What Deters Foreign Divestment?   A time-series study of Japanese parent firms

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INTRODUCTION

This paper aims to understand whether innovative capability, diversity of investment, culture similarity and policy stability decrease the likelihood of a firm's foreign divestment. Foreign divestment constitutes an important corporate strategic decision that concerns with a firm's business and resource portfolio for internationalization (Brauer & Wiersema, 2012). It involves the sale of international subsidiaries, closure of foreign plants and exit from foreign markets. Divestment is deemed as an important tactic to prevent a firm from unnecessary loss in international markets. Prior academic research emphasizes that firms are likely to divest their poorly performing operations, focusing on the factors that cause firms to divest their foreign investments (Chatterjee et al., 2003; Berry, 2013; Soule et al., 2014). Whilst most studies have focused exclusively on the firm-level factors that lead the parent firm to initially pursue domestic divestment or overseas investment, few empirical studies have addressed the aspects that decrease the likelihood of a firm's foreign divestment. We argue that if divestment entails some degree of loss (from previous investment), it is critical to understand what may help to decrease the hazard of this costly global strategy adjustment.

Derived from the resource-based-view and absorptive capability theory (Cohen & Levinthal, 1990; Teece et al., 1997), this study first explores whether parent firms' innovative capacity helps to decrease the likelihood of its foreign divestment. Driven by the strategy literature (Wrigley, 1970; Montgomery, 1982), this study then investigates whether the concentration of investment reduces the possibility of foreign divestment. Finally, considering the factors of macro environment, it examines whether culture similarity and political stability alleviate the occurrence of foreign divestment. This empirical study is based on a time series study (2001, 2010 and 2015) of Japanese parent companies that have foreign subsidiaries. As one of the leading countries in developed economy, Japan has significantly engaged in foreign investment in the past few decades. In recent years, the divestment activities from Japanese parent firms have drawn much attention. This setup provides us a rich observation for this study.

This study contributes to the knowledge along three aspects. First, through a rare time-series dataset, it addresses an under-researched topic, contributing to an important area in corporate global strategies and international business. Second, whilst most prior research focuses on the factors that trigger divestment, this study emphasizes the importance of the factors that may reduce the likelihood from costly foreign divestment. Finally, by using rare time series datasets, this study provides empirical evidence to have a more holistic understanding of an important strategic issue in internationalization.

THEORY AND HYPOTHESES

Innovative capacity and Patent Performance

Scholars of Resources-Based-View (RBV) and innovations have long highlighted that innovation is the results of capability building through inter-firm leaning. A large

body of research has evidenced that a firm's innovation superiority leads to foreign investment (Love and Roper, 2015). Globalizing markets increases open models of innovation, offering abundant resources of skills and know-how. Foreign investments facilitate cooperative strategies to enhance knowledge and foster innovative ideas. These seem to suggest that the better the cooperation between a parent company and its foreign subsidiaries, the better the innovative capacity of the parent company will be. This leads us to assume that the better the innovative capacity of parent company, the better the cooperation with foreign subsidiaries, therefore the less likely to divest from the foreign subsidiaries. In this study, we use two factors to observe a firm's innovative capacity. We measure both the volume and the quality of inventions by using patent data. Several studies demonstrated that "Recent work by Lanjouw and Schankerman (2004) also uses citations, along with other measures such as number of claims and number of countries in which an invention is patented, as a proxy for patent 'quality'"(e.g. Hall, Jaffe, & Trajtenberg, 2005:19). we also look into the quality of inventions by using patent citation data. Previous studies demonstrated that the more the patent document is cited by subsequent patent documents, the higher quality the underlying invention for the patent has (e.g. Harhoff, Narin, Scherer, & Vopel, 1999). Finally, several studies argued that "a high generality score suggests that the patent presumably had a widespread impact, in that it influenced subsequent innovations in a variety of fields (e.g. Hall et al., 2001:21). Therefore,

H1: The more patent a parent firm has, the less likely the parent firm divests its foreign subsidiaries.
H2a: The more a parent firm's patent claims are, the less likely the parent firm divests its foreign subsidiaries.
H2b: The more a parent firms' patent citations are, the less likely the parent firm divests its foreign subsidiaries.
H2c: The broader a parent firm's patent generality, the less likely the parent firm divests its foreign subsidiaries.

Diversity of Investment
The involved uncertainty of a new foreign subsidiary may be different from the parent firm's established activities. The more the number of investment countries, the greater is the uncertainty involved (Li, 1995). This has important implications for the strategy between foreign investment and divestment. The relationship between diversification and firm performance has been a subject of considerable research the strategy literature (see e.g. Montgomery, 1982; Rumelt, 1974). In general, the complex uncertainties of unfamiliar market conditions are likely to increase the exist hazards of foreign subsidiaries. Bene and Neubauer (1981), for example, examine the effect of product diversification on the failure of new foreign activities and found that diversifying in a foreign market increases the risk of failure. This leads us to assume:

H3a: The less number of investment countries is, the less likely a parent firm divests its foreign subsidiaries.
H3b: The less number of investment subsidiaries in each countries is, the less likely a

parent firm divests its foreign subsidiaries.

