THE DETERMINANTS OF SURVIVAL OF JAPANESE SUBSIDIARIES IN BRAZIL

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INTRODUCTION

What determines the survival of overseas investment of multinational enterprises (MNEs) has received much attention from scholars. Previous studies reported that joint ventures (JV) have a very high failure rate (Kogut, 1989; Makino and Beamish, 1998). However, past authors focused on this approach solely for JV and considered exits by either divestiture or dissolution, which gave some misinterpretations of the results. Hennart et al. (1998) showed that when controlling for subsidiary type (whether wholly-owned subsidiaries <WOS> or JV), and when distinguishing between two types of exits (through sale and through liquidation), JV should have short lives, but these should only be due to selloffs, not to liquidations. In addition, Dhanaraj and Beamish (2004) provided empirical evidence that small ownership levels have very high exit rates, while those with high ownership levels gave exit rates comparable to that of WOS.

Although both studies showed significant improvement on the understanding of the survival of overseas subsidiaries, there is still a question for further investigation. In fact, if JV is more likely to exit than WOS, are there some differences between the likelihood to exit (i.e. liquidation or divestment) within different types of JV equity ownership formed by Japanese and local partners? While Hennart et al. (1998) found that the higher dissolution rate for JV is associated with divestment and not with liquidation, they have not distinguished the equity ownership of JV. As Dhanaraj and Beamish (2004) pointed out, it is necessary to disaggregate JV than consolidating a wide range of organizational arrangements under a single umbrella of JV. They compared exit rates using different levels of ownership equity of JV, however there is no distinction between types of exits. The present study addresses this question and offers further evidence.

Therefore, this paper extends previous studies by examining the survival of MNEs subsidiaries in a foreign market while recognizing different types of exits and different types of equity ownership in JV formed by Japanese or local partners. While past studies have addressed these issues separately, none has covered these points simultaneously. .

THE DETERMINANTS OF SURVIVAL AND HYPOTHESES
International entry strategy

Several empirical investigations have suggested the importance of international entry strategies for firm survival (Li, 1995; Gomes-Casseres, 1987). Past studies reported the instability of JV (Yamawaki, 1997), the conflict between JV partners (Killing, 1983), which resulted in a very high failure rate comparing to WOS (Kogut, 1989; Li, 1995; Yamawaki, 1997). As Hennart et al. (1998) pointed out, previous studies have not distinguished types of exits. Therefore, it is important to see whether the supposedly higher termination rate of JV is due to a higher rate of divestment or to a higher rate of liquidations. In addition, past studies have considered JV formed between one foreign and one local firm, however other types of JV exist, particularly for Japanese subsidiaries (Makino and Beamish, 1998). Furthermore, Dhararaj and Beamish (2004) showed the benefit from explicitly considering the impact of foreign equity level in international joint venture (IJV). They found that the dissolution rates are high at very low equity levels, and as the equity increases, the dissolution rate decreased drastically. Hence, this study considers international entry choice based on this classification:

- *Wholly-owned subsidiaries (WOS)* – one Japanese parent firm holds at least 95% of the subsidiary equity.
- *Traditional International Joint Ventures (TIJV)* – formed between Japanese partner(s) and local partner(s), and considering the equity ownership, it can be classified as:

- *Majority TIJV* – formed between Japanese partner(s) and local partner(s). One Japanese parent firm holds at least 51% and no more than 95% of the subsidiary equity;
- *Co-owned TIJV* – formed between Japanese partner and local partner. One Japanese parent firm holds 50% of the subsidiary equity;
- *Minority TIJV* – formed between Japanese partner(s) and local partner(s). One Japanese parent firm holds at least 5% and no more than 50% of the subsidiary equity;
- *Japanese–Japanese Joint Ventures (JJ–JV)* – formed only by Japanese partners. Considering the equity ownership based on the partner affiliation, it can be classified as:
  - *Affiliated JJ–JV* – formed by affiliated Japanese partners. One Japanese parent firm holds 5% and no more than 95% of the subsidiary equity;
  - *Unaffiliated JJ–JV* – formed by unaffiliated Japanese partners. One Japanese parent firm holds 5% and no more than 95% of the subsidiary equity;

