

# EXPATRIATE KNOWLEDGE TRANSFER, SUBSIDIARY ABSORPTIVE CAPACITY, AND SUBSIDIARY PERFORMANCE

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**In this study, we theoretically identify three dimensions of expatriate competencies—ability, motivation, and opportunity seeking—for knowledge transfer. Integrating the ability-motivation-opportunity framework and the absorptive capacity perspective, we propose that expatriate competencies in knowledge transfer influence a subsidiary's performance through the knowledge received by the subsidiary, but that this indirect effect is stronger when subsidiary absorptive capacity is greater. We collected multi-source, time-lagged data from 162 British subsidiaries of Taiwanese multinational firms. The results support our hypotheses. Overall, we contribute to expatriation theory and research by revealing specific expatriate competencies as well as identifying boundary conditions for successful expatriate knowledge transfer.**

How can the performance of subsidiaries of multinational corporations (MNCs) be enhanced? An important competitive advantage of MNCs lies in their ability to create and transfer knowledge from headquarters to subsidiaries and vice versa (Bartlett & Ghoshal, 1989; Kogut & Zander, 1993). MNCs often use expatriates to transfer knowledge from headquarters to subsidiaries (Edström & Galbraith, 1977; Harzing, 2001; Hocking, Brown, & Harzing, 2004), and such knowledge transfer is believed to be vital to subsidiary performance (Delios & Beamish, 2001; Gong, 2003a; Tan & Mahoney, 2006).

Using expatriation as a proxy for knowledge transfer, researchers have examined the relationship between the number (proportion) of expatriates and subsidiary performance (Colakoglu & Caligiuri, 2008; Gaur, Delios, & Singh, 2007; Gong, 2003a). But the findings have been mixed. The

relationship has been positive in some studies (Gong, 2003a) but not significant, or even negative, in others (Gaur et al., 2007). Moreover, knowledge transfer has rarely been examined directly as the link between expatriation and subsidiary performance. In some MNCs, expatriates are selected on the basis of their technical skills (Tung, 1987) and thus may not have the “soft skills” required to transfer knowledge effectively (Peng, 2011). Going forward, it is important to identify the specific expatriate competencies critical for successful knowledge transfer. Although expatriate competencies are important, subsidiary absorptive capacity—the ability to recognize the value of external knowledge, assimilate it, and apply it to subsidiary operations (Cohen & Levinthal, 1990)—may also matter (Gupta & Govindarajan, 2000). The role of recipient absorptive capacity has been recognized in knowledge management research (Szulanski, 1996), but it has not been integrated into expatriation research. Thus, no previous research has examined this crucial question: How do expatriate competencies and subsidiary absorptive capacity *jointly* impact the knowledge transfer process?

The theory of knowledge management suggests that successful knowledge transfer depends on the characteristics of both the source and the recipient of knowledge (Easterby-Smith, Lyles, & Tsang, 2008; Szulanski, 1996). Theorists have identified ability, motivation, and opportunity as important for explaining the creation and transfer of knowl-

The first two authors are listed alphabetically. Yaping Gong mainly contributed to the theoretical aspects of this work, and Yi-Ying Chang mainly contributed to the empirical aspects. We thank Jason Shaw (associate editor) and three reviewers for constructive feedback. We acknowledge the financial support from the Carnegie Trust in Scotland awarded to Professor Chang, from the Research Grants Council of Hong Kong awarded to Professor Gong (project no. 640709), and from the Jindal Chair and the Provost's Distinguished Professorship at UT Dallas that supported Professor Peng's work.

edge (Argote, McEvily, & Reagans, 2003). Just as the successful performance of any task depends on the ability, motivation, and opportunity to perform the task, knowledge transfer to a subsidiary depends on expatriate ability, motivation, and opportunity to perform the transfer. Theorists have also identified recipient absorptive capacity as a critical factor in the successful transfer of knowledge (Szulanski, 1996). In the context of expatriate knowledge transfer, knowledge, once received by a subsidiary, must be better absorbed and utilized to contribute more to subsidiary performance.

In this study, we draw upon the ability-motivation-opportunity framework (Blumberg & Pringle, 1982; Boxall & Purcell, 2003) to identify three dimensions of expatriate competencies—ability, motivation, and opportunity seeking—for knowledge transfer, and examine their effects on subsidiary performance through the amount of knowledge received (hereafter, knowledge received) by the subsidiary. Integrating the ability-motivation-opportunity framework and the absorptive capacity perspectives, we propose that the mediation effect is moderated by subsidiary absorptive capacity: expatriate competencies in knowledge transfer have a stronger indirect effect on subsidiary performance when subsidiary absorptive capacity is greater. We chose subsidiary absorptive capacity because of its prominent role in knowledge management theory and research (Szulanski, 1996; Van Wijk, Jansen, & Lyles, 2008). Although the two perspectives share a focus on knowledge transfer, they concern the source side and the recipient side, respectively. Complementing each other, these two perspectives *jointly* provide a more complete explanation for knowledge transfer success.

We endeavor to make three theoretical contributions. First, we go beyond the focus on number of expatriates by identifying three dimensions of expatriate competencies in knowledge transfer, thereby addressing previous calls for understanding the expatriate characteristics that facilitate knowledge transfer and subsidiary performance (Hébert, Very, & Beamish, 2005; Tan & Mahoney, 2006). Second, our focus on subsidiary absorptive capacity adds a missing piece to research on expatriation and subsidiary performance. We not only test the idea that absorptive capacity enhances knowledge received by a subsidiary, but also extend it by showing that the effect may depend on expatriate competencies in knowledge transfer. Third, we test the idea that knowledge received by the subsidiary mediates the relationship between expatriation and subsidiary performance. Moreover, we extend it by showing that subsidiary absorptive capacity moderates the indirect effects of

expatriate competencies in knowledge transfer on subsidiary performance. Overall, we contribute to the broader literature on knowledge transfer, in which a fundamental issue is to identify “the conditions under which moving people will result in knowledge transfer” (Argote & Ingram, 2000: 164). We identify specific personnel characteristics and recipient absorptive capacity as conditions contributing to successful knowledge transfer via personnel movement (Argote & Ingram, 2000; Song, Almeida, & Wu, 2003). We make these contributions by using a multisource, time-lagged research design and a sample of Taiwanese MNCs operating in the U.K. This study is among the first to empirically examine expatriation and knowledge transfer in MNCs from an emerging economy operating in a developed economy and thereby expands the literature that hitherto has focused predominantly on MNCs from developed economies.

## THEORY AND HYPOTHESES

### Theoretical Background

The ability-motivation-opportunity framework suggests that ability, motivation, and opportunity are the primary building blocks of successful task performance (Blumberg & Pringle, 1982; Boxall & Purcell, 2003; Campbell, McCloy, Oppler, & Sager, 1993). Ability refers to the knowledge, skills, and experience needed to perform a task. Motivation refers to the willingness (or the degree to which a person is inclined) to perform it. Opportunity consists of resources in a workplace that enable task performance (Blumberg & Pringle, 1982). Motivation involves the choices of direction (where to direct the effort), intensity (the amount of effort to exert), and persistence of effort (Campbell et al., 1993; Kanfer, 1990; Mitchell, 1997). “Motivation is a combination of psychological processes that culminates in the wanting and intending to behave in a particular way. . . . Actual effort or persistence are the behavioral outcomes of motivation, not motivation itself” (Mitchell, 1997: 63–64). Ability, motivation, and opportunity are often specified in relation to specific tasks. For example, motivation to learn is defined as “a desire on the part of trainees to learn the content of the training program” (Colquitt & Simmering, 1998: 654).

In this study, the task in question is knowledge transfer to subsidiaries. The knowledge transfer perspective on expatriation suggests that expatriates represent a means of transferring knowledge to subsidiaries (Bonache & Brewster, 2000; Edström & Galbraith, 1977; Harzing, 2001; Hocking et al., 2004). Expatriates act as agents to transfer corporate

culture to subsidiaries and to develop subsidiary employees' perceptions about and attitudes toward headquarters (Kostova & Roth, 2002; Peng, 2011). More important to the subsidiaries, expatriates understand and have experience in utilizing their parent firm's knowledge base (especially technology), which, if transferred successfully, is expected to enhance subsidiary performance (Gong, 2003a; Hébert et al., 2005). Although researchers have examined the relationship between expatriate staffing and subsidiary performance, the focus has been on either the nationality of a subsidiary's general manager or the number/proportion of expatriates in the subsidiary (Colakoglu & Caligiuri, 2008; Fang, Jiang, Makino, & Beamish, 2010; Gaur et al., 2007; Gong, 2003a). Although this line of research is valuable in revealing the potential impact of expatriate staffing on subsidiary performance, it offers limited insights into the specific expatriate characteristics that facilitate knowledge transfer and subsidiary performance. Furthermore, although it has been routinely assumed that expatriates represent a conduit for knowledge transfer, the actual knowledge transfer mechanism linking expatriation and subsidiary performance has rarely been examined directly.

It has been recognized that MNCs often experience internal "stickiness," defined as the difficulty of transferring knowledge within an organization (Szulanski, 1996). Expatriates, as a source of knowledge, are potential causes of internal stickiness. This is because the tacit nature of knowledge creates difficulties in transfer (Kogut & Zander, 1993; Simonin, 1999). Tacit knowledge is not codifiable and is often built from the experiences of individuals, making it rather personal in nature (Hébert et al., 2005; Song et al., 2003). Tacit knowledge is deeply rooted in action and in an individual's commitment to a specific context (e.g., a particular technology or the activities of a specific unit) (Nonaka & Takeuchi, 1995). Tacit knowledge is difficult to articulate, and its transfer requires extensive interactions and focused efforts. Differences in culture and language may further hinder such transfer. Tacit knowledge, therefore, does not diffuse easily unless the expatriates with the knowledge have the ability, motivation, and opportunity to transfer it (Argote et al., 2003; Szulanski, 1996).

