
The relationship between location-bound advantages and international strategy: an empirical investigation

Fang-Yi Lo

Department of International Trade,
Feng Chia University,
100, Wenhwa Rd., Seatwen,
Taichung, Taiwan
Email: fylo@fcu.edu.tw

Joseph T. Mahoney*

Department of Business Administration,
College of Business,
University of Illinois at Urbana-Champaign,
140C Wohlers Hall, 1206 South Sixth Street,
Champaign, IL 61820, USA
Email: josephm@uiuc.edu
*Corresponding author

Danchi Tan

Department of International Business,
National Chengchi University,
64, Zhi-nan Rd. Sec. 2,
Wenshan Taipei 116, Taiwan
Email: dctan@nccu.edu.tw

Abstract: This paper examines the impact of location-bound advantage on the internationalisation strategy of Multinational Enterprises (MNEs). The extant research literature suggests that an advantage's location boundedness may be driven by the nature of the advantage itself, organisational embeddedness and environmental embeddedness. We posit that these different drivers of location boundedness exert different impacts on internationalisation strategies. Our empirical results reveal that organisational embeddedness lowers the breadth of internationalisation of MNEs and increases the tendency of these firms to employ a global strategy. We also find that MNEs whose advantages are tacit and complex have a lower depth of internationalisation and are more likely to expand into culturally similar countries. Finally, our results show that MNEs whose advantages are highly embedded in the home environment tend to adopt a multi-domestic strategy and decentralised organisational structures.

Keywords: location-bound advantages; multinational enterprise; international strategy.

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Biographical notes: Fang-Yi Lo received her PhD in International Business from National Chengchi University in Taiwan. She joined the Department of International Trade at the Feng Chia University in 2008. Her research and teaching interests include strategies of multinational enterprise and management.

Joseph T. Mahoney received his BA, MA, and PhD from the University of Pennsylvania, with a Doctorate in Business Economics from the Wharton School of Business. He joined the College of Business of the University of Illinois at Urbana-Champaign in 1988, and is currently the Caterpillar Chair of Business, and Director of Graduate Studies for the Department of Business Administration. He has published over 55 journal articles, which have been cited over 6700 times in *Google Scholar* from scholars in over 65 countries. His 2005 book, *Economic Foundations of Strategy*, has been adopted by over 30 doctoral programmes worldwide.

Danchi Tan is Associate Professor of International Business at the National Chengchi University, Taiwan. She received her PhD in International Business from the University of Illinois at Urbana-Champaign. Her current research focuses on the strategies and growth of multinational enterprises.

1 Introduction

Firms that invest abroad have long been considered to possess specific advantages to overcome the liability of foreignness (Hymer, 1976; Dunning, 1981; Zaheer, 1995). This line of reasoning suggests that the more advantages a firm possesses, the higher the degree of internationalisation that a firm can achieve (Kindleberger, 1969; Lall and Siddharthan, 1982; Caves, 1996). An implicit premise supporting this proposition is that firms can leverage their advantages overseas (Vernon, 1966; Luo and Tung, 2007; Yiu et al., 2007). However, in practice, some firm advantages may not transfer well across national borders (Kostova, 1999; Cuervo-Cazurra et al., 2007; Kotabe et al., 2007). Firm-specific advantages may be *location-bound* if they entail substantial costs when applied to other regions (Rugman and Verbeke, 1992; Shan and Song, 1997; Dunning, 2009). Such location-bound advantages are considered as the primary reasons why most multinational enterprises (MNEs) are regional, and few are global (Rugman and Verbeke, 2004; Rugman and Sukpanich, 2006; Oh and Rugman, 2007). While location boundedness has been presented as a critical factor influencing the internationalisation of firms, there has been little, if any, empirical evidence regarding its impact on MNEs' international strategy. The current paper aims to fill this gap in the research literature.

In particular, this paper examines the impact of location boundedness on the internationalisation strategy of MNEs. We posit that this impact depends on the sources of location boundedness. Drawing on the international business and knowledge transfer literature, we identify three drivers of location boundedness of an advantage: the nature of the advantage, organisational embeddedness and environmental embeddedness. While these three drivers all increase the degree of location boundedness of an advantage, they may have different or even opposite influences on an MNE's international strategy. The empirical analysis based on a sample of Taiwanese MNEs indicates that MNEs whose advantages are highly embedded in organisations have a smaller breadth of

internationalisation of MNEs and tend to employ a global strategy. In contrast, MNEs whose advantages are highly embedded in the home environment are found to adopt a multi-domestic strategy and decentralised organisational structures. We also find that MNEs whose advantages are tacit and complex have a lower depth of internationalisation and are more likely to expand into culturally similar countries.

We structure the paper as follows. The Section 2 reviews the extant research literature on location-bound advantage and international strategy, and develops the hypotheses. The Section 3 describes the data, variables and empirical findings. We conclude with a discussion of the results and final remarks in Sections 4–6.