Doing business abroad is more difficult than at home country, because firms face uncertainty and are subject to the *liability of foreignness* (Hymer, 1976). Therefore, entering a foreign country through TIJV can be an opportunity and effective strategy for gaining local partner's knowledge about the local consumer tastes, local institutional framework, business practices, and avoid costly mistakes in the new environmental. Although a previous research showed that sharing decision making in TIJV leads to management difficulties (Killing, 1983) increasing the risk to be liquidated, TIJV allows foreign investors to better adapt to the host country than doing it alone through WOS, and results in fewer liquidation that is comparable to that of WOS (Hennart et al., 1998), thus:

H1: The likelihood of subsidiary closure is similar between TIJV and WOS.

As Killing (1983) emphasized, the problem associated with management conflict between JV partners should lead the foreign partner to sell more quickly its stake to his partner or to other firm than those in WOS (Hennart et al., 1998), thus:

H2: TIJV are more likely to be divested than WOS.

On the other hand, TIJV differs in terms of degree of control exerted by the foreign partner. According to Dhanaraj and Beamish (2004), the organizational dynamic of having minority equity ownership position is vastly different from that of majority equity ownership. They suggested that minority

equity ownership may exist only for exploratory purposes and possibly for taking advantages of the local tax structure. While the majority equity ownership, may exist to accommodate some specific short-term objectives, thus:

H2a: Minority TIJV are more likely to be divested than high equity ownership level firms.

However, based on the assumptions made on *H1*, the effect of equity ownership of TIJV does not hold for firm closure, thus:

H2b: The likelihood of subsidiary closure is similar between Minority TIJV, Majority TIJV and Co-owned TIJV.

JVs formed between partners from the same home-country have the benefit to share similar organization cultures, they are more likely to have had dealings with one another, they are less likely to misunderstand each other (Hennart and Zeng, 2002). Hence, the rate of JJ–JV firm closure and capital divestiture is comparable to that of WOS:

H3: The likelihood of subsidiary closure and capital divestment is similar between JJ–JV and WOS.

According to Makino and Beamish (1998), the cultural distance level among Japanese partner in JJ–JV is lower than TIJV, and they suggested that JVs with similar national cultures have higher survival rates than JV between dissimilar cultures. Considering the assumption of the similarities between JJ–JV and WOS in terms of rate of firm liquidation and firm divestiture made in *H3*, and based on the assumptions proposed in *H1* and *H2*, thus:

H4a: The likelihood of subsidiary closure is similar between JJ–JV and TIJV.

H4b: JJ–JV is less likely to be divested than TIJV.

When Japanese partners are affiliated firms, it is assumed that partners have benefit to belong the same network, share similar organization cultures, and exchange both tangible and intangible resources (Makino and Beamish, 1998), thus:

H5: The likelihood of subsidiary closure and capital divestiture will be higher for Unaffiliated JJ–JV than for Affiliated JJ–JV.

Subsidiary Firm Characteristics

Previous studies have found a positive relationship between subsidiary size and the probability of survival (Mata et al., 1995; Dhanaraj and Beamish, 2004). Large investment is a characteristic of parent firms with large resource endowments. In addition, it requires more

managerial attention and substantial commitment of the parent firm to the subsidiary (Dhanaraj and Beamish, 2004):

H6: Subsidiaries of large size are less likely to be closed and to be divested than subsidiaries of small size.