Macro Environment

In this paper, we consider two major environmental factors that are critical to the issue of divestment.   First, culture difference is a key barrier for the communication between parent companies and its foreign subsidiaries.   This issue is especially appealing when cooperation involves tacit knowledge (i.e. un-coded, difficult to understand knowledge). Lack of good communication and often misunderstanding threat any cooperation between two parties. An information-processing view (see e.g. Cyert and March, 1993) considers human limitations on information processing with respect to environmental and culture factors, pointing to that companies generally are more comfortable with more familiar environment and seek to avoid more complex and uncertain contexts. Second, unstable political environment impacts on the exchange between firms, establishing obstacles to implement the rules and regulations that exist within a country. Henisz (2000) developed an approach to thinking about the stability of political systems that involves the balances in the formal policy making apparatus of a country and found that unstable environment increases the multiple veto points that make it difficult to follow any policies.   Hence:

H4: The more similar the culture between a parent company firm and its foreign subsidiaries, the less likely a parent firm divests its foreign subsidiaries.
H5: The more stable the policy environment of a foreign subsidiary is, the less likely a parent firm divests the foreign subsidiary.

METHODS

Sample and data collection

To test our hypotheses we used datasets that contain Japanese subsidiaries which remained existing or disappeared in the focal year (2010 or 2015). Our primary data source on foreign divestment is Overseas Japanese Companies Data (Kaigai Shinshutsu Kigyo Souran in Japanese), IIP patent database and PATSTAT. Our first database provides information on all Japanese publicly traded firms in terms of foreign direct investment and divestment, provided by Toyo Keizai Shimpo Co., Ltd. In order to allow for a sufficient number of foreign investment and divestment data, we gathered data on all Japanese subsidiaries listed in the Overseas Japanese Companies Data for three years – 2001, 2010, and 2015.   Another primary source for data on patenting activities for Japanese parent companies which owns several subsidiaries in foreign countries is IIP patent database and PATSTAT (EPO Worldwide Patent Statistical Database). We used the concordance table provided by NISTEP (National Institute of Science and Technology Policy) to match those patent databases with Overseas Japanese Companies Data.

Dependent measures

Divestment: our divestment variable is measured as a dummy variable which is coded as a "1" if the focal subsidiary alive in 2001 has been divested as of 2010 or 2015 and a

"0" otherwise.

Explanatory measures

Patent Count: we measured the innovative capacity by using the number of patents. Data were based on Japanese patents granted at Japan Patent Office which were filed for the period from 2004 to 2006 for the dependent variable as of 2010 and which were file for the period from 2009 to 2010 for the dependent variable as of 2015. We take the log transformation for this variable.

Patent Claim: we used the number of patent claims that individual Japanese patents had for the focal granted patents at Japan Patent Office from 2004 to 2006 for the dependent variable as of 2010 and which were file for the period from 2009 to 2010 for the dependent variable as of 2015. We calculated the proportion of the number of patents which have claimed at top 10% (by application year and by technology class) over the total number of patents which are granted by the focal Japanese parent company.

Patent Citation: we used the number of patent forward citations that Japanese patents had received for the focal granted patents at Japan Patent Office from 2004 to 2006 for the dependent variable as of 2010 and which were file for the period from 2009 to 2010 for the dependent variable as of 2015. We calculate the proportion of the number of patents which have forward citations at top 10% (by application year and by technology class) over the total number of patents which are granted by the focal Japanese parent company.

Patent Generality: Following the work of Hall et al. (2001) to compute "Generality", we use Herfindahl concentration index of patent forward citations. Japanese patents have received for the focal granted patents at Japan Patent Office from 2004 to 2006 for the dependent variable as of 2010 and which were file for the period from 2009 to 2010 for the dependent variable as of 2015. We calculate the proportion of the number of patents which have this Herfindahl concentration index at top 10% (by application year and by technology class) over the total number of patents which are granted by the focal Japanese parent company from 2004 to 2006 for the dependent variable as of 2010 and which were file for the period from 2009 to 2010 for the dependent variable as of 2015.. We also examined the applicability of patented invention.

Diversity at Country Level: we use the number of countries and that Japanese a Japanese parent firm has. We also took into account of the number of subsidiaries in each country. We use accumulated subsidiaries that Japanese foreign subsidiaries have been operated before 2001 in each host country. We take the log transformation for both variables.