Applying the ability-motivation-opportunity framework, we identify three dimensions of expatriate competencies—ability, motivation, and opportunity seeking—that may help overcome internal stickiness in knowledge transfer. In this study, expatriate ability refers to the knowledge, skills, and experience needed to solve difficulties in

transferring knowledge. Expatriate motivation refers to the willingness to devote time and to persist in solving difficulties in transferring knowledge. The transfer of knowledge occurs in a social context, and resources and opportunities for transferring it often reside in social relationships (Reagans & McEvily, 2003; Reiche, Harzing, & Kraimer, 2009). In this study, expatriate opportunity seeking refers to the search and utilization of resources and opportunities through social relationships to solve difficulties in transferring knowledge.

### **Mediating Role of Knowledge Received by Subsidiary**

The knowledge transfer process includes both transmission (by expatriates, in this study) and receipt (by subsidiaries) of knowledge (Grant, 1996). One indicator of knowledge transfer success is the amount of knowledge received by a subsidiary from expatriates, which, as we argue, is influenced by expatriate competencies in transferring knowledge. Overall, we propose that the three dimensions of expatriate competencies will increase the knowledge received by the subsidiary, which in turn will enhance subsidiary performance.

Expatriates, as the carriers of knowledge, must cope with the potential difficulties in transferring knowledge (Szulanski, 1996). Given the international context of MNCs and their subsidiaries, the ability to manage and function in new cultural settings is important in the knowledge transfer process (Earley & Ang, 2003; Peng, 2011). This may include people skills such as communication and conflict resolution (Zoogah & Peng, 2011). But expatriates are often selected on the basis of technical skills for performing their own jobs and their experience in their home country (Tung, 1987). Some expatriates may not have the ability to overcome surface-level (e.g., language) and deep-level (e.g., values and learning styles) cultural differences (Van Vianen, De Pater, Kristof-Brown, & Johnson, 2004). Others may not have the skills to teach local employees effectively despite their superior technical skills. This is particularly true when the knowledge being transferred is tacit and embedded in personal experience (Hébert et al., 2005), or the purpose of the transfer is to transform the mind-sets of the recipients at the subsidiary (Tsang, 2001). When expatriates have the ability to solve difficulties in the transfer process, the knowledge received by the subsidiary from expatriates should increase (Peng, 2011).

Motivation has been recognized as an important factor contributing to expatriate effectiveness (Chen, Kirkman, Kim, Farh, & Tangirala, 2010; Ear-

ley & Ang, 2003). Expatriate motivation to pursue the goal of knowledge transfer and to solve difficulties in the process may play a critical role in the successful transfer of knowledge. But cultural differences increase the difficulties in transferring intraorganizational knowledge (Van Wijk et al., 2008). Failing to adjust well to a new culture will tend to reduce motivation if, for example, expatriates become homesick or even clinically depressed. Indeed, some expatriates return home prematurely without completing their assignments because of adjustment difficulties abroad (Black & Gregersen, 1999).

In particular, expatriates may be ill motivated to transfer *tacit* knowledge (Nonaka & Takeuchi, 1995). The transfer of tacit knowledge is difficult and requires significant effort (e.g., extensive interactions with local employees). Also, tacit knowledge is built through years of experience in an MNC and gives expatriates certain advantages (e.g., a position of privilege, power, and superiority). Some expatriates may fear the loss of such advantages upon successfully transferring knowledge (Szulanski, 1996; Wong & Law, 1999). In reality the reward system may not provide sufficient incentive for expatriates to share their knowledge (Fey & Furu, 2008). They may become "out of mind" in the home office (because they are "out of sight"), and be passed over for promotions and recognitions that they deserve (Black & Gregersen, 1999). Prior research suggests that a shared identity (Kane, Argote, & Levin, 2005) and vision (Fey & Furu, 2008) increase knowledge sharing, suggesting that motivation is a potentially important factor underlying knowledge transfer. Overall, we expect that expatriates with stronger motivation will exercise their discretion in solving problems and persist in the transfer process, leading to more knowledge received by the subsidiary from expatriates.

Finally, expatriates' search for and utilization of resources and opportunities through social ties can be critical to the success of knowledge transfer (Argote et al., 2003; Nahapiet & Ghoshal, 1998; Tsai, 2001). Successful knowledge transfer occurs when social ties are established between the source and the recipient that provide a basis for joint problem solving (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Reagans & McEvily, 2003). Individuals can ease transfer difficulties by setting up communication channels, providing opportunities for dialogue, improving situations for team learning, and building informal ties (Argote et al., 2003; Uzzi & Lancaster, 2003; Zoogah, Vora, Richard, & Peng, 2011). Research has shown that social ties between knowledge sources and recipients facilitate knowl-

edge transfer (Hansen, Mors, & Løvås, 2005; Tsai & Ghoshal, 1998).

Transfer of tacit knowledge, in particular, requires extensive interaction (Damanpour, Devece, Chen, & Pothukuchi, 2012; Noorderhaven & Harzing, 2009; Su, Li, Yang, & Li, 2011), the success of which depends on social relationships between the source and the recipient. Social relationships provide expatriates with valuable resources (e.g., trust and cooperation) for solving difficulties and opportunities for tacit knowledge transfer. But expatriates may socialize mainly with fellow expatriates because of the greater ease of interaction (based on shared cultural identity and language). As a result, they may be unable to tap into the resources and opportunities embedded in relationships with local employees. Expatriates also need to build ties with their MNC home office and connect home country ties with host country ties so as to expand within-MNC contacts and opportunities for knowledge transfer (Kostova & Roth, 2003; Reiche et al., 2009). When expatriates seek out and utilize resources and opportunities through social ties to solve difficulties, they may increase the knowledge received by a subsidiary.

So far we have suggested that expatriate ability, motivation, and opportunity seeking to solve difficulties in transferring knowledge increase the knowledge received by a subsidiary. As the knowledge-based view suggests, resources that generate superior value for an organization are those developed within it (Argote & Ingram, 2000). For resources acquired through the competitive market, value to the organization is already reflected in price. Per the knowledge-based view, therefore, internally created and shared organizational knowledge are the primary source of value creation for organizations (Argote & Ingram, 2000; Grant, 1996; Kogut & Zander, 1993).

Subsidiaries can upgrade their knowledge stock through knowledge received from their parent. Because such internal knowledge is often tacit and is transferred through extensive interactions between expatriates and local employees in the subsidiaries, it is more difficult to diffuse to competitors. Such transfer of proprietary technology, repair know-how, and production processes thus may enhance subsidiary performance. For instance, repair know-how increases the productivity of equipment and facilities and therefore enhances return on those investments. The transmission of corporate culture to subsidiaries enhances coordination between headquarters and subsidiaries, which also benefits subsidiary performance (Gong, 2003b). To summarize, we hypothesize:

*Hypothesis 1a. Expatriate ability to transfer knowledge to a subsidiary (i.e., the ability to solve difficulties in the transfer process) has an indirect, positive relationship, via the knowledge received by the subsidiary, with the subsidiary's performance.*

*Hypothesis 1b. Expatriate motivation to transfer knowledge to a subsidiary (i.e., the motivation to solve difficulties in the transfer process) has an indirect, positive relationship, via knowledge received by the subsidiary, with subsidiary performance.*

*Hypothesis 1c. Expatriate opportunity seeking to transfer knowledge to a subsidiary (i.e., the seeking and utilization of resources and opportunities through social ties to solve difficulties in the transfer process) has an indirect, positive relationship, via knowledge received by the subsidiary, with subsidiary performance.*

### **Moderating Role of Subsidiary Absorptive Capacity**

We expect that the mediation relationships in Hypotheses 1a–1c are further moderated by subsidiary absorptive capacity. Absorptive capacity includes four components: (1) identifying and recognizing external knowledge, (2) processing and understanding it, (3) combining it with existing knowledge, and (4) applying the new knowledge to commercial ends (Cohen & Levinthal, 1990; Zahra & George, 2002). Absorptive capacity has been conceptualized and measured as a single construct by many researchers (Cohen & Levinthal, 1990; Gupta & Govindarajan, 2000; Szulanski, 1996). A recent meta-analysis treated absorptive capacity as a single variable in relation to knowledge transfer (obtaining a reliability-corrected mean correlation of .19 [Van Wijk et al., 2008]). In keeping with Cohen and Levinthal (1990), we conceptualize absorptive capacity as one construct, since all components are necessary, and together they influence the extent to which knowledge received by a subsidiary benefits its performance.

Extending the perspective of absorptive capacity, we suggest that knowledge transfer success is facilitated in two ways. First, knowledge transmitted by expatriates is successfully received by the subsidiary to which they have come. Second, knowledge received by the subsidiary from expatriates is integrated with existing routines and applied in subsidiary operations. Subsidiary absorptive capacity represents a *potential* that can be brought to bear upon external new knowledge; it does not refer to actual knowledge received and applied by the sub-

sidary. Given the same amount of knowledge transmitted by expatriates, higher subsidiary absorptive capacity leads to more effective acquisition and application of the knowledge by the subsidiary.