In addition, most studies analyzed the impact of a firm diversification on a firm survival, and found that unrelated units are more likely to exit than subsidiaries operating in the same activity as the parent firm (Li, 1995; Yamawaki, 1997). In general, when foreign firms invested abroad in the same activity, the parent firms are more likely to possess skills, resources and intangible assets that can be transferred to the subsidiaries (Li, 1995):

H7: Subsidiaries which diversify from the parent firm activity are more likely to be closed and to be divested than those subsidiaries in the same activity as the parent firm.

Parent Firm Characteristics

According to Delios and Beamish (1999), a parent size has a positive relationship with exit rate. This could be potentially due to the flexibility that large firms enjoy in moving their subsidiaries. In addition, large firms are probably less reluctant to divest their capital, because a given subsidiary is less important to a large MNEs than to a small parent firm (Hennart et al., 1998), thus:

H8: Subsidiaries with a large parent firm are more likely to be divested and to be closed.

A parent firm experience in the target market is critical for international expansion (Davidson, 1980), and consequently can have significant effects on performance of foreign subsidiaries (Johanson and Vahlne, 1977). This experience is time-consuming and can be learned only through learning-by-doing. Hence, the accumulation of parent firm experience helps firms to increase know-how of doing business in the local market (Johanson and Vahlne, 1977), and consequently reduce operational uncertainties (Davidson, 1980), thus:

H9: The longer the parent firm has been operating in the local market, the less likely that it will be closed or to be divested.

Control Variables

Furthermore, Mata and Portugal (1994) found a positive and significant effect of industry growth upon the survival. Industries which are growing quickly are likely to be a good environment for firms,

leading to increased sales and enhanced performance, and hence the probability of a firm closure is lower. On the other hand, the probability of a firm divestment is more ambiguous, since high growth may create opportunities to sell off a stake to another firm (Hennart et al., 1998):

H10: Subsidiaries in growing industries are less likely to be closed.

METHODOLOGY

Data and Sample

The subsidiary-level data was collected from two main data sources of Japanese investments in Brazil for the period of 1989-2003. First, from multiple editions of *Anuário: Empresas Japonesas no Brasil* (Yearbook: Japanese companies in Brazil, 1991-2005), a bilingual yearbook published in Portuguese and Japanese since 1974, and provides extensive information of Japanese investments in Brazil. Second, from various issues of *Kaigai Shinshutsu Kigyou Souran: Kuni Betsu* (Toyo Keizai Databank: Japanese Overseas investments by country. 1990-2004), and annual directory of the foreign investments of Japanese firms listed on the Japan stock exchanges (Tokyo, Osaka, and Nagoya), as well as by major unlisted Japanese firms. It is published by Toyo Keizai Inc. since 1970.

Data for the Japanese parent firms for each subsidiary were compiled using 1990 to 2004 editions of *Nikkei Kaisha Nenkan: Jyoujyou Kaishaban* (Nikkei Annual Corporation Report: Listed Companies) and *Nikkei Soukan: Mijyoujyou Kaishaban* (Nikkei Annual Report: Unlisted Companies).

Data for subsidiary type of exit (closure or divestment) were obtained through annual report of parent and subsidiary firms, and through numerous telephone and email inquires to existing subsidiaries which have the same parent firm, or the same local or Japanese partner.

Subsidiaries listed in the directory but with Japanese equity of less than 5 percent were removed as they were considered as portfolio investments (Dhanaraj and Beamish, 2004). In addition, those subsidiaries that did not report the founding date or the equity ownership were deleted from the

sample. Using those selection criteria and considering complete data for all independent variables used in this study, from the original sample of 273 manufacturing subsidiaries, the sample was reduced to 224 cases (see *Table 1*).