2 Literature review and hypotheses development

This paper examines the impact of location boundedness on an MNE's internationalisation strategies. We posit that this impact depends on the sources of location boundedness. The international business research literature (Kostova, 1999; Jensen and Szulanski, 2004; Simonin, 2004; Cuervo-Cazurra et al., 2007) and the knowledge transfer literature (Zander and Kogut, 1995; Bjorkman et al., 2004; Foss and Pedersen, 2004; Minbaeva, 2007) suggest three major drivers of location boundedness of an advantage. First, the advantage is difficult to transfer due to its tacit nature. Second, the advantage is organisationally embedded – it may be transferable within an organisation, but it is costly to transfer across the organisation. Third, the advantage is embedded in the home environment, meaning that while it might be possible to share the advantages across organisations, it may lose value when applied to other geographical contexts. We next discuss in further detail these three drivers of location boundedness.

The nature of firm advantage: The first reason why an advantage is difficult to transfer abroad is due to its tacit nature. The extant research literature on knowledge transfer has extensively analysed the characteristics of difficult-to-transfer knowledge. For instance, Kogut and Zander (1993) submit that tacitness of a skill or technique implies non-codifiability, non-teachability and complexity, which increases the difficulty of knowledge transfer (Nonaka and Takeuchi, 1995; Szulanski, 1996) and limits firm expansion (Teece, 1977). Simonin (2004) submits that advantages characterised by causal ambiguity (Barney, 1991) are costly to transfer because it is difficult for the firm to clarify the antecedents and consequences of its advantages. All these characteristics of an advantage such as tacitness, complexity and causal ambiguity increase the difficulty in advantage transfer (Hu, 1995) and thus will result in location boundedness.

Organisational embeddedness: An advantage is embedded in organisations if it needs to interact with complementary elements of a specific organisation in order to create economic value (Teece, 1986; Milgrom and Roberts, 1990). Such complementary elements may include any activities involving cross-function coordination within the organisation. For example, a firm's advantage may reside in its quality control practices, which need to function with the entire production systems of the firm.

The idea of organisational embeddedness is connected with Thompson's (1967) sub-systems' interdependence in an organisation. Advantages embedded in an organisation cannot create economic value in another organisation simply by single sub-system transfer (Weick, 1976). Therefore, such advantages are costly to be transferred across national borders and thus are location bound.

Environmental embeddedness: A third reason why an advantage is location bound is that it is embedded in the home environment. An environmentally embedded advantage must be aligned with specific environmental/geographical elements to function (Cuervo-Cazurra et al., 2007). These environmental elements may include local partners (e.g. suppliers) and local production-related factors (e.g. nature resources, labour and raw materials). For instance, a firm's advantage may reside in its access to high quality materials from the industry cluster at home. Such an advantage is closely linked to the firm's networking ability with local businesses and is deeply embedded in the home environment (Kogut and Zander, 2003; Coviello, 2006). Whether or not MNEs with such advantages can create economic value in the host countries depends on their capacity to sustain their advantages within the host environment. If MNEs can only sustain their advantages within their home country conditions, it is difficult to transfer these advantages across border.

We next discuss how these drivers of location boundedness affect MNEs' internationalisation strategy.

2.1 Internationalisation

In general, location boundedness limits a firm's propensity to venture abroad. Rugman and Verbeke (2005) report that more than 80% of MNEs are regional rather than global-firms, and attribute this pattern to location-bound advantages. The current paper extends this analysis by showing how location boundedness influences a firm's internationalisation pattern. Location boundedness may result from different drivers, and we next show how these drivers influence the pattern of internationalisation differently, with some drivers only influencing the breadth while others affecting only the depth of internationalisation.

In particular, we maintain that *organisational embeddedness* reduces the depth of internationalisation. The *depth* of internationalisation refers to the extent of a firm's penetration and presence in foreign markets (Thomas and Eden, 2004). An MNE whose advantages are highly embedded in the organisation must transfer its entire coordination system when attempting to leverage these advantages abroad. This transfer process increases the difficulty of starting up new subsidiaries in foreign markets, and subsequently limits a firm's speed in international expansion, and lowers its depth of internationalisation. Furthermore, advantages characterised by tacitness, complexity and causal ambiguity are also difficult to transfer (Kogut and Zander, 1995). These characteristics inhibit a firm's expansion in any market and therefore lower its international involvement. Based on this theory-based reasoning, we expect that:

H1a: 'Organisational embeddedness' is negatively related to the 'depth' of international expansion.

H1b: 'Tacitness, complexity and causal ambiguity of an advantage' are negatively related to the 'depth' of international expansion.

However, we posit that environmental embeddedness of an advantage reduces only the breadth, rather than the depth, of a firm's internationalisation. The *breadth of internationalisation* is the width of the global reach of the MNE; namely, the country

scope of a firm's international involvement (Sullivan, 1994; Goerzen and Beamish, 2003). An environment-embedded advantage needs to be operated within the home-country environment production factors. MNEs may still be able to leverage such advantages in a foreign market if they can find similar product factors to support the advantages locally. MNEs are less likely to do so in countries where environments are substantially different from the home country, in which case such advantages will lose substantial economic value. Therefore, *environmental embeddedness* will narrow the number of countries that the MNEs can expand into and will lower the breadth of internationalisation of the MNE.