First, subsidiary absorptive capacity may moderate the relationship between expatriate competencies in knowledge transfer and knowledge received by a subsidiary. Knowledge transfer success, first and foremost, requires that knowledge from expatriates be successfully received by the subsidiary. Theory of knowledge management suggests that knowledge transfer success depends on the characteristics of both the source and the recipient (Easterby-Smith et al., 2008; Szulanski, 1996). It is possible that expatriates as sources of knowledge have the competencies to transfer knowledge, but subsidiary employees as recipients do not fully acquire the knowledge because they do not have the prior related knowledge needed to recognize, understand, and process the new knowledge from expatriates (Cohen & Levinthal, 1990). Indeed, prior related knowledge is known to be critical for absorptive capacity and effective knowledge acquisition (Lyles & Salk, 1996; van Wijk et al., 2008). Prior research has also suggested that cultural differences between source and recipient hamper knowledge acquisition (Easterby-Smith et al., 2008; van Wijk et al., 2008). It is possible that subsidiary employees will perceive the knowledge from expatriates to be foreign and less valuable in their local context (i.e., the “not invented here” syndrome [Szulanski, 1996]) and thus will not actively learn from expatriates, leading to less knowledge received or acquired by the subsidiary. The reasoning above suggests that lower (greater) subsidiary absorptive capacity would weaken (strengthen) the relationship between expatriate competencies in knowledge transfer and knowledge received by the subsidiary at which they are working. To sum up, we hypothesize:

*Hypothesis 2a. The relationship between expatriate ability to transfer knowledge to a subsidiary and knowledge received by the subsidiary is stronger when subsidiary absorptive capacity is greater.*

*Hypothesis 2b. The relationship between expatriate motivation to transfer knowledge to a subsidiary and knowledge received by the subsidiary is stronger when subsidiary absorptive capacity is greater.*

*Hypothesis 2c. The relationship between expatriate opportunity seeking to transfer knowledge to a subsidiary and knowledge received*

*by the subsidiary is stronger when subsidiary absorptive capacity is greater.*

Second, a subsidiary's absorptive capacity may also moderate the relationship between the knowledge it received and subsidiary performance. Expatriates represent a small proportion of a subsidiary's workforce, and eventually they will return to headquarters. For knowledge transfer to have a strong and lasting effect on subsidiary performance, the knowledge received from expatriates must become an integral part of the subsidiary's routines guiding its operations. But because of potential conflicts with existing routines, it is possible that the knowledge received will not be fully integrated and applied. Expatriates are often on short-term assignments with a subsidiary and may return to headquarters before the changes take hold. Another reason for the incomplete integration and utilization may lie in the subsidiary's absorptive capacity. Indeed, research suggests that one of the biggest obstacles to successful knowledge transfer resides in the recipient's low absorptive capacity (Szulanski, 1996). When subsidiary absorptive capacity is in place, knowledge from expatriates is combined or integrated with existing knowledge. Such integration creates novel and useful new knowledge (Smith, Collins, & Clark, 2005). This integrative new knowledge is potentially more relevant to the subsidiary and more widely utilized, and thus may deliver a greater performance benefit to it.

The reasoning above suggests that subsidiary absorptive capacity may moderate the influence of knowledge received on subsidiary performance in such a way that the effect is stronger when subsid-

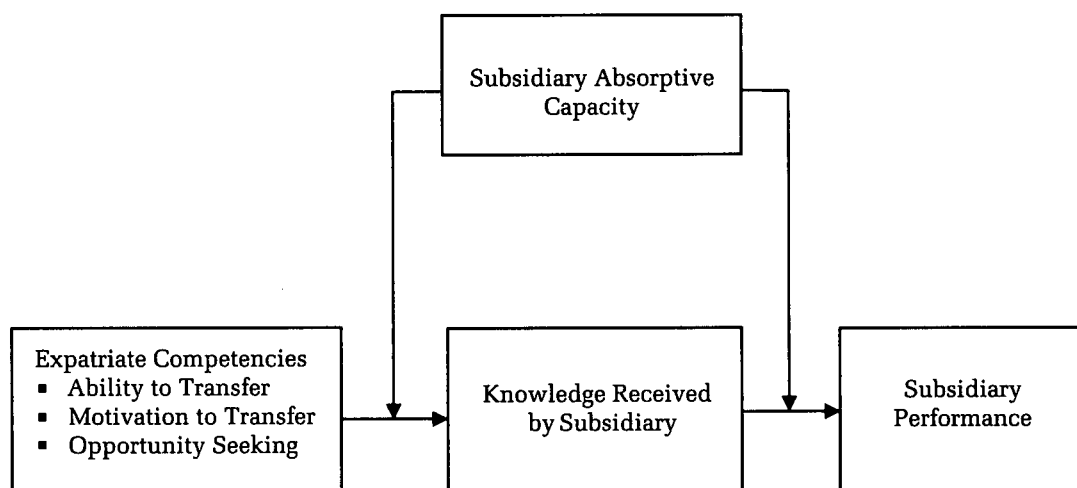
iary absorptive capacity is greater. Prior research has focused on absorptive capacity as an antecedent to knowledge transfer (Gupta & Govindarajan, 2000; Lyles & Salk, 1996; Minbaeva, Pedersen, Bjorkman, Fey, & Park, 2003) but has not examined whether it moderates the relationship between knowledge received and firm performance. Extending prior research, we hypothesize:

*Hypothesis 3. The relationship between knowledge received by a subsidiary and subsidiary performance is stronger when subsidiary absorptive capacity is greater.*

So far our theoretical development suggests that expatriate competencies in knowledge transfer increases knowledge received by the subsidiary to which expatriates have been assigned, which in turn enhances subsidiary performance. Furthermore, subsidiary absorptive capacity moderates the first link (i.e., the relationship between expatriate competencies in knowledge transfer and knowledge received by the subsidiary) and the second link (i.e., the relationship between knowledge received by the subsidiary and subsidiary performance) in the mediation relationship. The combination of the mediating role of knowledge received by a subsidiary and the moderating role of subsidiary absorptive capacity (in both the first and the second links of the mediation relationship) leads to the first-stage and second-stage moderation models (Edwards & Lambert, 2007). Combining the first-stage and second-stage moderation models leads to our integrative model, presented in Figure 1.

The integrative model suggests that knowledge received by a subsidiary from expatriates mediates

**FIGURE 1**  
**Integrative Model**



the relationship between expatriate competencies in knowledge transfer and subsidiary performance, and this mediation effect is stronger when subsidiary absorptive capacity is greater. In other words, the strength of the mediated relationship between expatriate competencies in knowledge transfer and subsidiary performance (through knowledge received by the subsidiary) varies depending on the subsidiary's absorptive capacity, and the indirect effect is stronger when this capacity is greater. Formally, we present three summary hypotheses:

*Hypothesis 4. The indirect relationship between expatriate ability to transfer knowledge to a subsidiary and the subsidiary's performance that is attributable to knowledge received is stronger when subsidiary absorptive capacity is greater.*

*Hypothesis 5. The indirect relationship between expatriate motivation to transfer knowledge to a subsidiary and the subsidiary's performance that is attributable to knowledge received is stronger when subsidiary absorptive capacity is greater.*

*Hypothesis 6. The indirect relationship between expatriate opportunity seeking to transfer knowledge to a subsidiary and the subsidiary's performance that is attributable to knowledge received is stronger when subsidiary absorptive capacity is greater.*

## METHODS

### Sample and Procedure

We contacted 181 British subsidiaries of 181 Taiwanese MNCs to participate in the study. These were identified through the Taiwanese Foreign Trade Council in London, the Financial Analysis Made Easy (FAME) database, and the website of the British Council's Taipei office. Each of these MNCs operated a single subsidiary—for reasons including cost control and financial concerns—to penetrate and serve the U.K. market only. In early 2009, we sent out surveys to the subsidiaries, together with a letter supporting the study by the CEO of each parent firm. Participants had four weeks to complete the survey and were promised a summary report of the study's findings. After three rounds of reminders, 162 subsidiaries had responded, representing an 89.5 percent response rate. On average, the subsidiaries had been in operation for 14 years. The majority operated in the information technology and computer-related sectors.

We obtained data from three sources. The first was 324 expatriates, 2 in each subsidiary, chosen

randomly from a list provided by the subsidiary's parent firm. Only 2 were selected because the expatriate interviewees indicated that they generally knew each other well within their own subsidiaries, and also because it was difficult to get more expatriates from the same subsidiary to participate in the survey. These participants were told the study's purpose and were asked to rate the knowledge transfer competencies of expatriates in their own subsidiaries. The second source comprised 324 local managers: one human resources (HR) manager and one line manager from each subsidiary. These participants rated the absorptive capacity of subsidiary employees (excluding expatriates) and knowledge received from expatriates. Most expatriates and local managers were key technical and executive personnel (e.g., chief engineer, and managing director), so they had adequate information to allow them to respond to the questions. The third data source was the FAME and the *Taiwan Economic Journal (TEJ)* databases, from which we obtained objective subsidiary performance data for fiscal year 2009–10.

We checked the representativeness of the final sample. First, respondents were divided into two subsamples: the earlier responses from 1 to 162 and the later responses from 163 to 324. These subsamples were compared on the basis of the hypothesis that those who responded late might be more similar to those who did not respond than to those who responded earlier (Armstrong & Overton, 1977). Comparison on dimensions including subsidiary years of operation and number of employees revealed no significant difference.

Because data for expatriate competencies in knowledge transfer, knowledge received by a subsidiary from expatriates, and subsidiary performance were obtained from three separate sources, the test for the mediation relationships were not susceptible to common method bias. One of our interests was in the moderating effect of subsidiary absorptive capacity on the mediation relationships, and such moderating effect also is not susceptible to common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Nevertheless, we took measures to minimize the potential risk of such bias, because subsidiary absorptive capacity (the proposed moderator) and knowledge received (the proposed mediator) were both rated by the local managers. First, when designing the survey we followed suggestions by previous researchers such as conducting on-site interviews and a pilot study to avoid item ambiguity, minimizing the survey's length, providing clear instructions about completing the survey, and offering confidentiality and anonymity to the respondents (Podsakoff et al., 2003).



Second, we subjected subsidiary absorptive capacity and knowledge received measures to confirmatory factor analyses (CFAs). The fit of the two-factor model ( $\chi^2 = 47.58$ ,  $df = 7$ ,  $p < .01$ , RMSEA = .08, CFI = .90, GFI = .88, TLI = .89) was significantly better than that of the one-factor model ( $\chi^2 = 82.28$ ,  $df = 6$ ,  $p < .01$ , RMSEA = .92, CFI = .37, GFI = .49, TLI = .37;  $\Delta\chi^2 = 34.7$ ,  $\Delta df = 1$ ,  $p < .01$ ).

Third, we compared a measurement model with a latent method factor model (Kulik, Cregan, Metz, & Brown, 2009; Podsakoff et al., 2003). To facilitate nested model comparison, we included a method factor (variance set to 1) in both models. Items in both models were allowed to load on their respective theoretical constructs. However, item loadings on the latent method factor were constrained to zero in the measurement model, but free to vary in the latent method factor model. The latent method factor model generated a good fit ( $\chi^2 = 123.65$ ,  $df = 19$ ,  $p < .01$ , RMSEA = .04, CFI = .94, GFI = .94, TLI = .92). Our model comparison indicated that the latent method factor model did improve fit:  $\Delta\chi^2 = 182.47$ ,  $\Delta df = 19$ ,  $p < .01$ . Because the chi-square difference test is vulnerable to sample size, Bryne (2001) recommended the CFI difference between models as an indicator of practical significance. The CFI difference between our two models was .03, less than the .05 level suggested by Bagozzi and Yi (1990). Furthermore, the method factor explained only 10.8 percent of the total study variance, which is less than the median amount of method variance (25%) observed in the literature (Williams, Cote, & Buckley, 1989). Therefore, we concluded that common method bias was not a significant concern in this study.