Table 1 - Sample Distribution

International Entry Mode	Firm Survival		Firm Closure		Firm Divestiture		Total
WOS	81	(77.1%)	22	(21.0%)	2	(1.9%)	105
TIJV	36	(54.5%)	9	(13.6%)	21	(31.8%)	66
◆ Maj. TIJV	12	(75.0%)	3	(18.8%)	1	(6.3%)	16
◆ Co-own. TIJV	4	(100%)	0	(0%)	0	(0%)	4
◆ Min. TIJV	20	(43.5%)	6	(13.0%)	20	(43.5%)	46
JJ-JV	41	(77.4%)	12	(22.6%)	0	(0%)	53
◆ Affil. JJ-JV	18	(78.3%)	5	(21.7%)	0	(0%)	23
◆ Unaffil. JJ-JV	23	(76.7%)	7	(23.3%)	0	(0%)	30
Total	158	(70.5%)	43	(19.2%)	23	(10.3%)	224

Dependent Variable

Following Hennart et al. (1998), the dependent variable is the duration (in years) of a Japanese subsidiary in Brazil. For exit case, the duration is the difference between the ending (exit) year and the starting (establishment) year. Subsidiary that continues to survive at the end of the observation is treated as censored case, which is the number of years between establishment in Brazil and the cutoff year (2003). Two types of exits are considered, closure and divestment. Closure means that subsidiary was closed, liquidated, or went bankrupt. While divestment means that the Japanese partner sold a stake to either the local partner firm or a third partner, and there is no more equity ownership of Japanese investment in this subsidiary.

Independent Variables

International entry strategy

◆ *TIJV* – dummy variable which takes the value of "1" if the subsidiary is TIJV, and "0" otherwise. In addition, it was considered the foreign equity ownership:

- *Majority TIJV* – dummy variable which takes the value of "1" if the Japanese partner equity in the TIJV is greater than 51% but less than 95%.
- *Co-owned TIJV* – dummy variable which takes the value of "1" if the Japanese partner equity in the *TIJV* is equals to 50%.
- *Minority TIJV* – dummy variable which takes the value of "1" if the Japanese partner equity in the *TIJV* is greater than 5% but less than 50%.

◆ *JJ-JV* – dummy variable which takes the value of "1" if the subsidiary is JJ-JV, and "0" otherwise. In addition, it was considered the Japanese partner affiliation:

- *Affiliated JJ-JV* – dummy variable which takes the value of "1" if the JJ-JV is formed by affiliated home-country firms.
- *Unaffiliated JJ-JV* – dummy variable which takes the value of "1" if the JJ-JV is formed by unaffiliated home-country firms.

Subsidiary Firm Characteristics

◆ *Subsidiary firm size* – For exited firm, it is the logarithm of the number of subsidiary employees at the time of liquidation or divestment. For censored case, it is the logarithm of the number of subsidiary employees in the cutoff year (2003). Mata et al. (1995) have found that models using current size are better predictors of survival than those including start-up size.

◆ *Subsidiary firm diversification* – Dummy variable which takes the value of "1" if the subsidiary is a diversification from the parent's main line of business, and "0" otherwise.

Parent Firm Characteristics

◆ *Parent firm size* – For exited firm, it is the logarithm of the number of parent employees at the time of liquidation or divestment. For censored case, it is the logarithm of the number of parent employees in the cutoff year (2003).

◆ *Parent firm local experience* – For exited firm, it is the logarithm of the number of years between a Japanese parent's first entry into Brazil and the year that the parent sold or liquidate its stake in that affiliate. For censored case, it is the logarithm of the number of years between a Japanese parent's first entry into Brazil and the cutoff year (2003).

Control Variables

◆ *Industry growth rate* – Data on the annual industry growth rate were obtained from IPEADATA online. IPEADATA is a database on Brazilian economy compiled and maintained by the Institute of Applied Economic Research *(Instituto de Pesquisa Econômica Aplicada – IPEA)* with more than 2,500 Brazilian macroeconomic time series accessible through the internet. For exited firm, the variable is computed using the average annual real growth rate from the previous year of the subsidiary entry to the year of the firm's liquidation or divestment. For survivor firm, it is the average annual real growth rate from the previous year of the subsidiary entry to 2003. One year-lag from the subsidiary entry was chosen because the assumption that managerial decisions are based on information from previous year (Hennart et al., 1998).