H2: 'Environmental embeddedness' is negatively related to the 'breadth' of international expansion.

Location choice: Location boundedness also has important implications for the firm's location choice. In particular, environmental embedded advantages lose greater economic value when transferred to culturally and/or geographically distant contexts. Thus, we expect that firms with such advantages to invest in host countries with similar cultures and/or environmental traits to avoid the dissipation of potential advantage. The similarity between home and host countries also promotes the transfer of advantages, reducing the time and financial resources that the firms must commit to succeed in foreign expansion (Anand and Delios, 1997; Jensen and Szulanski, 2004).

Our proposition that MNEs with environmentally embedded advantages tend to expand into environmentally similar countries is consistent with the observation by Rugman and Verbeke (2005) that most MNEs are regional firms. Such a pattern can be explained by the fact that the country environments in the same region are usually more similar than those in different regions, and as a result, the cost of transferring resources within the same region is relatively lower (Rugman and Brain, 2004; Rugman and Collinson, 2005; Oh and Rugman, 2006). This observation indicates that the advantages of many MNEs are embedded in their home environments, which limit their location choice when they venture abroad.

We also predict that MNEs, whose advantages are characterised by tacitness, complexity and causal ambiguity, tend to invest in culturally similar countries. The transfer of such advantages requires personal interactions between transferors and recipients. Because the closeness of the national culture promotes frequent interaction and attenuates potential misunderstandings between transferors and recipients, we thus expect that MNEs are likely to leverage these advantages in culturally similar countries.

H3a: 'Environmental embeddedness' is negatively related to the 'cultural distance' of the home and host country.

H3b: 'Tacitness, complexity and causal ambiguity of an advantage' are negatively related to the 'cultural distance' of the home and host country.

2.2 International strategy

A multinational firm can coordinate its worldwide activities through two major strategies: global strategy and multi-domestic strategy (Prahalad and Doz, 1987; Bartlett and Ghoshal, 1989).¹ Global strategy is characterised by a high level of international

competition, with national product markets being interconnected and firms focusing on capturing economies of scale and scope to achieve cost leadership. A firm adopting a global strategy typically centralises most of its decisions to conduct integration worldwide and transfers advantages from home to foreign subsidiaries. In contrast, firms with a multi-domestic strategy compete predominantly in the local market by adapting products and policies locally to achieve a product differentiation strategy (Roth and Morrison, 1990; Harzing, 2000). They must be highly responsive to the local environment and their subsidiaries often must develop their own advantages to compete in the local environment (Hill et al., 1990; Ring et al., 1990).

We predict that MNEs whose advantages are highly embedded in the home environment are likely to deploy a multi-domestic strategy. Environmental embedded advantages lose value when they are not functioning along with production factors in the home country. To compensate, subsidiaries must find comparable production factors locally to complement these advantages, or develop new capabilities in the local market. Achieving this objective requires the initiative of the subsidiaries and thus requires their parent companies to deploy a multi-domestic strategy.

In contrast, we predict that MNEs whose advantages are organisationally embedded tend to deploy the global strategy. Like environmental embeddedness, organisational embeddedness also increases the cost of MNEs in transferring the advantages, but in different ways. When transferring organisationally embedded advantages, MNEs must also move the entire system or related sub-systems in the organisation. In addition, they may also find it necessary to develop a management network to enable the transfer of the system and the advantage. Global strategy facilitates this process because centralisation in decision-making enables the parent company to transfer the entire package of advantages to their subsidiaries. Thus, we expect that organisational embeddedness leads to the use of a global strategy in MNEs.

H4a: 'Environmental embeddedness' is positively related to the tendency of MNEs to conduct 'multi-domestic strategy'.

H4b: 'Organisational embeddedness' is positively related to the tendency of MNEs to conduct 'global strategy'.

Organisational structure: A centralised organisational structure places the bulk of the decision-making authority in the parent company, which necessarily leads to the building of an internal coordination mechanism (Egelhoff, 1988). A centralised organisational structure stimulates the cross-functional knowledge transfer within a firm (Lord and Ranft, 2000).

Location boundedness influences the MNE's centralisation or decentralisation decision (Rugman and Verbeke, 1992). When location boundedness is driven by *environmental embeddedness*, a firm may need to rely on its subsidiaries to make local adaptation on its advantages or to build up a new advantage. In this case, the firm may need to *decentralise* and increase the subsidiary's autonomy and decision-making authority. In contrast, when transferring *organizationally embedded* advantages, MNEs need to build up *centralised* decision-making authority to facilitate the transfer of the entire systems in which the advantages are embedded. This developed logic leads to the following hypotheses:

H5a: 'Environmental embeddedness' is positively related to the 'decentralised organisational structure' of the MNEs.

H5b: 'Organisational embeddedness' is negatively related to the 'decentralised organisational structure' of the MNEs.