## Measures

Before the survey data collection, we conducted qualitative interviews to develop measures and to generate contextual information about the subsidiaries and the expatriates. Specifically, one author interviewed (in Chinese) 60 expatriates (on assignments ranging in length from two to four years) from 60 Taiwanese MNCs operating in the U.K. These expatriates were from a variety of different functions. Some were interviewed twice to clarify certain points. The expatriates indicated that their subsidiaries mainly played the "implementor" role identified by Gupta and Govindarajan (1991), operating with high knowledge inflow and low knowledge outflow, and many were not mature yet. These subsidiaries thus relied on parent firms for key resources such as personnel and knowledge. Most subsidiaries performed manufacturing and service functions. To ensure compliance with standards

from headquarters and to deliver products and services to U.K. customers on time, there was a strong need to transfer production and repair know-how. Another example was the need to transfer corporate culture (e.g., cost consciousness and loyalty toward the parent firm). All interviewees indicated they were involved in knowledge transfer, although some also had the purposes of developing their careers and filling positions. For example, those filling key positions in subsidiaries also indicated that they were involved in knowledge transfer because subsidiary employees were expected to master parent knowledge and to eventually take over the positions.

To develop context-sensitive measures, we asked interviewees about expatriate competencies critical for knowledge transfer, the major barriers in the process, and the ways to overcome the barriers. The interviewer took extensive notes and reiterated the interviewees' comments explicitly to verify their actual meaning during the interviews. After transcribing all the interview data, we coded the data into categories guided by the ability-motivation-opportunity framework (Blumberg & Pringle, 1982; Campbell et al., 1993) and prior research on expatriation and/or knowledge transfer (Hansen et al., 2005; Kostova & Roth, 2002; Reagans & McEvily, 2003; Szulanski, 1996; Wong & Law, 1999). One author independently coded the interview notes. To assess the reliability of the coding, a second coder with extensive qualitative research experience checked and coded all the interview data using standardized coding instructions. We compared the coding and found intercoder agreement ( $\kappa$ ; Cohen, 1960) of .86. Three major categories emerged: expatriate ability, motivation, and opportunity seeking to solve difficulties in the knowledge transfer process. All interviewees commented that expatriates must possess functional knowledge and people skills to tackle problems in this process. One interviewee commented:

An expatriate must possess strong functional expertise to deal with barriers or problems in the transfer process. This can gain credibility in the eyes of local employees.

Another interviewee said:

We have to be competent in terms of establishing social connections with the local staff in order to deal with existing and potential difficulties.

The finding about the need for expatriate people skills echoes Wong and Law's (1999) finding that expatriates need such skills to build the long-term and in-depth relationships with local employees necessary to have successful localization, defined



as “the development of job-related skills within the local population and the delegation of decision-making authority to local employees, with the final objective of replacing expatriate managers with local employees” (1999: 34). Ninety-nine percent of the interviewees indicated that it is critical to be willing to overcome barriers in knowledge transfer. Major barriers revealed in the interviews included cultural differences in coaching and learning and the fear of losing power or even jobs upon successful knowledge transfer. All of the expatriates mentioned that it is critical to seek and utilize opportunities through social ties to boost trust and cooperation. This is consistent with prior research showing that informal social ties are critical for knowledge sharing (Hansen et al., 2005; Reagans & McEvily, 2003; Reiche et al., 2009). As one interviewee reported:

Expatriates have to establish social relationships to reduce distrust among the parent, expatriates, and local employees and to create opportunity for knowledge transfer.

Another interviewee commented:

Some expatriates faced difficulties in transferring repair-related skills from the parent because they were unable to utilize social relationships to persuade local staff to accept such skills.

The qualitative interviews aided the development of measures because prior research has not provided measures specifically for expatriate competencies in knowledge transfer. Prior research has focused on a source's (interviewee's) knowledge and technical skills per se (Szulanski, 1996; Wang, Tong, Chen, & Kim, 2009) or on social ties of the source as contributors to knowledge transfer (Hansen et al., 2005; Reagans & McEvily, 2003). Similarly, prior research has examined the motivations for a variety of tasks (e.g., test-taking motivation in Arvey, Strickland, Drauden, and Martin [1990]; motivation to learn in Colquitt and Simmering [1998]), but not for the task of knowledge transfer by expatriates. They did not account for barriers in expatriate knowledge transfer either.

After the interviews, one of the authors developed survey items for expatriate competencies in knowledge transfer—two for ability, five for motivation, and two for opportunity seeking. Items were developed in English and based on concept definitions, interviews, and prior research. An individual fluent in both Chinese and English independently translated the items into Chinese, and a third individual (also bilingual) then translated the Chinese version back into English (Brislin, 1980). The Chinese version was then sent to 20 Taiwanese expa-

triates. These expatriates were asked to assign each item to its intended construct—expatriate ability, motivation, or opportunity seeking in knowledge transfer—and to comment on the clarity of the items. All nine items passed the screening (i.e., at least 75 percent of the respondents correctly assigned each item [Hinkin, 1998]). We revised the items for clarity in light of this feedback. We next describe the final items together with a quantitative assessment of the validity of the measures. Responses in the final survey were on a seven-point scale for all measures except subsidiary performance.

**Expatriate ability.** During the interviews, some expatriates indicated that they had been chosen because they had the functional knowledge, skills, and experience needed to tackle difficulties in knowledge transfer. We drew on the pilot study and prior research (Szulanski, 1996; Wong & Law, 1999) to develop two items measuring expatriate ability in knowledge transfer. In the final survey, we stated that the survey items targeted expatriates sent by an MNC parent to the subsidiary where they were working and asked the expatriates to rate the extent to which the items accurately described expatriates as a whole in the subsidiary: (a) “Possess superior managerial (people) competencies (knowledge, skills, and experience) to solve difficulties in the knowledge transfer process” and (b) “Possess superior functional competencies (knowledge, skills, and experience) to solve difficulties in the knowledge transfer process” ( $\alpha = .79$ ). We checked within-group agreement ( $r_{wg}$ ) between the expatriates (James, Demaree, & Wolf, 1993). Because the mean was .80, higher than the .70 level (George & Bettenhausen, 1990), we aggregated expatriates' ratings.

**Expatriate motivation.** Interviewees suggested that as expatriates, they were willing to deal with cultural difficulties and not afraid of losing power in transferring knowledge to foreign employees. We drew on the pilot study and prior research (Colquitt & Simmering, 1998; Szulanski, 1996; Wong & Law, 1999) to develop five items measuring expatriate motivation for knowledge transfer. In the final survey, we stated that the survey items targeted expatriates sent by their MNC parent to the subsidiary where they were working and asked the expatriates to rate the extent to which the items accurately described expatriates as a whole in the subsidiary: (a) “Are not afraid of losing power and control to solve difficulties to transfer knowledge to subsidiary employees,” (b) “Are willing to solve difficulties to transfer parent knowledge to subsidiary employees,” (c) “Are willing to cope with cultural differences to transfer knowledge to subsidiary em-

employees," (d) "Are willing to devote time to solve difficulties to transfer parent knowledge to subsidiary employees," and (e) "Are willing to make persistent efforts to solve difficulties to transfer parent knowledge to subsidiary employees" ( $\alpha = .86$ ). The statements were consistent with the common definition of motivation and captured its key components (i.e., direction, intensity, and persistence) (Blumberg & Pringle, 1982; Kanfer, 1990; Mitchell, 1997) while reflecting the expatriate knowledge transfer context. The mean  $r_{wg}$  was .83. We thus aggregated the expatriates' ratings.

**Expatriate opportunity seeking.** Some of the expatriates commented that they actively searched for opportunities through informal interactions with local employees to convince the locals to adopt parent production and quality control knowledge. Two items were developed for expatriate opportunity seeking for knowledge transfer based on the pilot study and prior research (Hansen et al., 2005; Kostova & Roth, 2002; Reagans & McEvily, 2003). In the final survey, we stated that the survey items targeted expatriates sent by the MNC parent to the subsidiary where they was working, and asked the expatriates to rate the extent to which the items accurately described expatriates as a whole in the subsidiary: (a) "Seek opportunities through social relationships to solve difficulties in the knowledge transfer process," and (b) "Utilize social ties to generate trust and cooperation to solve difficulties in the knowledge transfer process" ( $\alpha = 0.81$ ). The mean  $r_{wg}$  exceeded .70. We also aggregated the expatriates' ratings.

We subjected expatriate ability, motivation, and opportunity seeking measures to CFA analyses. The three-factor model ( $\chi^2 = 5.6$ ,  $df = 2$ ,  $p < .01$ , RMSEA = .06, CFI = .98, GFI = .98, TLI = .90) fit better than all the alternative models (i.e., three two-factor models and a one-factor model). For instance, the three-factor model fit better than the one-factor model ( $\Delta\chi^2 = 121.27$ ,  $\Delta df = 4$ ,  $p < .01$ ). We thus concluded that the three dimensions were distinct from each other. We also ran a second-order factor analysis in which the three factors at the first level were assumed to reflect a second-level latent factor, and this had a poor fit ( $\chi^2 = 46.02$ ,  $df = 5$ , RMSEA = .12, CFI = .80, GFI = .82, TLI = .80). We conducted a further validation study and the results (see the Appendix) also supported the validity of the measures.