Model

Following Hennart et al. (1998) and Dhanaraj and Beamish (2004), this paper adopt the proportional hazard model implemented in Cox Regression (Cox and Oakes, 1984) to adjust the problems of censoring data and aging effects, and consequently quantify the impact of independent variables on the survival

of the subsidiary. The Cox regression model is written in terms of the hazard function (exit rate at time t), which indicates how likely a case is to experience an event given that the case has survived to that time (Norusis, 2004):

$$h(t) = \left[h_o(t)\right] e^{(\beta_1 x_1 + \cdots \beta_k x_k)} \quad (1)$$

where $h_0(t)$ is a baseline function of survival time and depends only on time, while $\beta_1 X_1 + \cdots \beta_k X_k$ depends only on the values of the covariates and the regression coefficients.

RESULTS

Test of Equality of Survival Function

In order to test for the differences in the survival functions due to international entry strategy, the long rank test was performed (Perez et al., 2004). The log rank test is based on computing the weighted difference between the observed and expected number of exits at each of the time points. This test evaluates the null hypothesis that in the population, two or more survival functions are equal (Norusis, 2004). Three different survival functions were defined:

Table 2 – Test of Equality of Survival Function across International Entry Strategy

Categories of Entry Strategy	TEST A Termination[a] Log Rank		TEST B Firm Closure[b] Log Rank		TEST C Firm Divestiture[c] Log Rank	
WOS x TIJV	7.18***	(0.007)	1.24	(0.265)	29.33***	(0.000)
WOS x JJ-JV	0.05	(0.824)	0.00	(0.993)	0.88	(0.348)
TIJV x JJ-JV	7.48***	(0.006)	0.56	(0.452)	21.23***	(0.000)
ALL GROUP	10.46***	(0.005)	1.14	(0.566)	48.23***	(0.000)
WOS x Maj. TIJV	0.00	(0.978)	0.15	(0.700)	1.24	(0.265)
WOS x Co-own. TIJV	0.66	(0.414)	0.63	(0.428)	0.04	(0.847)
WOS x Min. TIJV	11.70***	(0.001)	1.24	(0.266)	42.03***	(0.000)
WOS x Affil. JJ-JV	0.02	(0.900)	0.04	(0.834)	0.31	(0.580)
WOS x Unaffil. JJ-JV	0.15	(0.698)	0.07	(0.789)	0.58	(0.448)
Maj. TIJV x Co-own. TIJV	0.45	(0.503)	0.27	(0.605)	0.18	(0.669)
Maj. TIJV x Min. TIJV	4.18**	(0.040)	0.02	(0.895)	6.46**	(0.011)
Maj. TIJV x Affil.JJ-JV	0.11	(0.745)	0.21.	(0.648)	1.09	(0.296)
Maj. TIJV x Non-affil.JJ-JV	0.01	(0.942)	0.01	(0.909)	2.00	(0.157)
Co-own. TIJV x Min. TIJV	1.25	(0.263)	0.40	(0.528)	0.85	(0.356)
Co-own. TIJV x Affil.JJ-JV	0.54	(0.462)	0.54	(0.462)	#	#
Co-own. TIJV x Unaff. JJ-JV	0.40	(0.525)	0.40	(0.525)	#	#
Min. TIJV x Affil. JJ-JV	4.62**	(0.031)	0.85	(0.357)	8.58***	(0.003)
Min. TIJV x Unaffil. JJ-JV	9.07***	(0.002)	0.42	(0.516)	15.42***	(0.000)
Affil.JJ-JV x Unaffil. JJ-JV	0.13	(0.722)	0.13	(0.722)	#	#
ALL GROUP	18.56***	(0.002)	1.67	(0.893)	71.11***	(0.000)

Notes: [a] 224 total number of cases, 66 *Termination*, 158 censored cases.