3 Research methodology

3.1 Sample

The research sample consisted of 1197 firms which were listed on the Taiwan Stock Exchange or traded over the counter. We employed both survey and secondary data sources to collect data. Variables relating to the depth, breadth and locations of internationalisation were obtained from company annual reports. All remaining variables were collected from a survey. Efforts were made to collect the data with multiple sources to avoid any potential common method biases (Doty and Glick, 1998).

We developed an initial questionnaire before we administrated the survey. We pre-tested the instrument with a top executive and asked him to comment on the relevance and the clarity of the items developed. We then incorporated his comments into the final version of the questionnaire.

We mailed the questionnaires to executives in charge of international business operations of the sample firms, and collected their responses between April and August 2007. At the beginning of the survey, the respondents were asked to fill in the most important advantage of their firms; the respondents were then reminded to answer the rest of the items based on the advantage.

Location-bound advantages are likely to influence the international strategy of MNEs within a specific time lag. Previous research used a four-week time lag (Srivastavam et al., 2006) and one-year time lag (Almedia and Phene, 2004; Wadhwa and Kotha, 2006). Others, however, do not consider the time lag to be a critical issue (Kostova, 1999; Lord and Ranft, 2000; Hansen and Lovas, 2004; Simonin, 2004; Frost and Zhou, 2005). For this particular study, we set a three-year time lag based on our company interviews. We asked the respondents to rate independent variables (environmental embeddedness, organisational embeddedness and the nature of the advantages) based on the year 2003, and to rate dependent variables based on the year 2006.

We received valid responses to the questionnaires from 158 firms, yielding a response rate of 13%. We checked the non-response bias of this sample (Armstrong and Overton, 1977; Lambert and Harrington, 1990) by comparing the basic characteristics of early (79 samples) and late (79 samples) responses of returned surveys. The *t*-tests on MNEs' total assets ($t = 1.685$), number of subsidiaries ($t = 1.934$) and respondents' working experience ($t = 0.033$) indicated no statistical differences for the two samples under 95% confidence interval. Thus, the research participants who responded to the survey did not appear to exhibit bias.

3.2 Dependent variables

Depth of a firm's internationalisation is measured by the foreign subsidiary ratio (i.e. number of foreign subsidiaries/number of total subsidiaries). The higher the foreign

subsidiary ratio, the greater the depth of the internationalisation. Based on the 1935 US company law, we selected foreign subsidiaries with foreign ownership larger than 10% (Martin and Salomon, 2003). We excluded holding companies or any subsidiaries whose operations are only on reinvestment or foreign investment. We also excluded any subsidiaries located in tax-haven countries (e.g. Cyman, British Virgin Islands and Samoa).

Breadth of a firm's internationalisation is measured by the number of countries in which the firm has at least one subsidiary (Pantzalis et al., 2001; Thomas and Eden, 2004).

Cultural distance: As with many previous empirical studies (Benito and Gripsrud, 1992; Barkema et al., 1996; Gomez-Mejia and Palich, 1997), we used Kogut and Singh's (1988) model to calculate Hofstede's (2003) national cultural distances between home and host countries for all subsidiaries in each sample firm. We then calculate the average cultural distance of sample firms by using the ratios of subsidiaries in host countries as weights. A larger score means that on average, an MNE expanded into culturally more distant host countries. We obtained data on subsidiaries and their locations from the annual reports of the firms. We collected the most recent (year of 2003) national cultural scores from Hofstede's website.

International strategy: Drawn on Bartlett and Ghoshal (1989), we define MNEs using multi-domestic strategy as focusing on local adaptation due to the pressure of responsiveness and define those using global strategy as focusing on economies of scale due to cost pressures. Accordingly, multi-domestic strategy is measured by a questionnaire item developed by Harzing (2002) to evaluate the extent to which an MNE recognises national differences in taste and values, and tries to respond to those national differences by adapting products and policies to the local market. Global strategy is measured by a questionnaire item developed by Harzing (2002) to evaluate the extent to which an MNE's strategy is focused on achieving economies of scale by concentrating its important activities at a limited number of locations. Each item used a 5-point Likert (1932) scale with the descriptive equivalents ranging from strongly disagree (1) to strongly agree (5).

Decentralisation: The degree of decentralisation in the decision-making authority can be examined through the decision-making authority bestowed by the parent company to its sub-sidiaries (Garnier, 1982; Nobel and Birkinshaw, 1998). It was measured according to the locus of decision-making of the subsidiary's major strategy. A 3-point scale was used for this variable (1 – representing 'determined by the parent company', 2 – representing 'jointly determined by the parent company and subsidiary' and 3 – representing 'determined by the subsidiary') with the values ranging from 1 (the lowest level of decentralisation) to 3 (the highest level of decentralisation).

