (Barkema et al. 1996, 1997, Barkema/Vermeulen 1997).

Previous Alliances: a dummy variable that takes the value 1 when the firm under study had maintained previous cooperative relationships with any of its partners, and 0 otherwise. This variable had been analyzed in previous research on JV longevity (Kogut 1989, Park/Russo 1996, Park/Ungson 1997). These studies expect a positive influence of this variable on JV longevity because of the positive effect on cooperative behavior of the trust accumulated in these previous alliances.

Experience: a variable that indicates the company's experience in the management of JVs; this experience was proxied by the number of JVs in which the company under study had participated since 1986. Previous research has included this variable

Table 3. Descriptive Statistics and Correlation Matrix

	Means	SD	1	2	3	4	5	6	7	8	9	10
1 Number Partners	4.92	7.15	1									
2 Competitors	0.38	0.49	0.005	1								
3 Cultural Distance	0.57	0.80	-0.248	0.017	1							
4 Previous Alliances	0.32	0.47	0.067	-0.002	0.032	1						
5 Experience	2.18	1.91	0.061	0.112	10.043	0.008	1					
6 Scope	0.18	0.39	-0.015	0.031	0.144	0.039	0.145	1				
7 Size	0.10	0.16	0.300	-0.078	-0.003	0.101	0.317	-0.129	1			
8 Finance	0.22	0.41	0.080	0.238	-0.056	-0.017	-0.162	-0.183	-0.040	1		
9 Services	0.24	0.43	0.135	-0.229	-0.017	-0.106	-0.014	0.193	0.097	-0.295	1	
10 Construction-power	0.09	0.28	-0.084	-0.003	-0.062	-0.126	0.112	-0.147	0.387	-0.163	-0.173	1

(Park/Russo 1996, Barkema et al. 1997, Delios/Beamish 2001), a positive influence on JV longevity being expected.

Scope: a dummy variable that takes the value 1 for JVs that are multi-country (the JV carries out activities in more than one country), and 0 otherwise. This variable has been used in previous research as a proxy of complexity (Park/Russo 1997), a negative influence on JV longevity being expected.

Size: a variable that measures the size of the firms that replied to the questionnaire via turnover in the year 1995. This magnitude was divided by the maximum value of this variable in order to facilitate the estimation of the models. The absolute and relative size of the partners is a variable commonly used in the literature, although with inconclusive results. While Barkema et al. (1997), Hennart et al. (1998) and Delios and Beamish (2001) found a negative impact on JV longevity; Pennings et al. (1994) and Li (1995) found a positive impact.

Finally, we also included a number of industry controls:

Finance: a dummy variable that takes the value 1 when the JV belongs to the financial industry, and 0 otherwise.

Services: a dummy variable that takes the value 1 when the JV belongs to a services industry, and 0 otherwise.

Construction-Energy: a dummy variable that takes the value 1 when the JV belongs to the construction or energy industries, and 0 otherwise. JVs formed in the manufacturing industries act as a reference category for industry effects.

Table 3 shows the descriptive statistics and correlations of the variables used in our estimations. No high correlations were observed.

Results

Table 4 presents the results of four estimated proportional hazard regression models. The first two models were constructed using the *Competitors* variable. The last two models include the *Competitors-Marketing* and *Competitors-Nomarketing* variables. Models 1a and 2a includes only independent and industry control variables, whereas Models 1b and 2b include all control variables. These different models are presented to show the robustness of our results. Each model includes the coefficient of the different variables, their standard deviation and an indication of their significance level. A positive coefficient for a specific variable means that increases in this variable are associated to increases in the likelihood of withdrawal from the JV. Note that this coefficients are the β's included in equation [1], and not the marginal effect

Table 4. Results of the Estimates Carried out on the Likelihood of Withdrawing from JVs[1]

Variables	Model 1a	Model 1b	Model 2a	Model 2b[†]
Number of Partners	0.0384**	0.0569**	0.0399**	0.0626**
	(0.0179)	(0.0270)	(0.0178)	(0.0263)
Competitors	0.5987**	0.5732*		
	(0.2968)	(0.3180)		
Numberpartners*competitors	-0.1024***	-0.1351***		
	(0.0373)	(0.0466)		
Competitors-marketing			1.0161***	1.4075***
			(0.3659)	(0.4403)
Competitors-nomarketing			-0.1166	-0.2939
			(0.6294)	(0.6476)
Numberpartners*competitorsmarketing			-0.2039***	-0.3512***
			(0.0745)	(0.1009)
Numberpartners*competitorsnomarketing			-0.0689*	-0.1014**
			(0.0370)	(0.0417)
Cultural Distance		-0.1830		-0.2254
		(0.1587)		(0.1614)
Previous Alliances		0.4894*		0.4044
		(0.2680)		(0.2703)
Experience		0.0197		0.0180
		(0.0808)		(0.0819)
Scope		-0.5701*		-0.4459
		(0.3416)		(0.3479)
Size		-1.9332*		-2.0307*
		(1.0860)		(1.0556)
Finance	-0.2337	-0.1815	0.0245	0.3138
	(0.3146)	(0.3463)	(0.3427)	(0.3750)
Service	0.6855**	0.8652***	0.7513**	1.0147***
	(0.2884)	(0.3245)	(0.2934)	(0.3344)
Construction-energy	-0.1209	0.3971	-0.1521	0.3871
	(0.3918)	(0.5005)	(0.3923)	(0.4829)
Log likelihood (LL) function	-309.2630	-269.6674	-307.3830	-266.1893
Chi-Square	19.4921***	27.1146***	23.25194***	34.07085***