During the pilot interviews, the expatriates indicated that they knew each other well within their own subsidiaries. They had formal or informal meetings. For example, expatriates from one subsidiary had formal daily meetings to discuss the difficulties they faced in transferring parent knowl-

edge and the potential solutions to these difficulties. Expatriates from another subsidiary organized regular informal social gatherings at different expatriates' homes. The expatriate group was relatively small (minimum = 2, median = 7, maximum = 17, and about 76 percent of subsidiaries had 10 or fewer expatriates). The small sizes made formal or informal interactions among the expatriates easier. Nevertheless, we did a further check to ascertain whether the expatriates knew each other well and were able to rate fellow expatriates from their own subsidiaries. Specifically, we contacted 30 randomly selected expatriates after the completion of the main study and asked them (a) to list the names of the other expatriates in his or her own subsidiary and (b) to rate the extent to which he or she was familiar with the competencies (ability, motivation, and opportunity seeking) of the listed expatriates in knowledge transfer to the subsidiary (1 = "not at all," to 5 = "very familiar"). Twenty-eight expatriates responded. We compared the list of names provided by each expatriate with that provided by the headquarters and found a 100 percent match. For item b, 96.5 percent of the respondents gave a rating of 5. It appeared that the expatriates in each subsidiary did know each other well.

**Knowledge received.** One indicator of the success of expatriate knowledge transfer is the knowledge actually received by the subsidiary from expatriates. The extent to which expatriates transferred knowledge is a function of knowledge transmission behavior, but the extent to which the subsidiary at which the expatriates worked received knowledge as rated by local managers reflects an external evaluation of such behavior. We measured knowledge received by a subsidiary with seven items ( $\alpha = .87$ ). These items were taken from prior research (Gupta & Govindarajan, 2000; Lyles & Salk, 1996) and then modified in light of our interview findings to better capture the operating activities of Taiwanese MNCs in the U.K. We asked local managers to indicate the amount of knowledge that their subsidiaries received from expatriates in the following areas: (a) technological know-how and skills, (b) repair-related know-how and skills, (c) quality control know-how and skills, (d) product-related know-how and skills, (e) managerial know-how and skills, (f) knowledge about corporate culture, and (g) human resource management know-how and skills. We conducted a CFA to examine the discriminate validity of knowledge received by the subsidiary and expatriate ability, motivation, and opportunity seeking. The four-factor model fit the data well ( $\chi^2 = 8.67$ ,  $df = 2$ ,  $p < .01$ , RMSEA = .06, CFI = .98, GFI = .97, TLI = .93) and far better than the one-factor model ( $\Delta\chi^2 = 232.76$ ,

$\Delta df = 8$ ,  $p < .01$ ; RMSEA = .15, CFI = .62, GFI = .67, TLI = .63). The mean  $r_{wg}$  for knowledge received was .78, so the local managers' ratings were again aggregated.

**Subsidiary absorptive capacity.** During the interview, some expatriates expressed the idea that to achieve productivity targets, they should not only focus on their own abilities, but also pay attention to how to improve the ability of the local staff to absorb and apply the knowledge. We measured subsidiary absorptive capacity using six items adapted from Jansen, Van Den Bosch, and Volberda (2005), asking local managers to indicate the extent to which the following statements accurately described their subsidiary's employees (excluding expatriates): (a) "Have the ability to acquire new knowledge from the parent company to achieve targets," (b) "Have a vision of what the subsidiary is trying to achieve through the transfer of knowledge from the parent company," (c) "Have the technical competency to absorb the knowledge from the parent company," (d) "Have the necessary skills to implement the practices from the parent company," (e) "Have the ability to convert knowledge or the practices from the parent company," and (f) "Have the ability to exploit new knowledge or practices from the parent company" ( $\alpha = .87$ ). We conducted an exploratory factor analysis. The results indicated a one-factor solution with all loadings at .85 or higher. CFA results indicated that the one-factor model fit the data well ( $\chi^2 = .89$ ,  $df = 2$ , RMSEA = .01, CFI = .98, GFI = .99, TFI = .97). The mean  $r_{wg}$  was .82, so the local managers' ratings were aggregated.

**Subsidiary performance.** We obtained two objective subsidiary performance measures—return on investment (ROI) and return on equity (ROE) for fiscal year 2009–10—from the FAME and TEJ databases. This gave a one-year time lag with the measures of expatriate competencies, subsidiary absorptive capacity, and knowledge received by subsidiary. Theoretically, knowledge has been viewed as a key input for production. Knowledge received by a subsidiary should increase the utilization efficiency of facilities, equipment, and so forth, and therefore boost the returns derived from them.

**Control variables.** First, we controlled for *subsidiary age* (years of operation in the U.K.), because older subsidiaries may have better-developed relationships with their parent and thus better knowledge transfer (Fey & Furu, 2008). Second, we controlled for *subsidiary size* (number of subsidiary employees), following past research (Gupta & Govindarajan, 2000). We used the log transformation of size in hypotheses testing. Third, we controlled for

MNC *parent age* (years of operation) and *size* (the logarithm of the number of employees) (Van Wijk et al., 2008). Fourth, we controlled for *subsidiary industry sector* using a dummy variable. The majority (85%) of subsidiaries were from the IT and electronic components industry (coded 1), and others (15%) were from miscellaneous industries (coded 0). Fifth, we controlled for the *number of expatriates* working at a given subsidiary because it may affect knowledge transfer and subsidiary performance. We used the log transformation of number of expatriates in hypotheses testing. Finally, we controlled for *subsidiary function*: 84 percent of the sample subsidiaries performed manufacturing and repair functions (coded 1) to serve U.K. customers, and 16 percent performed other functions (coded 0). We did not control for equity ownership since all the subsidiaries were wholly owned. Finally, because we focused on subsidiaries from a single home country operating in a single host country, we did not include home- or host-country-specific factors or measures of cultural and institutional distance, as prior studies have done (Fang et al., 2010; Gaur et al., 2007; Gong, 2003a).

## RESULTS

Table 1 presents descriptive statistics and correlations. Expatriate ability ( $r = .45$ ,  $p < .01$ ), motivation ( $r = .25$ ,  $p < .01$ ), and opportunity seeking ( $r = .42$ ,  $p < .01$ ), the three dimensions of expatriate competencies in knowledge transfer, were all positively related to knowledge received by subsidiary. They were also positively related to subsidiary performance. Subsidiary absorptive capacity was positively related to subsidiary performance (ROI,  $r = .24$ ,  $p < .01$ ; ROE,  $r = .23$ ,  $p < .01$ ). Knowledge received by subsidiary was likewise positively related to subsidiary performance (ROI,  $r = .37$ ,  $p < .01$ ; ROE,  $r = .20$ ,  $p < .01$ ).

We tested the hypotheses following Edwards and Lambert's (2007) procedure, which integrates moderated regression analysis and path analysis to comprehensively analyze simultaneous moderation and mediation. The procedure permits simultaneous examination of first-stage (between expatriate competencies and knowledge received), second-stage (between knowledge received and subsidiary performance), direct (between expatriate competencies and subsidiary performance), indirect (through knowledge received), and total effects at a particular level of the moderator (subsidiary absorptive capacity).

A one-step regression was first conducted for the mediator, in which the following variables were entered: expatriate competencies (ability, motiva-

TABLE 1  
Means, Standard Deviations, and Correlations<sup>a</sup>

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Subsidiary age	14.30	7.86													
2. Subsidiary size	78.81	69.56	.15*												
3. MNC parent age	27.19	8.29	-.00	.12											
4. MNC parent size	2,935	4,131	-.21**	-.07	.08										
5. Subsidiary industry	0.85	0.35	.21**	.10	.11	-.11									
6. Number of expatriates	8.74	3.61	.13	.06	-.03	-.03	-.06								
7. Subsidiary function	0.84	0.36	.22**	.01	-.02	-.08	.05	-.02							
8. Expatriate ability	4.52	1.48	.33**	.30**	.04	-.17*	.28	.05	.27**						
9. Expatriate motivation	5.10	1.32	.27**	.21**	.10	-.02	-.19*	-.04	.05	.20**					
10. Expatriate opportunity seeking	4.70	1.29	.32**	.36**	.04	-.13	.11	.04	.11	.29**	.35**				
11. Subsidiary absorptive capacity	5.37	0.74	.16*	-.12	.01	-.06	.08	.02	.07	.25**	.32**	.36**			
12. Knowledge received	5.03	0.73	-.05	.03	-.08	.10	-.40**	-.01	.05	.45**	.25**	.42**	.41**		
13. Subsidiary return on investment	0.72	0.63	.03	.02	.09	-.02	.09	-.12	-.12	.21**	.28**	.35**	.24**	.37**	
14. Subsidiary return on equity	0.53	0.32	-.03	-.01	.07	.06	-.05	.04	-.04	.17*	.19*	.16*	.23**	.20**	.23**

<sup>a</sup>  $n = 162$ . Mean and standard deviations for subsidiary age, subsidiary size, MNC parent age, MNC parent size, number of expatriates, and subsidiary performance are based on raw data.

\*  $p < .05$

\*\*  $p < .01$

tion, opportunity seeking), subsidiary absorptive capacity, and expatriate competencies by subsidiary absorptive capacity interactions, as captured by the following equation:

$$M = a_{05} + a_{X5}X + a_{Z5}Z + a_{XZ5}XZ + e_{M5}, \quad (1)$$

where  $X$  is expatriate ability, motivation, and opportunity seeking;  $Z$  is subsidiary absorptive capacity;  $XZ$  is expatriate competencies times subsidiary absorptive capacity; and  $M$  is knowledge received. To avoid potential multicollinearity, we centered the variables and computed the interaction terms as a product of the centered scores on the component variables in all analyses. Control variables were included in all regression analyses unless specified otherwise.