Independent variables: We developed a total of 11 items to measure the three location-bound antecedents, including *organisational embeddedness* (three items, $\alpha = 0.753$), *the nature of firm advantage* (five items, $\alpha = 0.816$) and *environmental embeddedness* (three items, $\alpha = 0.754$) (Lo and Yu, 2008). These items were assessed via a 5-point Likert's (1932) scale, with values ranging from strongly disagree (1) to strongly agree (5). After confirming the reliability and validity of the instrument, we utilised the average score of the items to measure the constructs and conducted subsequent analysis. Appendix A provides the details of these items.

Control variables: We include three control variables in the estimation. Specifically, we control for the size of the firms. Larger firms may be more able to successfully expand internationally and compete in international markets (Erramilli and D'Souza, 1993; Li, 1995). We measure firm size by log number of employees of the firms (Simonin, 2004). We also control for the age of the firms. Older firms are likely to have greater experience of leveraging their advantages and consequently may have lower cost of transferring these advantages (Martin and Salomon, 2003; Chetty et al., 2006). Finally, we control for the industry affiliation of the firms. The advantages of service industry firms are usually more location-bound than those of manufacturing industry firms (Rugman et al., 2006) because in service industries, production and consumption must take place simultaneously (Boddewyn et al., 1986). In addition, service industry firms typically need to adapt their advantages to local conditions to create economic value. We classified the sample into three industries: electronics industry, other manufacturing industry and service industry, and then we used two dummy variables to capture the industry effect (using the service industry firms as the base group). The distribution of our sample firms in these three industries is as follows: 91 firms in the electronics industry, 40 firms in other manufacturing industry and 27 firms in the service industry.

3.3 Reliability and validity

We employed exploratory factor analysis on our 11 items measuring the antecedents of location boundedness, using the iterative principal axis and the pro-max method to extract factors. The standards for deciding the factor numbers reside in the turning point of screen plot and whether the eigenvalue is larger than one. The results revealed that 11 items are loaded in three constructs, as we have expected. The first factor is 'the nature of firm advantage'; there are five items with an eigenvalue of 2.939 and an explanatory variation of 26.720%. The second factor is 'environmental embeddedness'; there are three items with an eigenvalue of 2.147 and the explanatory variation is at 19.515%. The third factor is 'organisational embeddedness'; there are three items with an eigenvalue of 2.009 and the explanatory variation is at 18.260%. The accumulated explanatory variation is 64.495%.

With respect to internal consistency, each factor's Cronbach's (1951) alpha is 0.816 (the nature of firm advantage), 0.754 (environmental embeddedness) and 0.753 (organisational embeddedness), all corroborating the reliability of these items (Nunnally, 1978). We used the item-total correlation to check whether any item should be excluded. Results showed that every item is larger than 0.3, thus it is unnecessary to eliminate any item (Nunnally, 1978).

As for the validity of the instrument, we used the items developed by previous research studies and pre-tested them with a practicing manager to achieve face validity. Furthermore, our respondents have on average 10.5 years of work experience in their firms, and they all occupied in mid-to-high level managerial positions. Thus, it is assumed that our respondents were familiar with their firms' operations.

The descriptive statistics and correlations between variables (Table 1) revealed that there was no serious multicollinearity among the independent variables. We next test the hypotheses using regression analysis.

Table 1 Mean, standard deviation and correlation coefficients

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Firm size (log)	3.330	0.863	1												
2 Firm age	27.450	23.521	0.374**	1											
3 Electronics industry	0.576	0.496	-0.153	-0.337**	1										
4 Non-electronic manufacturing industry	0.253	0.436	0.070	.138	-0.679**	1									
5 Environmental embeddedness	3.201	0.897	-0.070	0.094	.164*	-0.055	1								
6 Organisational embeddedness	3.407	0.792	-0.070	0.086	.140	-0.073	0.442**	1							
7 The nature of advantage	2.873	0.775	-0.117	-0.068	.095	-0.040	0.267**	0.164	1						
8 Depth	0.637	0.262	0.023	-0.126	.257**	-0.031	-0.065	-0.162*	-0.177*	1					
9 Breadth	9.700	30.948	0.467**	0.392**	-0.173*	-0.038	-0.044	-0.102	-0.078	0.120	1				
10 Cultural distance	33.602	10.066	-0.047	-0.286**	.281**	-0.208*	0.126	0.095	-0.079	0.028	0.335**	1			
11 Multi-domestic strategy	4.15	.738	-0.029	-0.037	.117	.022	.118	.071	-0.013	-0.179*	-0.088	.067	1		
12 Global strategy	3.91	.760	.053	.015	.053	-0.087	-0.004	.121	.099	-0.040	.037	-0.016	.093	1	
13 Decentralisation	1.530	0.615	0.240**	0.207**	-0.175*	.065	0.090	0.041	-0.050	0.061	0.193*	-0.136	-0.160*	.088	1

Notes: N = 154; * p < 0.05; ** p < 0.01 (two-tail).

4 Results

The results of the regression analysis are presented in Table 2. All models are statistically significant, and adding independent variables significantly increases the percentage of explained variance.