Culture Similarity: we constructed this variable by the following procedure. If the host country is in Asia this variable takes 2. If the host country is in the Middle East, this variable takes one. Otherwise this variable is coded as a zero. In our future research, we use World Values Survey to construct this variable.

Policy Stability: we followed that: if the host country is not under civil control or is engaging in civil war currently, this variable takes zero. If the host country is in East Asia, East Europe, South America, or Africa, this variable takes 1. Otherwise this variable is coded as a "2". In our future research, we use Worldwide Governance Indicators to construct this variable.

Control variables
Firm size is likely to have an influence on the probability of subsidiary divestment since larger subsidiaries have greater capital. We include a control for firm size, measured as the log of the local subsidiary's employees in the host country in 2001. Firm age is also likely to have an impact on the probability of subsidiary divestment since older subsidiaries have a lot of experience to struggle in the host country. We include a control for firm age, measured as the log of the local subsidiary's age in the host country in 2001. The number of parent companies which have invested in the focal subsidiary is also likely to have an influence on the probability of subsidiary divestment (e.g. Li, 1995). We include a control of the number of parent companies in the focal subsidiary in 2001. We added dummy variables for industry, subsidiary activity and host country.

ANALYSIS

The dependent variable of this study is dichotomous where a Japanese subsidiary that has already dead in 2010/2015 is coded as a "1" and a Japanese subsidiary that is still alive in 2010/2015 as a "0". The appropriate statistical technique when using a binary dependent variable is logit regression.

RESULTS

Table 1 (model 1 to model 9) reports the results of the logit regression analysis predicting the probability of divestment in 2010 for the focal subsidiary in the host country in relation to the explanatory and control variables. Table 1(model 10 to model 18) also reports the results of the logit regression analysis predicting the probability of divestment in 2015 for the focal subsidiary in the host country.

As shown in Model 1, Firm size is negative and significant. Thus the larger the firm, the less likely the focal subsidiary will be divested in 2010. As shown in Model 2, the coefficient for the number of patents is negative and significant ($b = -0.10, p < 0.01$), providing support for H1. As shown in Model 3, the coefficient for the proportion of patents whose claims are high at top 10% level is negative and significant ($b = -1.13, p < 0.01$), providing support for H2a. As shown in Model 4, the coefficient for the proportion of patents whose forward citations are high at top 10% level is negative and significant ($b = -1.61, p < 0.01$), providing support for H2b. As shown in Model 5, the coefficient for the proportion of patents whose generality are high at top 10% level is negative and significant ($b = -0.75, p < 0.01$), providing support for H2c. As shown in Model 6, the coefficient for the Japanese parent firm's foreign diversity in terms of country level is positive and significant ($b = 0.24, p < 0.01$), which does support H3a. As shown in Model 7, the coefficient for the Japanese parent firm's foreign diversity in

terms of subsidiary level is positive and significant (*b = 0.15, p < 0.01*), which does support H3b. As shown in Model 8, the coefficient for the proportion of cultural similarity is negative and significant (*b = -1.24, p < 0.05*), providing support for H4. Lastly, as shown in Model 9, the coefficient for political stability is positive and significant (*b = 1.24, p < 0.05*), which does not support H5. For the measure as of 2015 (see model 10 to 18) identical results were obtained for H1, H2 and H3.   However, we do not find any significant level for H4 and H5.

DISCUSSION AND CONCLUSION

Overall, our data in 2010 and 2015 supports H1, H2 and H3.   These suggest that a parent firm's strong innovative capacity and more focused (i.e. less diversity) investment may decrease the likelihood of the firm's divestment to its foreign subsidiaries.   The impact on the macro environment, on the other hand, is not that straightforward.   From the year of 2015 data, we are not able to link the culture similarity and policy stabilities with the decrease of likelihood of foreign divestment, although support for H4 is found from 2010 data.

In line with the literature, this article coincides the importance of a firm's innovation performance, highlighting that the leadership and quality of innovation (in the form of patents) may help a parent firm to decrease the odds to divest its foreign subsidiaries.   Consistent with prior work (e.g. Lee, 1995), this study also empirically evidences the importance of the selection strategy in foreign investment.   Macro Environment is a complex (and tricky) one when considering foreign divestment. Several researchers (see e.g. Berry, 2013, Henisz, 2000) have highlighted the impact of policy stability and culture similarities.   We however are not able to provide a consistent result in different time series (2010 and 2015).   One possible explanation may embedded in the constant changes in the global markets.   For example, the attitude of a parent firm towards policy stability of Syria would be very much different in 2015 from that in 2010.   Culture issue is equal (if not more) delicate than policy stability.   On one hand, business preference (e.g. product and channel sections) in Japan can be similar to many Asian countries.   On the other, management style in a developed country such as Japan may be similar to another developed country in Europe towards foreign subsidies in emerging countries.   The complex issues behind culture similarities and policy stability demand a need for further research.