[1] Estimates carried out for 82 stakes in joint ventures. We considered as withdrawal from JVs the following events: dissolution or liquidation of the JV, sale of all of the equity of the respondent firm to another firm (another partner or a third party) or the acquisition by the respondent firm of all of the remaining shares in the JV in such a way that the JV becomes a wholly owned subsidiary of the respondent firm

[†] Beta coefficients (standard deviations in brackets).

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

of the independent multiplicative variable. All the models present overall significance levels below 0.05, as the chi-squared values show.

As can be seen in Table 4, the variables related to our hypotheses present the predicted influence in all the models and are statistically significant. The results obtained in Models 1a and 1b reflect that when the partners are competitors, a large number of partners exercise a negative and significant influence on the likelihood of withdrawing from the agreement. In fact, the variable *Numberpartners*Competitors* – which indicates the interaction effect between the competitors and the number of partners variables – presents a statistically significant and negative coefficient that is two times greater in absolute value than the coefficient of the variable *Numberpartners*. Thus, considering the obtained results when including all the control variables (Model 1b), the net coefficient of the number of partners when these are competitors is -0.0782 (0.0569-0.1351). Applying a t-test to the estimator of the sum of the parameters, we found that this estimator is significantly different from zero with a likelihood of $p<0.05$, thus confirming Hypothesis 1. On the other hand, the results obtained in Models 1a and 1b show that when the partners are not competitors, the effect of the number of partners is positive and significant with respect to the likelihood of withdrawal, as shown by the coefficient of the variable *Numberpartners* and as predicted by Hypothesis 3.

Models 2a and 2b also confirm Hypothesis 2. This hypothesis predicted a more negative impact of the number of partners in the likelihood of withdrawing from the JV in the case of JVs formed by competitors and entailing marketing activities than when the JV does not include such activities. In fact, the variable *Numberpartners*Competitorsmarketing* – which indicates the interaction effect between the number of partners and the dummy valued one when all of the partners are competitors and the JV entails marketing activities – presents a statistically significant and negative coefficient that is five times greater in absolute value than the coefficient of the variable *Number of partners*. Thus, considering the obtained results in Model 2b (which includes all the control variables), the net coefficient of the number of partners in the case of JVs formed by competitors and entailing marketing activities is -0.2886 (0.0626-0.3512). Applying a t-test to the estimator of the sum of the parameters, we found that this estimator is significantly different from zero with a likelihood of $p<0.05$. The variable *Numberpartners*Competitiorsnomarketing* also presents a statistically significant negative coefficient, although its absolute values does not reach double the coefficient of the *Number of partners* variable. Specifically, considering the results obtained in Model 2b, the net coefficient is -0.0388 (0.0620-0.1014). Applying a t-test to the estimator of the sum of the parameters, we found that this estimator is not significantly different from zero.

With respect to the control variables, it is observed in all the models that the partner's size has a negative and significant influence on the likelihood of withdrawal from the agreement, while the equity stakes in JVs established within the services

industry present a higher likelihood of withdrawal. In addition, the results of Model 1b show that previous cooperative relationships among the partners have a positive and significant influence on the likelihood of withdrawal from the agreement, whereas having a multicountry scope diminishes this likelihood of withdrawal.

Discussion

In this paper, we have provided new empirical evidence on the influence of the number of partners in the longevity of stakes in JVs. The obtained results allow us to clarify the influence of this factor, for which the results of previous research had been inconclusive and even contradictory. To do so, we considered the effect that competition may have when interacting with the number of partners.

The negative influence that the number of partners has on the performance and duration of JVs has often been highlighted. It has been pointed out how increases in the number of partners raises conflicts of interests and the complexity of the agreement (Parkhe, 1993, Park/Russo 1996, Hennart/Zeng 2002). However, our results show that in certain contexts a large number of partners can positively affect the longevity of a stake in a JV. Specifically, when all the partners are competitors, a specific source of value creation is leveraged: cooption. By entering into cooption JVs, a firm can collectively achieve the critical mass to compete in a specific market that each partner alone cannot replicate. This impossibility of replicating the synergy achieved within the agreement guarantees the longevity of the stakes in the JV. Our results also show that this positive effect is especially high in the case of JVs entailing marketing activities, since most of the conflicts of interest that may appear in a JV can be naturally solved within the JV when marketing activities are carried out by the JV and not by the partners separately.