A one-step regression was also conducted for the dependent variable (ROI or ROE), in which the following variables were entered: expatriate competencies (ability, motivation, and opportunity seeking), subsidiary absorptive capacity, expatriate competencies by subsidiary absorptive capacity interactions, knowledge received, and knowledge received by subsidiary absorptive capacity interactions, as captured by the following equation:

$$Y = b_{020} + b_{X20}X + b_{M20}M + b_{Z20}Z + b_{XZ20}XZ + b_{MZ20}MZ + e_{Y20}, \quad (2)$$

where  $X$  is expatriate ability, motivation, and opportunity seeking;  $Z$  is subsidiary absorptive capacity;  $XZ$  is expatriate competencies times subsidiary absorptive capacity;  $M$  is knowledge received;  $MZ$  is knowledge received times subsidiary absorptive capacity; and  $Y$  is subsidiary performance (ROI

or ROE). Substituting Equation 1 into Equation 2 gives Equation 3:

$$Y = [b_{020} + b_{Z20}Z + (a_{05} + a_{Z5}Z)(b_{M20} + b_{MZ20}Z)] \\ + [(b_{X20} + b_{XZ20}Z) + (a_{X5} + a_{XZ5}Z)(b_{M20} + b_{MZ20}Z)]X \\ + e_{Y20} + b_{M20}e_{M5} + b_{MZ20}Ze_{M5} \quad (3)$$

In Equation 3, the direct effect of  $X$  (expatriate ability, motivation, opportunity seeking) on  $Y$  (subsidiary performance) corresponds to the term  $b_{X20} + b_{XZ20}Z$ , which varies by  $Z$  (subsidiary absorptive capacity). The indirect effect of  $X$  on  $Y$  corresponds to  $(a_{X5} + a_{XZ5}Z)(b_{M20} + b_{MZ20}Z)$ , which also varies by  $Z$ . The term  $(a_{X5} + a_{XZ5}Z)$  captures the first-stage moderation of the indirect effect, and the term  $(b_{M20} + b_{MZ20}Z)$  captures the second-stage moderation of that effect.

Table 2 presents the regression results. We then entered the coefficient estimates from regression analyses (Equations 1 and 2) in Edwards and Lambert's (2007) constrained nonlinear regression (CNLR) module to produce, via bootstrapping, unstandardized coefficient estimates and bias-corrected confidence intervals (for the significance test) for the simple effects of each path at selected levels of subsidiary absorptive capacity. We also did the same for difference comparisons of the simple effects of each path at various levels of subsidiary absorptive capacity. To take into account control variables, we obtained the average effects for the control variables and added these values to the constant before testing the substantive effects. We used one standard deviation above or below the

TABLE 2  
Coefficient Estimates<sup>a</sup>

Predictors	Dependent Variables		
	Knowledge Received	Return on Investment	Return on Equity
Subsidiary age	.02	.00	.00
Subsidiary size	.00	.01	.01
MNC parent age	-.01	.12	-.02
MNC parent size	.02	-.04	-.01
Subsidiary industry	-.02	-.15	-.04
Number of expatriates	-.01	.01	.00
Subsidiary function	.00	.02	.00
Expatriate ability	.49**	.34**	.29**
Expatriate motivation	.29**	.31**	.28**
Expatriate opportunity seeking	.21**	.28**	.26**
Subsidiary absorptive capacity	.57**	.67***	.74***
Knowledge received		.44**	.35**
Expatriate ability × subsidiary absorptive capacity	.63**	-.15	-.16
Expatriate motivation × subsidiary absorptive capacity	.42**	-.13	-.15
Expatriate opportunity seeking × subsidiary absorptive capacity	.23**	-.14	-.18
Knowledge received × subsidiary absorptive capacity		.30**	.35**
R <sup>2</sup>	.37**	.35**	.29**

<sup>a</sup>  $n = 162$ . Entries under the column labeled knowledge received are unstandardized coefficient estimates from Equation 1. Entries under the columns labeled return on investment and return on equity are unstandardized coefficient estimates from Equation 2.

\*\*  $p < .01$

\*\*\*  $p < .001$

mean to indicate a high or low level of absorptive capacity (Aiken & West, 1991).

Table 3 presents the results for the simple effect paths at different levels of subsidiary absorptive capacity with ROI as the dependent variable ( $Y$ ). For the expatriate ability path, the indirect effect was .51 ( $p < .01$ ) at high subsidiary absorptive capacity,  $-.15$  ( $p < .01$ ) at low subsidiary

absorptive capacity, and the difference was significant ( $.51 - [-.15] = .66$ ,  $p < .01$ ). The results thus suggested that the indirect effect of expatriate ability on ROI, through knowledge received, was stronger at higher absorptive capacity. Among other findings, the second-stage moderation, which applies to the second stage of the indirect effect, was significant ( $.61 - [-.26] = .87$ ,

TABLE 3  
Simple Effects of Expatriate Competencies at High and Low Levels of Subsidiary Absorptive Capacity and via Knowledge Received<sup>a</sup>

Independent Variable	Subsidiary Absorptive Capacity	Stage		Effect		
		First	Second	Direct	Indirect	Total
Expatriate ability	High	.85**	.61**	.06	.51**	.57*
	Low	.32**	-.26**	-.18	-.15**	-.33*
	Difference	.53**	.87**	.24	.66**	.90*
Expatriate motivation	High	.53**	.60**	.06	.31**	.37*
	Low	.21*	-.26**	-.18	-.05**	-.23*
	Difference	.32**	.86**	.24	.36**	.60*
Expatriate opportunity seeking	High	.30**	.61**	.05	.18**	.23*
	Low	.11**	-.26**	-.13	-.02**	-.15*
	Difference	.19**	.87**	.18	.20**	.38*

<sup>a</sup>  $n = 162$ . Tests of differences for the first stage and second stage are equivalent to tests of  $a_{XZ}$  and  $b_{MZ}$ , respectively. Tests of differences for the indirect and total effects were based on bias-corrected confidence intervals derived from bootstrap estimates. Subsidiary return on investment was the dependent variable, subsidiary absorptive capacity was the moderator, and knowledge received was the mediator.

\*  $p < .05$

\*\*  $p < .01$

$p < .01$ ), suggesting that knowledge received from expatriates benefits subsidiary ROI more at higher subsidiary absorptive capacity. The first-stage moderation, which applies to the first stage of the indirect effect, was also significant ( $.85 - .32 = .53, p < .01$ ).

For the expatriate motivation path, the indirect effect was .31 ( $p < .01$ ) at high subsidiary absorptive capacity,  $-.05$  ( $p < .01$ ) at low subsidiary absorptive capacity, and the difference was significant ( $.31 - [-.05] = .36, p < .01$ ). The results thus suggest that the indirect effect of expatriate motivation on ROI is stronger when subsidiary absorptive capacity is greater. Among other findings, the second-stage moderation was significant ( $.60 - [-.26] = .86, p < .01$ ), indicating that knowledge received benefits subsidiary ROI more when subsidiary absorptive capacity is higher. The first-stage moderation was also significant ( $.53 - .21 = .32, p < .01$ ). Finally, for expatriate opportunity seeking, there was a significant difference in the indirect effects at high versus low subsidiary absorptive capacity. The results indicate that the indirect effect of expatriate opportunity seeking on subsidiary ROI is stronger at higher subsidiary absorptive capacity. Similarly, both the first-stage and the second-stage moderations were significant.

Table 4 presents the simple effect paths at different levels of subsidiary absorptive capacity with ROE as the dependent variable ( $Y$ ). The pattern of results is similar to that for ROI. The indirect effects of expatriate competencies in knowledge transfer

on subsidiary ROE through knowledge received are stronger at higher subsidiary absorptive capacity. Again, both the first-stage and the second-stage moderations were significant. For instance, knowledge received benefits subsidiary ROE more at higher subsidiary absorptive capacity (i.e., the second-stage moderation). Overall, our hypotheses were supported.

So far we have focused on the most general model, the total effect moderation, which "combines moderation of the first and second stages of indirect effect with moderation of the direct effect" (Edwards & Lambert, 2007: 11). We also compared four alternative models: (1) the first-stage model, in which the mediation relationship is moderated at the first stage of the indirect effect, (2) the second-stage model, in which the mediation relationship is moderated at the second stage of the indirect effect, (3) the hypothesized first- and second-stage model, in which the mediation relationship is moderated at both the first and the second stages of the indirect effect, and (4) the total effect moderation. We conducted nested model comparison by computing a generalized  $R^2$  from the regression  $R^2$ -values and comparing it with a  $Q$ -statistic (Pedhauzer, 1982; Tepper, Henle, Lambert, Giacalone, & Duffy, 2008), calculated as:

$$Q = (1 - R^2_{G \text{ more restricted}}) / (1 - R^2_{G \text{ less restricted}}) \quad (4)$$

where  $R^2_{G \text{ more restricted}}$  refers to the generalized  $R^2$  for the more restricted model, and  $R^2_{G \text{ less restricted}}$  refers to the generalized  $R^2$  for the less restricted

**TABLE 4**  
Simple Effects of Expatriate Competencies at High and Low Levels of Subsidiary Absorptive Capacity and via Knowledge Received<sup>a</sup>

Independent Variable	Subsidiary Absorptive capacity	Stage		Effect		
		First	Second	Direct	Indirect	Total
Expatriate ability	High	.85**	.55**	.08	.46**	.54*
	Low	.32**	-.47**	-.19	-.15**	-.34*
	Difference	.53**	1.02**	.27	.61**	.88*
Expatriate motivation	High	.53**	.55**	.06	.29**	.35*
	Low	.21**	-.47**	-.14	-.09**	-.23*
	Difference	.32**	1.02**	.20	.38**	.58*
Expatriate opportunity seeking	High	.30**	.55**	.04	.16**	.20*
	Low	.11**	-.37**	-.13	-.04**	-.17*
	Difference	.19**	.92**	.17	.20*	.37*

<sup>a</sup>  $n = 162$ . Tests of differences for the first stage and second stage are equivalent to tests of  $a_{XZ}$  and  $b_{MZ}$ , respectively. Tests of differences for the indirect and total effect were based on bias-corrected confidence intervals were derived from bootstrap estimates. Subsidiary return on equity was the dependent variable, subsidiary absorptive capacity was the moderator, and knowledge received was the mediator.

\*  $p < .05$

\*\*  $p < .01$

model. The significance of  $Q$  was evaluated with the formula  $W = -(N - d)\log_e Q$ , where  $W$  is a statistic with chi-square distribution,  $N$  and  $d$  are the sample size and the number of restrictions imposed by the more restricted model when compared to the less restricted model, respectively, and  $\log_e$  is the natural logarithm.