[b] 224 total number of cases, 43 *Firm Closure*, 181 censored cases.

[c] 224 total number of cases, 23 *Firm Divestiture*, 201 censored cases.

Significance level at parenthesis; # no value;

*significant at the 10% level; **significant at the 5% level; ***significant at the 1% level;

(1) *Termination* <Test A>, which considered a firm exit due to either liquidation or to divestment, while treating survivor firms as censored cases;

(2) *Firm Closure* <Test B> is termination due liquidation, while considering firm survival and firm divestiture as censored cases;

(3) *Firm Divestiture* <Test C> is termination through capital divestiture, while treating firm survival and firm closure as censored cases.

According to the results displayed in *Table 2* and based on the sample distribution in *Table 1*, *Test A* showed a significant difference between the survival rate of TIJV and WOS, which means that TIJV is more likely to exit than WOS. In addition, when controlling for levels of equity ownership in TIJV, there is a statistically significant difference between Minority TIJV with WOS and Majority TIJV. This implies that small ownership levels have higher mortality rate than high ownership level of TIJV. These results confirm previous empirical studies that have not distinguished between exits due to liquidation and divestment (Li, 1995; Yamaki, 1997; Dhanaraj and Beamish, 2004). Furthermore, a statistically significant difference was found between JJ-JV and TIJV, which reinforces the importance of recognizing other types of JV (Makino and Beamish, 1998).

Test B gives the results for *Firm Closure*, and none of the relationship revealed to be statistically significant, which means that the likelihood of a firm exit by liquidation is similar for all international entry modes. Hence, *H1*, *H2b*, *H3*, *H4a* are supported, while *H5* is not supported. In addition, the results suggested the importance to distinguish between two different types of firm exits, because they have different determinants and implications.

When exit is due to *Firm Divestiture* (Test C) significant differences exist between TIJV with WOS and JJ-JV. This indicated that the likelihood of a firm divestiture will be higher for TIJV than for WOS, which is consistent with the findings of Hennart et al. (1998). In addition, TIJV has higher divestiture rate than JJ-JV. This finding reinforces the importance to differentiate JV formed between a foreign and a local partner, from JV formed between partners

from the same country (Makino and Beamish, 1998). Therefore, *H2* and *H4b* are supported. However, when controlling for equity ownership level of TIJV, the output revealed that only Minority TIJV has impact on firm divestiture. It implies that Minority TIJV is more likely to be divested than subsidiaries with high level of ownership equity, supporting *H2a*. Furthermore, this provides evidence for the need to disaggregate TIJV rather than consolidating it under a single umbrella of TIJV (Dhanaraj and Beamish, 2004). On the other hand, the results did not support *H5*, where the probability of a firm closure showed no significant difference between Affiliated JJ-JV and Unaffiliated JJ-JV.

Cox Regression

The focus of this study is not limited to the evaluation of the differences in the survival functions among categories of international entry mode, but it intends to assess the influence of covariates on the probability of firm survival. Hence, the proportional hazards Cox model was performed. Although not reproduced in this paper, the correlation among the independent variables was verified, of which the coefficients were low. In addition, variance inflation factor (VIF) for possible signs of multicollinearity. None of the VIF scores was above two, indicating that multicollinearity should not be a problem with these data. In addition, the proportional hazard assumption was tested with a time-dependent covariate and by examining the martingale residuals (Norusis, 2004). Both tests supported the assumption that the hazards are proportional between entry strategies.

Table 3 shows the results of proportional hazards model estimates for *Termination* (*Model 1* and *2*), *Firm Closure* (*Model 3* and *4*), and *Firm Divestiture* (*Model 5* and *6*), and as noted in the chi-square coefficient associated with each mode, all of them are significant at 0.0001 level. The difference between the first and second models in each classification, is being compared to WOS (reference category), and the first model includes international entry strategies as IJV, JJ-JV, while the second model considers the equity ownership levels of TIJV (Majority TIJV, Co-owned TIJV, Minority TIJV) and affiliation of JJ-JV (Affiliated JJ-JV and Unaffiliated JJ-JV).