Model 1 of Table 2 examines the *depth* of internationalisation of MNEs. H1a predicts that MNEs whose advantages are embedded in organisations have a lower depth of internationalisation. Results indicate that the coefficient of organisational embeddedness is negative but is not significant ($\beta = -0.027$; $t = -0.875$). Thus, Hypothesis 1a was not supported. We find that MNEs whose advantages are characterised by tacitness, complexity and causal ambiguity indeed have a lower depth of internationalisation ($\beta = -0.070$; $t = -2.595$), corroborating Hypothesis 1b.

Model 2 of Table 2 examines the breadth of internationalisation of MNEs. Hypothesis 2 maintains that environmental embeddedness reduces the breadth of a firm's internationalisation. The coefficient of environmental embeddedness is not significant ($\beta = 0.786$; $t = 0.269$). Thus, Hypothesis 2 was not supported.

Model 3 of Table 2 examines MNEs' location choice. Hypothesis 3a predicts that MNEs with environmentally embedded advantages tend to expand into culturally similar countries. However, the coefficient of environmental embeddedness is not significant ($\beta = 1.268$; $t = 1.141$). Thus, Hypothesis 3a was not supported. Hypothesis 3b predicts that MNEs whose advantages are characterised by tacitness, complexity and causal ambiguity likely locate in the host countries with smaller cultural distances. The coefficient of tacit, complex advantages is negatively related to cultural distance ($\beta = -1.987$; $t = -1.775$), supporting Hypothesis 3b.

Models 4a and 4b of Table 2 examine the use of international strategy. We predict that the use of a multi-domestic strategy is positively related to environmental embeddedness (H4a) and the use of a global strategy is positively related to organisational embeddedness (H4b). Our empirical results indicate that the coefficient of environmental embeddedness is positively related to multi-domestic strategy ($\beta = 0.112$; $t = 1.406$), corroborating Hypothesis 4a. The coefficient of organizational embeddedness is also found to positively related to global strategy ($\beta = 0.221$; $t = 2.458$). Therefore, Hypothesis 4b was also supported.

Model 5 of Table 2 examines decentralisation. Hypothesis 5a predicts that environmental embeddedness leads to the use of a decentralised organisational structure. The coefficient of environmental embeddedness is positive and significant ($\beta = 0.098$; $t = 1.538$), corroborating Hypothesis 5a. Hypothesis 5b predicts that MNEs whose advantages are embedded in organisations tend to adopt a centralised organisational structure. Our empirical results indicate that the coefficient of organisational embeddedness is positive but insignificant ($\beta = 0.011$; $t = 0.157$) and fails to support Hypothesis 5b.

With regard to control variables, we find that firm size increases the breadth of internationalisation ($\beta = 13.483$; $t = 4.885$) and a firm's tendency to adopt a decentralised organisational structure ($\beta = 0.142$; $t = 2.353$). Older firms are found to have larger breadth of internationalisation ($\beta = 0.272$; $t = 2.460$), but they tend to choose host countries with smaller cultural distances ($\beta = -0.188$; $t = -2.723$). Finally, compared to firms in the service industries, firms in the electronics industries have a greater depth ($\beta = 0.261$; $t = 4.475$) but have a smaller breadth of internationalisation ($\beta = -9.068$; $t = -1.402$), and they tend to adopt highly centralised organisational structures ($\beta = -0.247$; $t = -1.750$). Similarly, firms in the non-electronic manufacturing industries also have a greater depth of internationalisation ($\beta = 0.217$; $t = 3.384$) and a smaller breadth of internationalisation ($\beta = -13.300$; $t = -1.901$).

Table 2 Results of regression analysis

	Model 1	Model 2	Model 3	Model 4a	Model 4b	Model 5
<i>Dependent variables</i>						
Constant	0.779(5.236)***	-24.339(-1.521)*	37.584(5.631)***	3.884(8.864)***	3.193(7.275)***	0.808(2.311)**
<i>Control variables</i>						
Firm size	0.006(0.241)	13.483(4.885)***	-0.279(-0.238)	-025(-.327)	.040(.535)	0.142(2.353)**
Firm age	-0.001(-1.082)	0.272(2.460)**	-0.188(-2.723)***	.002(.526)	.002(.531)	0.002(0.657)
Electronics industry	0.261(4.475)***	-9.068(-1.402)*	3.035(1.169)	.273(1.541)*	-.114(-.640)	-0.247(-1.750)**
Non-electronic manufacturing industry	0.217(3.384)***	-13.300(-1.901)**	0.062(0.022)	.239(1.248)	-.160(-.836)	-0.137(-0.894)
<i>Independent variables</i>						
Environmental embeddedness	-0.015(-0.581)	0.786(0.269)	1.268(1.141)	.112(1.406)*	-.113(-1.407)*	0.098(1.538)*
Organisational embeddedness	-0.027(-0.875)	-4.549(-1.388)*	0.493(0.391)	-.019(-.208)	.221(2.458)***	0.011(0.157)
The nature of advantage	-0.070(-2.595)***	0.915(0.312)	-1.987(-1.775)**	-.069(-.855)	.093(1.162)	-0.002(-0.046)
<i>Model indices</i>						
F-value	4.788	7.995	3.102	.897	1.390	2.366
Adjusted R-Square	0.161	0.249	0.100	-.005	.018	0.061
R-Square	0.204	0.284	0.148	.043	.065	0.105
Sign.	0.000	0.000	0.005	.510	.214	0.026
Sample	147	158	138	158	158	158

Notes: Numbers in parentheses are *t*-values. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$ (one-tailed tests).