In contrast, when not all the partners are competitors, the possibilities of taking advantage of and replicating the value provided by the cooperative agreement among a large number of partners are lower. In this case, negative aspects resulting from a large number of partners appear, such as problems of coordination and difficulties in developing the relationship. For these reasons, within the latter context, this factor exercises a negative influence on the longevity of stakes. These results complement the research of Beamish and Kachra (2004), who did not find a clear relationship between number of partners and firm performance. Our findings highlight the importance of taking into account the interaction between number of partners and direct competition, and the positive role that carrying out marketing activities can play in reducing the conflicts of interest between the partners.

Analyzing the direct effect of the competition among the partners on the likelihood of withdrawing stakes in JVs, our results allow us to supplement the findings

of previous studies. Thus, although a positive effect of this variable is detected on this likelihood of withdrawal in the previous literature (Park/Russo 1996, Park/Ungson 1997), our full model shows that this effect takes place for a number of partners of below 4. In fact, the positive effect of the *Competitors* variable is counteracted by the negative effect of the *Competitors*Numberpartners* variable only when the number of partners is at least 4.

The results obtained in Model 1b show that previous cooperative relationships among partners have a positive effect on the likelihood of withdrawing stakes in a JV. It should be borne in mind that we are referring to the abandonment of a specific project of cooperation, but not to the end of the cooperation between two partners. This result may also be due to the so-called *paradox of embeddedness* (Uzzi 1997). That is to say, the trust created in reiterated relationships among partners can hinder partner adaptation to changes in the environment and thus the duration of the project. On the other hand, Model 1b also shows that multi-country JVs have a negative influence on the likelihood of withdrawing from the agreement. This may constitute further evidence regarding the importance of cooption in JV formation, as multi-country JVs can act as a vehicle for some firms to compete as a block in several markets. Expanding the scope of the agreement is thus a means to leveraging the value created with the JV (Vidal/García-Canal 2003). However, neither result associated to these two variables is robust, so further research will be needed to clarify the influence of these factors.

JVs are sometimes formed as real options (Kogut 1991). They are a flexible means to gain access to external resources. This flexibility is specially valuable under conditions of uncertainty, and once this uncertainty was disappeared and/or the goals of the JV have been achieved the JV may be no longer necessary. In these cases, one of the partners take over the equity stakes of the JV. These takeover is sometimes labeled as the exercise of the real option implicit in the JV. Unfortunately our data do not allow us to know if the JVs in our sample were formed as real options or not. However, to discard possible biases that may stem from this fact, we reestimated all the models included in Table 4 in a reduced sample in which all of the withdrawals associated to equity transfers between the original partners have been removed. In all of these models the results of our independent variables hold. These results are not included in the paper, but are available from the authors upon request.

Conclusions

The present paper has sought to shed light on the influence of the number of partners on the longevity of stakes in JVs. Specifically, we draw attention to the fact that this factor exercises an ambivalent effect on said longevity. On the one hand, it hin-

ders the generation of value, as the coordination problems that it causes hinder the good functioning of the agreement. On the other hand, it raises the potential value associated with the JV. We argue that the number of partners exercises a negative influence on the likelihood of withdrawing stakes in JVs when all the partners are competitors, especially in JVs that carry out marketing activities. In these cases, the JV can achieve a critical mass that would be difficult to replicate by the partners going alone. In contrast, a large number of partners will positively affect the likelihood of withdrawing from the agreement when not all the partners are competitors. Our hypotheses are empirically tested by several estimates of proportional hazard regressions, using a sample of JVs carried out by Spanish firms.

Our results highlight the two facets that the number of partners presents in cooperation agreements in general, and in JVs in particular. On the one hand, more partners facilitate the accumulation of a critical mass of resources, thus hindering the possibility of replicating the generated value by each partner acting on its own. On the other hand, they hinder the coordination of activities and the development of cooperative relationships. In contrast with the previous literature, our results show that the contradictory findings obtained in prior research on the influence of the number of partners on the longevity of stakes in JVs may be explained by the moderator role that competition among the partners plays.

It should be noted that this research is not without its caveats. Firstly, bias exists in the employed database, as it is formed by a single type of alliance: JVs. Therefore, any attempt at extending our arguments and results to other types of alliances should be performed with caution. Secondly, at least one Spanish firm participates in all the cases. This supposes another bias that might be influencing our results. Thirdly, the measure of cultural distance employed, Kogut and Singh's indexes (1988), has been the object of recent criticism by some authors – for example, Shenkar (2001). Although a firmly ingrained tradition exists in the literature concerning the use of this index, its utilization would probably be more precise in a wider sample. Finally, due to limitations in our data, the variable SIZE has been measured in absolute terms and not in relative terms, as would have been desirable.

Bearing in mind these limitations, we can affirm that there still exist aspects related to the duration of JVs that deserve the attention of researchers. In particular, different ways exist to extend the results of our study. Firstly, the carrying out of empirical studies that include other types of strategic alliances made by firms from several countries. A second way to develop the study would be to carry out studies of cases that allow a better understanding of some of the variables employed, such as cultural distance or the effect of motivations derived from market power and collusion. In order to determine whether longevity and performance are affected by the same factors, a development of this line of research might also be the combined analysis of objective measures, such as longevity, and subjective measures of performance. Finally, future research might analyze factors related to the fitting of the JV into the partners' strategy, as suggested by Lewin and Koza (2002).

Acknowledgements

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