Comparisons among the models suggested that the generalized variance explained by models 3 and 4 ( $R^2_G = .31$ ) differed from the variance explained by model 1 ( $R^2_G = .28$ ;  $Q = .93$ ,  $W = 1.34$ ,  $d = 1$ ,  $p < .05$ ) and model 2 ( $R^2_G = .28$ ;  $Q = .93$ ,  $W = 1.34$ ,  $d = 1$ ,  $p < .05$ ). Hence, the predictive power of models 3 and 4 was superior to that of models 1 and 2. There was no difference in the variance explained by models 3 and 4 ( $R^2_G = .31$ ;  $Q = .98$ ,  $W = 1.41$ ,  $d = 1$ , n.s.), suggesting that adding a path representing moderation of the direct effect did not improve the predictive power of model 3. We conducted the same analyses for ROE and obtained the same pattern of results. Model 3 was therefore preferred. The conditional indirect effects of expatriate opportunity seeking in the full model (with both stages of moderation) are plotted in Figures 2 and 3. Figures for the conditional indirect effects of expatriate ability and motivation are available upon request.

## DISCUSSION

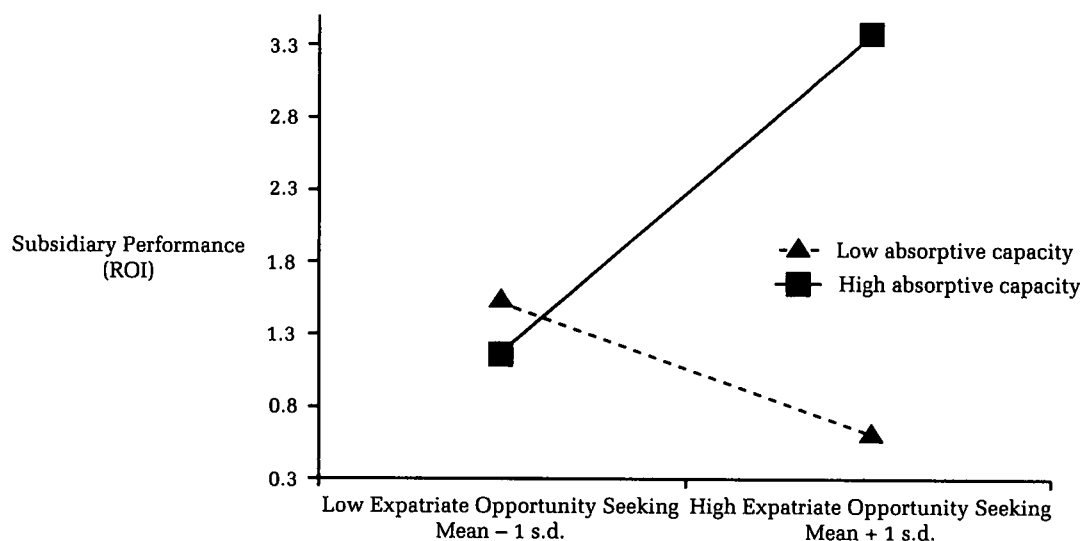
In this study, we theoretically identified three dimensions of expatriate competencies—ability, motivation, and opportunity seeking—for knowledge transfer and empirically showed that they

were distinct both from each other and from knowledge received by a subsidiary. Expatriate competencies in knowledge transfer enhanced subsidiary performance through knowledge received by the subsidiary, and this indirect effect was stronger when subsidiary absorptive capacity was higher. The moderation of the indirect effect manifested itself in two ways. First, knowledge received by the subsidiary led to better subsidiary performance when subsidiary absorptive capacity was greater. Second, expatriate competencies in knowledge transfer led to more knowledge received by the subsidiary when subsidiary absorptive capacity was greater. *Ceteris paribus*, a subsidiary acquires more knowledge from expatriates when its absorptive capacity is higher. It is also possible that expatriates may engage in more knowledge transfer behaviors when they see that a subsidiary has better absorptive capacity. Among other findings, the number of expatriates did not enhance knowledge received by a subsidiary or the subsidiary's performance, but subsidiary absorptive capacity did. Overall, three contributions emerge.

### Contribution 1: Expatriate Competencies in Knowledge Transfer

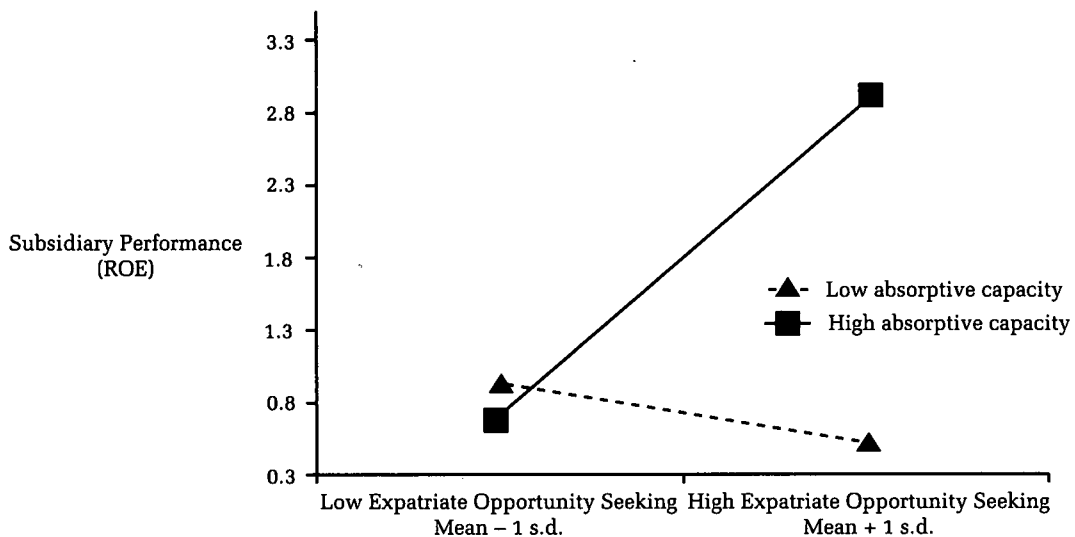
Our first contribution is identifying three dimensions of expatriate competencies in knowledge transfer. Much prior research has examined expatriate staffing without attending to the characteristics of expatriates. The focus has been on the more observable number (proportion) of expatriates. This approach assumes that expatriates can effectively trans-

**FIGURE 2**  
Indirect Effect of Expatriate Opportunity Seeking (via Knowledge Received) on Subsidiary Return on Investment at High and Low Levels of Subsidiary Absorptive Capacity





**FIGURE 3**  
**Indirect Effect of Expatriate Opportunity Seeking (via Knowledge Received) on Subsidiary Return on Equity at High and Low Levels of Subsidiary Absorptive Capacity**



fer knowledge. With expatriates treated as a black box, it has not been clear what is in them that helps or hinders knowledge transfer. We found that expatriate competencies in solving difficulties during the knowledge transfer process boosted knowledge received by a subsidiary and subsidiary performance. It would therefore be useful to examine what expatriate competencies matter for successful knowledge transfer in future research on expatriation.

Many MNCs often select expatriates for superior technical skills, not their competencies in effective knowledge transfer (Peng, 2011; Tung, 1987). It is therefore not surprising that expatriate staffing per se may not enhance subsidiary performance, as some prior studies have shown. This study provides one potential explanation for the mixed results regarding the effect of expatriate staffing on subsidiary performance found in previous work. It may be that expatriates in some subsidiaries (or some MNCs) have greater competencies in transferring knowledge than those in other subsidiaries (or some MNCs). Assigning expatriates without competencies in transferring knowledge may even hurt subsidiary performance because expatriates are often more expensive than other sources of staffing.

The implication is that MNCs need to pay close attention to the criteria for selecting expatriates, especially their "soft" skills, to reflect needs in knowledge transfer. The broader implication is that the effectiveness of personnel mobility (expatriation in this study) as a means of transferring knowledge (Argote & Ingram, 2000; Song et al., 2003) depends on the characteristics of the people being moved. Identifying such microlevel factors prom-

ises to enrich our understanding of knowledge transfer beyond the immediate setting of the headquarters-subsidiary relationship.

### **Contribution 2: Knowledge Received by Subsidiary as Mediator**

In this study, we suggested that the knowledge transfer process involves both transmission by expatriates and receipt by subsidiary. This distinction clarifies the more ambiguous concept of knowledge transfer that has been widely used in the literature. We showed empirically that the effects of expatriates' competencies in knowledge transfer on a subsidiary's performance take place through knowledge received by the subsidiary. We, therefore, provided a test of the idea from the knowledge transfer perspective of expatriation that knowledge transfer underlines the effect of expatriation on subsidiary performance (Edström & Galbraith, 1977; Gong, 2003a; Harzing, 2001). Our findings extend prior studies that did not directly test knowledge received by the subsidiary as a mediator.

### **Contribution 3: Subsidiary Absorptive Capacity as Moderator**

As the third contribution, we showed that the indirect effects of expatriate competencies in knowledge transfer on subsidiary performance can be strengthened when subsidiary absorptive capacity is greater. Clearly, the presence of expatriate competencies alone may not lead to the most effective knowledge transfer and highest subsidiary performance.

Knowledge received by a subsidiary and the subsidiary's performance reach the highest level when both (1) the expatriates have competencies in knowledge transfer and (2) the subsidiary has the absorptive capacity.

No prior study of expatriation and subsidiary performance has examined subsidiary absorptive capacity as a moderator. This study has revealed the important role of the other side—subsidiary employees—in successful knowledge transfer, and thus provided a valuable extension to prior research. Theoretically, it extends prior work (e.g., the knowledge transfer perspective of expatriation) by revealing the boundary conditions of subsidiary absorptive capacity that may affect knowledge transfer effectiveness and subsidiary performance. The implication is that a more powerful theory of expatriation and subsidiary performance must include the characteristics of both sides of the knowledge transfer equation: both expatriates and subsidiary. Empirically, this study provides another potential explanation for the mixed findings on the relationship between expatriate staffing and subsidiary performance. It may be that some subsidiaries have greater absorptive capacity than others, and this makes expatriate knowledge transfer more successful.