We tested for common method variance using Harman's (1967) one-factor test (Podsakoff and Organ, 1986). According to the test, common methods may exist if the un-rotated factor solution contains only one factor, or if any single factor accounts for the majority of covariance (Brouthers et al., 2004). In our analysis, the factor solution resulted in four factors, and the largest factor accounted for only 18.993% of the covariance. Therefore, common method variance does not appear to be a problem in the current research study.

We conducted additional tests to check the robustness of our empirical results. Specifically, we did post hoc analysis by adding the time of advantage transfer (i.e. the number of years it takes to completely transfer the advantage to a foreign subsidiary), and the degree of advantage actually transferred as additional control variables, and we also removed our current control variables (e.g. firm size) from the model specification. We found that our empirical findings remain the same. Moreover, one might suspect that interactive relationships exist in the three location-bound antecedents (i.e. the nature of firm advantage, organisational embeddedness and environmental embeddedness). To address this concern, we created three interaction terms of the three antecedents to examine their effect on the dependent variables and find that the main results remain unchanged and most of the interaction terms are statistically insignificant.

We used Baron and Kenny's (1986) method to evaluate the mediating effect of location boundedness to the relationship between its three drivers and the consequence variables. We included in the survey an additional item asking the respondents to provide an overall score for the degree of location boundedness of their advantages. A higher score means a higher degree of location boundedness (ranging from 1 to 5). The empirical results show that only one of the models (the depth of internationalisation) is partially mediated by the degree of location boundedness. All of the other models are not affected by the mediation effect, indicating that the antecedent variables have direct effects on the international strategies. Therefore, location-bound advantages are a multidimensional construct and should be separately considered.

5 Discussion

Depth: We found that the depth of internationalisation is influenced by the nature of firm advantages, but it is not affected by organisational embeddedness. A plausible reason for this finding is that MNEs with organisationally embedded advantages could use a 'fly man' strategy (Lu and Chiou, 2006) to transfer the system in which the advantages are embedded to geographically close countries and thus increase the depth of their internationalisation. The 'fly man' strategy involves frequent rotation of managers in certain functional departments between headquarters and subsidiaries, or relocation of the whole management team every six months to one year. Such a strategy reduces the cost of transferring the entire systems in which the advantages are embedded, and is employed by many Taiwanese MNEs to manage their subsidiaries in China.² Thus, despite their advantages being organisationally embedded, MNEs may be able to use this strategy to achieve a greater depth of internationalisation by expanding into geographically close host countries.

Breadth: Our finding indicates that MNEs with organisationally embedded advantages have a smaller breadth of internationalisation. Although such MNEs can use the 'fly man' (Lu and Chiou, 2006) strategy to increase its depth of internationalisation, this strategy

is costly for geographically distant host countries. Therefore, while organisational embeddedness does not necessarily reduce the depth of internationalisation of MNEs, it will decrease the breadth of the MNEs' internationalisation.

We find that environmental embeddedness does not influence the breadth of internationalisation. A possible explanation is that although their advantages are embedded in specific environmental conditions, MNEs might still be able to select a group of environmentally similarly host countries from all over the world to conduct foreign investment, and hence do not necessarily have a lower breadth of internationalisation.

Cultural distance: Consistent with the finding that environmental embeddedness does not reduce the breadth of internationalisation, we also find that environmental embeddedness does not reduce the average cultural distance of MNEs' FDI locations. Perhaps Hofstede's (2003) national cultural constructs (power distance, individualism, masculinity and uncertainty avoidance) do not fully capture the influences of environmental embeddedness on the location decisions of foreign investment. We further used two other measures for capturing the concept of environmental difference including Henisz' (2000) political constraint index and GDP per capita. However, the empirical results are similar. Future research can develop alternative measurements for environmental difference.

International strategy: Although both organisational embeddedness and environmental embeddedness create difficulties for MNEs to transfer their advantages across national borders, our empirical finding indicates that they have different impacts on the internationalisation of MNEs. In particular, we find that organisational embeddedness increased the tendency of MNEs to adopt a global strategy, while environmental embeddedness increased their tendency to adopt a multi-domestic strategy.

Decentralisation: Our findings show that environmental embeddedness increases the tendency of MNEs to adopt a decentralised organisational structure, but organisational embeddedness and the nature of firm advantage were not directly influential to the centralised or decentralised decisions of MNEs. MNEs with such advantages may adopt a centralised organisational structure to stimulate the transfer of their advantages. However, they can also bestow autonomy to their subsidiaries by using decentralised organisational structures so that the subsidiaries can take initiative to develop advantages themselves.