As expected and coherent with earlier statistical test (Table 1), TIJV is positive and significant in models *1*, *3*, and *5* indicating that TIJV has a higher level of termination rate than WOS, which is consistent with previous studies (Li, 1995; Yamawaki, 1997). However, the findings showed that the higher likelihood to a firm exit is due to capital divestment, but not to a firm closure, confirming the results obtained

Table 3 – Result of Cox Regression (+ = shorter life)

Variables	Termination Model 1	Termination Model 2	Firm Closure Model 3	Firm Closure Model 4	Firm Divestiture Model 5	Firm Divestiture Model 6
International Entry Strategy [a]						
Traditional International JV	0.711**		-0.318		2.802***	
	(6.039)		(0.574)		(12.214)	
◆ Majority TIJV		-0.190		-0.358		1.068
		(0.106)		(0.271)		(0.689)
◆ Co-owned TIJV		-11.695		-12.118		-12.994
		(0.002)		(0.001)		(0.000)
◆ Minority TIJV		1.112***		-0.112		3.167***
		(12.884)		(0.053)		(15.511)
Japanese-Japanese JV	0.046		0.325		-11.235	
	(0.016)		(0.743)		(0.002)	
◆ Affiliated JJ-JV		0.145		0.468		-11.843
		(0.082)		(0.796)		(0.000)
◆ Unaffiliated JJ-JV		0.035		0.250		-11.338
		(0.006)		(0.309)		(0.001)
Subsidiary Firm Characteristics						
Subsidiary Size	-0.076	-0.095	-0.184*	-0.188*	0.251	0.200
	(0.800)	(1.274)	(3.556)	(3.735)	(1.792)	(1.205)
Subsidiary Diversification	-1.153***	-1.054***	-1.086***	-1.066***	-1.719***	-1.518***
	(17.244)	(13.721)	(9.356)	(8.604)	(11.737)	(9.114)
Parent Firm Characteristics						
Parent Size	0.343***	0.346***	0.249**	0.248**	0.515**	0.499**
	(17.244)	(11.227)	(4.005)	(3.925)	(5.394)	(4.874)
Parent Local Experience	-2.302***	-2.355***	-2.165***	-2.187***	-2.241***	-2.448***
	(30.601)	(32.232)	(17.189)	(17.523)	(10.851)	(11.055)
Control Variable						
Industry Growth	-0.366***	-0.472***	-0.503***	-0.529***	-0.322	-0.418
	(7.125)	(10.491)	(7.546)	(7.851)	(1.831)	(2.673)
Chi square	95.500***	105.658***	73.283***	76.237***	76.554***	96.855***
Number of observations	224		224		224	
Number of events	66		43		23	

Notes: [a] Reference category is WOS.
Wald Statistics in parenthesis;
*significant at the 10% level; **significant at the 5% level; ***significant at the 1% level.

from Hennart et al. (1998) study. Hence, this result supported *H1* and *H2*. On the other hand, the output in models *2*, *4* and *6* also revealed that it is dangerous to interpret that all types of TIJV have the same likelihood to be divested, but it holds for a firm closure supporting *H2b*. When controlling for equity ownership of TIJV, the findings showed that comparing to WOS, only Minority TIJV is more likely to be terminated by capital divestment, while Majority TIJV and Co-owned TIJV revealed no statistical difference. This provided support for *H2a*. Hence, the previous studies on a firm survival that have not distinguished different types of a firm exit (closure and divestiture) and different types of equity ownership of TIJV, should give misinterpretations of the results.

The coefficients of JJ-JV exhibited no significant difference, which means that the likelihood to be closed or divested are similar between JJ-JV and WOS, supporting *H3*. This suggests that the advantage to share JV ownership with partners of the same culture background is a good strategy to achieve higher likelihood of survival.