In arriving at the third contribution, we utilized time-lagged objective subsidiary performance and collected survey data from multiple sources. Because we used a sample of Taiwanese subsidiaries operating in the U.K., this study also extends the empirical literature to MNCs from emerging economies that have not been extensively studied.

One interesting finding is that the indirect effects of expatriate competencies in knowledge transfer on subsidiary performance may be negative at low levels of subsidiary absorptive capacity. Deploying expatriates is an expensive undertaking, and knowledge transfer is a long and costly process. It consumes time from both expatriates and a subsidiary's employees. Considering the costs, subsidiary performance may suffer when knowledge from expatriates is not as well assimilated and applied in the subsidiary. It is also possible that knowledge received from expatriates may create conflict and disruption when it is not well integrated with existing routines because of low absorptive capacity.

### Practical Implications

MNCs incur substantial costs in sending expatriates to subsidiaries because of high compensation and possible failure in overseas assignments. To help ensure the success of knowledge transfer, it is critical that MNCs select expatriates with competencies in overcoming difficulties in the knowledge transfer

process. The ability and motivation to transfer knowledge are critical. The expatriates must, for example, be willing to face a loss of prestige and power when the locals master the new knowledge and skills. The expatriates must also be willing to cope with cultural difficulties in the transfer process. In addition, opportunity seeking through social ties is critical. Expatriates must be able to establish relationships with local employees and use such ties to facilitate knowledge transfer. Selection, however, is not the only way to obtain expatriates with such competencies. The necessary competencies can be taught. For example, MNCs can train expatriates in relationship-building skills and culturally sensitive ways of coaching and teaching. Such training may smooth the knowledge transfer process and make it more effective. Overall, MNCs must go beyond the focus on technical skills and attend to competencies in transferring knowledge.

MNCs can also take steps to develop their subsidiaries' absorptive capacity. Doing so would further enhance the success of knowledge transfer and subsidiary performance. MNCs are thus advised to provide a clear vision as to what their subsidiaries are trying to achieve with the knowledge from their parent firms. Some human resource practices such as job rotation may enhance absorptive capacity (Jansen et al., 2005). MNCs may rotate subsidiary employees to positions at the headquarters—a process known as "inpatriation" (Peng, 2011: 519). They may also train subsidiary employees on multiple languages and functional skills. In addition, MNCs may provide a dense, socially connected environment for subsidiary employees to develop trust and cooperation in knowledge transfer.

### Limitations and Future Research Directions

This study has at least five limitations that point out future research directions. First, we did not establish causality for the relationships examined. For example, greater knowledge received by a subsidiary may have led expatriates to believe that they are capable of transferring knowledge. It is also possible that more competent expatriates were sent to subsidiaries further along in the knowledge transfer process. Second, the number of expatriates did not significantly predict subsidiary performance, but the sample subsidiaries mostly played an implementor role. It is possible that the number of expatriates is more important when subsidiaries play the role of integrated players (i.e., both receiving a high knowledge inflow from their parent and giving a high knowledge outflow to the parent [Gupta & Govindarajan, 1991]). In that situation, expatriates must not only transfer knowledge (in

both directions) but also coordinate with the parent. The high level of interdependence and the resulting integration needs are likely to make expatriates particularly important. Future research needs to examine whether our findings generalize to other types of parent-subsidiary relationships.

Third, the expatriate motivation measure in this study captured the willingness or intention of expatriates. Theoretically, the actual effort by expatriates should have a stronger relationship with knowledge received by the subsidiary in which they work. In other words, our findings regarding expatriate motivation should be more conservative. Future research may replicate our findings by using different measures of expatriate motivation. Fourth, this study focused on knowledge transfer to subsidiaries. An interesting future line of research would be to examine what facilitates knowledge transfer from subsidiaries to a parent. Finally, this study focused on MNCs from an emerging economy operating in a developed economy. Although there is no theoretical reason to believe that our model would work differently for MNCs from a developed economy operating in an emerging economy, it would be useful to replicate the study in that context.

## Conclusions

We have identified three dimensions of expatriate competencies in knowledge transfer and examined their indirect effects, via knowledge received, on subsidiary performance moderated by subsidiary absorptive capacity. Theoretically, we suggest that expatriation can be used more effectively as a knowledge transfer mechanism when certain conditions are met. Empirically, we have found that expatriates must have the competencies to transfer knowledge and subsidiaries must have the capacity to absorb such knowledge. In conclusion, when selecting expatriates for overseas assignments, MNCs should go beyond the focus on technical skills and consider competencies in knowledge transfer. To achieve the greatest knowledge transfer and the best subsidiary performance, MNCs should consider developing subsidiary absorptive capacity at the same time.

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## APPENDIX A

### Scale Validation for Expatriate Ability, Motivation, and Opportunity Seeking

To further assess the construct validity of the measures, we collected additional data from 92 Taiwanese expatriates working in the U.K. To measure expatriate ability, motivation, and opportunity seeking in knowledge transfer, we used the same items described in the Methods section. The respondents were asked to think about expatriates in the subsidiary in which they were working and rate the extent to which they agreed that the items accurately described those expatriates as a whole. On average, these expatriates had been living in the host country for three and a half years and had worked for their current parent firms an average of eight and a half years. Eighty-six percent of the sample's members were male.

To assess discriminant validity, we conducted a series of CFAs. First, we examined a three-factor model that included expatriate motivation, ability, and opportunity seeking in knowledge transfer and compared it with three two-factor models and with one one-factor model. The three-factor model, in which the factors were correlated, fit the data well ( $\chi^2 = 26.98$ ,  $df = 5$ ,  $p < .01$ , RMSEA = .06, CFI = .95, GFI = .95, TLI = .93) and better than all three two-factor models. For example, the three-factor model fit better than the two-factor model in which ability and motivation were combined ( $\Delta\chi^2 = 38.66$ ,  $\Delta df = 1$ ,  $p < .01$ ; RMSEA = .09, CFI = .87, GFI = .87,

TLI = .85). The three-factor model also fit better than the one-factor model ( $\Delta\chi^2 = 58.24$ ,  $\Delta df = 2$ ,  $p < .01$ ; RMSEA = .12, CFI = .81, GFI = .81, TLI = .80). Second, we evaluated a second-order factor model in which expatriate ability, motivation, and opportunity seeking (i.e., the first-level factors) were assumed to reflect a second-level latent factor. The result indicated a poor fit ( $\chi^2 = 87.02$ ,  $df = 6$ ,  $p < .01$ , RMSEA = .14, CFI = .80, GFI = .80, TLI = .79). Overall, these results supported the discriminant validity of the measures.

To assess their convergent validity, we included in the survey several variables expected on theoretical grounds to converge with expatriates ability, motivation, and opportunity seeking for knowledge transfer. For expatriate ability in knowledge transfer, we included a two-item measure for expatriate technical skills (sample item, "The expatriates possess superior technological knowledge" [Wang et al., 2009]). The two measures correlated significantly with each other ( $r = .70$ ). For expatriate motivation for knowledge transfer, we referred to the ten-item test-taking motivation scale of Arvey and colleagues (1990), which has a combination of items on intention and actual exertion of effort. We adapted the scale to suit our context (e.g., "I want to do well on this test" was adapted to "Expatriates in this subsidiary want to do well in transferring parent knowledge to the subsidiary," and "I push myself to work hard on this test" was adapted to "Expatriates in this subsidiary push themselves to work hard on transferring parent knowledge to the subsidiary").

We also referred to a three-item motivation to learn scale from Colquitt and Simmering (1998). This measure is similar to ours in that both capture intention or willingness rather than the actual exertion of effort. Similarly, we adapted the items to suit our context. "I will exert considerable effort in learning this material" was adapted to "Expatriates in this subsidiary will exert considerable effort to transfer parent knowledge to the subsidiary"; "I will try to learn as much as I can of this material" was adapted to "Expatriates in this subsidiary will try to transfer as much parent knowledge as they can to the subsidiary"; and "I have a strong desire to learn the material covered in this course" was adapted to "Expatriates in this subsidiary have strong desires to transfer parent knowledge to the subsidiary." Our measure of expatriate motivation for knowledge transfer correlated significantly with the adapted measures from Arvey et al. (1990) and Colquitt and Simmering (1998) ( $r = .65$  and  $.88$ , respectively).

For expatriate opportunity seeking, we could not identify measures of the same construct. Because expatriate opportunity seeking in our study reflects the search for and utilization of resources and opportunities through social relationships, we expected that it should correlate significantly with measures of relational or social capital. We referred to a three-item scale for measuring social ties (Hansen et al., 2005) and adapted the items to this context. "From \_\_\_ you regularly seek information and advice to help your project work" was adapted to "Expatriates in this subsidiary regularly seek information and advice to cope with barriers to transferring parent knowl-

edge to the subsidiary"; "To \_\_\_ you go on a regular basis to get buy-in for your work" was adapted to "Expatriates would go on a regular basis to get buy-in for transferring parent knowledge to the subsidiary"; and "With \_\_\_ you interact informally as friends" was adapted to "Expatriates interact informally with friends (e.g., through social activities) to cope with barriers to transferring parent knowledge to the subsidiary." Our measure of expatriate opportunity seeking in knowledge transfer correlated significantly with the adapted measure from Hansen and colleagues (2005) ( $r = .81$ ). The Cronbach's alpha reliability coefficients for expatriate ability, motivation, and opportunity seeking in knowledge transfer were .91, .90, and .92, respectively. Overall, the results indicate that the measures were valid and reliable.

To further assess the distinctiveness of knowledge received by the subsidiary and subsidiary absorptive capacity, we also included items for them in the scale validation study. CFA results showed that the two-factor model fit the data well ( $\chi^2 = 36.27$ ,  $df = 7$ ,  $p < .01$ , RMSEA = .05, CFI = .92, GFI = .91, TLI = .90), and had a better fit than the one-factor model ( $\chi^2 = 107.40$ ,  $df = 8$ ,  $p < .01$ , RMSEA = .14, CFI = .78, GFI = .76, TLI = .75):  $\Delta\chi^2 = 69.13$ ,  $\Delta df = 1$ ,  $p < .01$ . As in the main study, the correlation between the two was moderate ( $r = .39$ ). Further details about the validation study are available upon request.

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