The implication of this article is three-fold.   First, it contributes to the knowledge of global strategies, in specific, how parent firms reduce the likelihood of foreign divestment.   Second, this article offers insights into an important yet under-developed topic in firm's internationalization process.   The topic is especially important for business practitioners in the developed economy when considering between 'invest' or 'divest' its foreign subsidiaries (often in the emerging markets). Finally, this article broadens the study of divestment, focusing on innovative capacity, investment diversity and macro environment.   This study has several limitations, leading to further research. We use patent number to observe innovative capability. Other factors (e.g. IPRs) should be considered for further research. Furthermore, this study uses time-series datasets.   A longitudinal study by using panel data is

recommended. Finally, culture similarity and policy stability are important yet complex issues that require further research.

What Deters Foreign Divestment? A Time-series Study of Japanese Parent Firms

Table 1. Logistic regression results for the probability of Japanese foreign subsidiaries divested[a,b]

VARIABLES	(1) Control Model	(2) H1	(3) H2a	(4) H2b	(5) H2c	(7) H3a	(8) H3b	(9) H4	(10) H5	(11) Control Model	(12) H1	(13) H2a	(14) H2b	(15) H2c	(16) H3a	(17) H3b	(18) H4	(19) H5
Subsidiary Size[c]	-0.263***	-0.232***	-0.258***	-0.253***	-0.241***	-0.263***	-0.245***	-0.263***	-0.263***	-0.249***	-0.216***	-0.244***	-0.229***	-0.222***	-0.251***	-0.229***	-0.249***	-0.249***
	(-18.32)	(-15.91)	(-17.92)	(-17.53)	(-16.60)	(-18.20)	(-16.86)	(-18.32)	(-18.32)	(-17.68)	(-15.03)	(-17.27)	(-16.08)	(-15.55)	(-17.61)	(-16.03)	(-17.68)	(-17.68)
Subsidiary Age[c]	0.064*	0.064*	0.062*	0.057	0.057	0.030	0.044	0.064*	0.064*	0.046	0.042	0.043	0.035	0.025	0.008	0.025	0.046	0.046
	(1.74)	(1.74)	(1.70)	(1.53)	(1.55)	(0.82)	(1.18)	(1.74)	(1.74)	(1.28)	(1.16)	(1.20)	(0.95)	(0.69)	(0.21)	(0.70)	(1.28)	(1.28)
Number of Parent Companies[c]	0.070	0.030	0.067	0.053	0.005	0.019	-0.009	0.070	0.070	0.047	0.012	0.043	-0.008	-0.029	-0.014	-0.043	0.047	0.047
	(1.32)	(0.57)	(1.27)	(1.00)	(0.09)	(0.35)	(-0.17)	(1.32)	(1.32)	(0.92)	(0.23)	(0.83)	(-0.15)	(-0.55)	(-0.27)	(-0.82)	(0.92)	(0.92)
Patent Count[c]		-0.101***									-0.114***							
		(-12.91)									(-13.58)							
Patent Claim			-1.129***									-0.969***						
			(-4.73)									(-5.10)						
Patent Citation				-1.606***									-1.041***					
				(-9.20)									(-15.48)					
Patent Generality					-0.747***									-0.722***				
					(-15.83)									(-17.74)				
Diversity at Country Level[c]						0.242***									0.288***			
						(15.51)									(18.74)			
Diversity at Subsidiary Level[c]							0.147***									0.168***		
							(17.90)									(20.64)		
Culture Similarity								-1.241**									-0.672	
								(-2.29)									(-1.64)	
Policy Stability									1.241**									0.672
									(2.29)									(1.64)
Constant	13.037	13.204	12.987	13.251	13.543	11.369	11.848	15.519	13.037	13.376	12.056	13.348	12.102	12.150	11.198	13.014	14.720	13.376
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Sample Period	2001-2010	2001-2010	2001-2010	2001-2010	2001-2010	2001-2010	2001-2010	2001-2010	2001-2010	2001-2015	2001-2015	2001-2015	2001-2015	2001-2015	2001-2015	2001-2015	2001-2015	2001-2015
Pseudo R-squared	0.0844	0.0937	0.0857	0.0893	0.0982	0.0979	0.102	0.0844	0.0844	0.0829	0.0928	0.0843	0.0960	0.0998	0.102	0.106	0.0829	0.0829

*** p<0.01, ** p<0.05, * p<0.1

[a] All models also include industry dummy variables, activity dummy variables and country dummy variables.

[b] Z-statistics are reported in parentheses.

[c] Log transformed.

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