Regarding other variables that should affect a firm survival, the coefficient of subsidiary size is negative and significantly associated with a firm closure, suggesting that small subsidiaries are more likely to be liquidated. This indicates that size of the subsidiary is a relevant characteristic that affect its ability to compete and survive. On the other hand, large subsidiaries seem to be more likely to be divested, but the coefficient is not significant, which partially supported H6. This could be potentially due to the high number of Minority TIJV in this sample which has the characteristics to hold minority stakes in large subsidiaries as a diversification strategy (Blomstrom and Zejan, 1989).

The output for subsidiary diversification is negative and significant for all models, indicating that subsidiaries which diversify into different products from their parents are less likely to survive, in other words, more likely to be closed or to be divested. The result is consistent with previous researches (Li, 1995; Yamawaki, 1997), and provided

support for *H7*.

As expected, the a coefficient of parent size is positive and significant for all models, which means that subsidiaries with large Japanese parents are more likely to be divested and to be closed, supporting *H8*. Large parent firms enjoy the flexibility to shift subsidiaries to new locations within a country (Delios and Beamish, 1999).

The output of parent local experience revealed in all models a negative and significant effect on subsidiary survival, providing support for *H9*. It means that having a longer presence in the local market allows the firm to interact with a variety of workers, customers, suppliers, which helps the firm to learn more about the host country, to develop more capabilities (Makino and Delios, 1996), and to increase know-how of doing business in the market (Johanson and Vahlne 1977), and consequently it reflects on higher rate of survival.

Industry growth has a negative and significant effect in *Termination* and *Firm Closure*, indicating that firms are less likely to exit through liquidation from a growing market, consistent with Hennart et al. (1998). Hence, it supported *H10*.

CONCLUSION

This study analyzed the impact of international entry strategies on a firm survival based on different types of a firm exit (i.e. closure and divestment) and different types of JV equity ownership formed by local and Japanese partners. The results found that comparing to WOS, the higher exit rate for TIJV is due to capital divestiture, but not to a firm closure, which is consistent with the study of Hennart et al. (1998). However, this finding can not be generalized for all types of JV. In case of TIJV, the results suggested that only Minority TIJV seems to have a higher probability to be divested than WOS, while Majority TIJV and Co-owned TIJV provided similar rate of capital divestiture as WOS. These provide evidence for not only control for different types of a firm exit, but also the need to control equity ownership of TIJV when analyzing a firm survival. Studies that have not taken into account this

characteristic should lead to misinterpretation of the results.

In addition, the results showed that TIJV (Minority TIJV) is more likely to be exited by divestment than JJ-JV (Affiliated JJ-JV and Unaffiliated JJ-JV). With few exceptions (Makino and Beamish, 1998; Dhanaraj and Beamish, 2004; Ogasavara and Hoshino, forthcoming), previous studies have not considered different types of JV. The finding indicated that when JV is formed by partners from the same country and consequently with the same culture background, the probability rate to be terminated (through capital divestiture) is lower than JV formed between foreign and local partners. Therefore, this cannot to be ignored in investigations of survival firms which considered JV as a part of the analysis.

In interpreting the results in this paper, some limitations have to be considered. First, business culture in Japanese firms is unique and has a long term orientation (Dhanaraj and Beamish, 2004). Future empirical studies should investigate whether the findings of this paper can be generalized to non-Japanese parents based in Brazil or operating in other countries. Second, this study could not include entry mode by acquisition, because only a few number of acquisition was identified in the sample (10 cases in 224). Third, this study only focused on manufacturing firms. Future research should also compare manufacturing and non-manufacturing firms in order to test whether the results are generalized.

Nevertheless, this study provided the first evidence that international entry strategy, firm characteristics (firm size, diversification, experience in the local market), and industry growth are critical factors for subsidiary survival in Brazil.

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