6 Conclusions

6.1 Research conclusions

This paper is built upon the concept of location-bound advantages (Rugman and Verbeke, 1992) and examines the relationships between antecedents of location-bound advantages and MNEs' international strategy. While location-bound advantages in general are considered as reducing an MNE's involvement in foreign markets, the current paper shows that different drivers of location boundedness affect the internationalisation of the MNE differently. The empirical results show that when location boundedness of an advantage is driven by organisational embeddedness, the MNE tends to have a lower breadth of internationalisation and adopts a global strategy. However, when an advantage is location bound due to its tacit nature, the MNE has a lower depth of internationalisation

and tends to choose host countries with smaller cultural distances. When location boundedness is driven by environmental embeddedness, the MNE tends to adopt a multi-domestic strategy and decentralises its locus of control.

In terms of theoretical contribution, the current paper extends the idea of location-bound advantages as put forward by Rugman and Verbeke (2001) and examines its impact on the internationalisation of MNEs. In addition, the extant research literature has primarily focused on the transfer of intangible resources (e.g. knowledge) and has given little research attention to the transfer of tangible resources. This is a critical gap in the extant research literature, given that MNEs require both types of resources in their foreign investments. The current paper addresses this research gap by including both tangible and intangible advantages in research design.

With regards to practical contribution, Henderson (1989) observed that if a company is in business and is self-supporting, it already has certain advantages, no matter how little or subtle. It follows that MNEs will be influenced by their advantages when performing foreign investments. Understanding the sources of location boundedness of advantages enables managers to better understand the applicability of their firm's advantages when making overseas investment. In particular, before proceeding with overseas investment, MNEs should not only know whether their advantages are location-bound; they should also consider their internal supporting sub-systems, and even whether the advantages can be coordinated with host country elements in order to successfully transfer the headquarters' advantages to the host country for operation.

Furthermore, the current paper suggests important implications for MNEs' strategy. Based on the different antecedents that caused location-bound advantages, MNEs can deploy different international strategies. International growth requires not only the accumulation and creation of new knowledge but also the replication of existing knowledge and advantages in multiple locations (Penrose, 1959; Martin and Salomon, 2003). The fact that some advantages are location bound may increase the failure rate of foreign investments. By leveraging appropriate international strategy (e.g. global strategy or location choice), MNEs can improve their likelihood of success in foreign markets.

Research limitations and suggestions for future research: In terms of the paper's limitations, as with other empirical research, we need to be mindful of potential specification, measurement, and econometric identification problems (Kennedy, 1998). In particular, we emphasise the following limitations. *First*, the investment performance of MNEs is not incorporated in the current paper and should usefully be included in future research. *Second*, as to the level of analysis, this paper examined the MNEs' international strategy and then focused on firm-level strategy. Future research can focus on the different level analysis, such as value-chain (Porter, 1985) or advantage level of analysis. *Finally*, advantage transfer can take many different directions: parent company to subsidiaries, subsidiaries to parent company and subsidiary to other subsidiaries (Kostova, 1999). Moreover, advantage transfer can be in a single direction (transfer from parent company) or in multiple directions (transfer from other subsidiaries or subsidiaries network) (Rugman and Verbeke, 2003). The current paper focuses on advantage transfer from parent company to subsidiaries. Future research can explore the generalisability of this advantage transfer in other directions to further advance the evolving field of international business.

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Notes

- 1 Bartlett and Ghoshal (1989) state that MNEs ascribe to four international strategies: global, multi-domestic, international and transnational in response to the pressures of operational cost and localisation. Research indicates that global and multi-domestic strategies were commonly accepted and clearly defined (Roth et al., 1991; Harzing, 2002), and are the focus of the current paper.
- 2 A large portion of Taiwanese overseas FDI is made in China. According to the Ministry of Economic Affairs, 73% of Taiwanese MNEs had invested in China as of 2006.

Appendix A

The nature of advantage

- 1 This advantage *cannot be transferred to subsidiaries with low costs.*
- 2 This advantage *cannot be transferred to subsidiaries via documents.*
- 3 This advantage *cannot be transferred to subsidiaries via the currently available standard operating procedure.*
- 4 It is *difficult to set up an operating procedure to transfer* this advantage to subsidiaries.
- 5 This advantage *cannot be broken into smaller modules.*

Organisational embeddedness

- 6 This advantage needs to be operated *with the specific elements, conditions and activities in the organisation.*
- 7 This advantage needs to be *operated through the major systems* (e.g. the entire production system) *and sub-systems* (e.g. quality control) within the organisation.
- 8 This advantage needs to be *operated through cross-functional coordination and interaction* (e.g. marketing and production) within the organisation.

Environmental embeddedness

- 9 This advantage needs to be operated in *coordination with local partners* (e.g. suppliers, and supply chain members)
- 10 This advantage needs to be operated in *coordination with local factors of production* (e.g. labour and raw materials)
- 11 This advantage needs to be operated in *coordination with local environment* (e.g. infrastructure, laws and regulations).