Activating brokerage:
Inter-organizational knowledge transfer through skilled return migration

Dan Wang[*]

Assistant Professor of Management and (by courtesy) Sociology
Graduate School of Business
Columbia University

Forthcoming in *Administrative Science Quarterly*

[Please do not cite or circulate
without permission from the author]

Abstract

Scholarship suggests that skilled return migrants are ideally positioned as cross-border brokers to conduct knowledge transfer from abroad to their home countries. Many, however, face challenges in doing so. Using an original dataset of 4,183 former J1 Visa holders from 81 different countries – all of whom had worked in the U.S. – I argue that returnees' knowledge transfer success depends on their embeddedness in their home and host country workplaces. I find that not only do host and home country embeddedness increase knowledge transfer success, they also interact positively. However, at the organizational level, the presence other returnees in a home country workplace decreases the positive effect of a returnee's host country embeddedness whereas the similarity of a returnee's industry background increases it. At the country level, high xenophobia in a given home country diminishes the positive effect of host country embeddedness and by contrast, increases the positive effect of home country embeddedness. These findings inform an interpersonal perspective on knowledge transfer, contributing to work on brokerage, organizational learning, employee mobility, and the globalization of expert knowledge.

Keywords: Knowledge transfer, brokerage, return migration, employee mobility

Introduction

As the global movement of skilled people spreads ideas, technologies, and practices

around the world, many have looked to skilled return migrants as agents of economic

transformation in their home countries (Saxenian 2006). Returnees are often regarded as cross-

border intermediaries, whose ties to overseas resources and familiarity with their homeland

institutions enable them to bring innovative practices to organizations in their countries-of-origin

(Kuznetsov and Sabel 2006, Jonkers and Tussen 2008, Choudhury 2010). However, some work

suggests that returnees might be ill-suited to brokering knowledge, pointing out that many

encounter readjustment difficulties (Szkudlarek 2009, Potter 2005), develop only superficial

expertise abroad at the expense of maintaining their ties at home (Chen 2007, Obukhova 2012),

lack commitment to homeland institutions (Kenney, et al 2011), and face xenophobic responses

in local environments (Bovenkerk 1981, Adler 1981, Gaw 2000). Whereas the first line of

research underscores the individual empowerment of returnees as cross-border brokers, the

second identifies the interpersonal barriers facing returnees in their homelands. In this paper, I

make sense of these views by asking, what are the organizational and cultural conditions that

activate or suppress skilled returnees' ability to broker knowledge across borders?

To inform my study, I draw from growing research on the cultural and organizational

contingencies of social capital and brokerage (Xiao and Tsui 2007, Song, et al 2003, Burt 1997).

This work has, in part, focused on how the "vision advantage" of a broker (Burt 2002) – i.e., an

individual who has ties to otherwise disconnected groups – does not always translate into

functional advantages. For example, the presence of other brokers (Reagans and Zuckerman

2001, Buskens and Van de Rijt 2009, Ryall and Sorenson 2007), cultural environments that

emphasize collectivist ideals (Xiao and Tsui 2007), and the task-orientation of social capital

(Ahuja 2000) can all erode a broker's ability to transform a positional advantage into a power

advantage. I adopt this contingency perspective to understand variation in another important

brokerage outcome – the ability to command flows of information between disconnected groups

– which has not received systematic empirical treatment in this past work.

This study also builds on research in organizational learning on the link between worker

mobility and inter-organizational knowledge spillover. Much of this work suggests that

organizational features, such as absorptive capacity, account for variation in knowledge transfer

in studies of engineers (Almeida and Kogut 1999, Song, et al 2003), accountants (Wezel, et al

2006), scientists (Azoulay, et al 2005, Zucker, et al 1998), inventors (Marx, et al 2009), and

financial analysts (Groysberg and Lee 2009). Another view stresses that the characteristics of

newcomers to organizations matter, especially their embeddedness in social networks (Reagans

and McEvily 2003, Dokko and Rosenkopf 2010, Inkpen and Tsang 2005, Hansen 1999). Using

these ideas, I develop a framework that links organizational evaluation and individual

embeddedness as contingent mechanisms in an interpersonal perspective on organizational

knowledge transfer. Furthermore, in my analysis, I decompose knowledge transfer by

comparing the organizational and cultural factors that motivate an individual to *share* knowledge

to those that explain the likelihood that a target organization *adopts* that knowledge.

Although much research assumes that returnees create economic growth by bringing back

resources and skills to their home countries, little work investigates returnee knowledge transfer

as an outcome itself (Saxenian 2006). Tung and Lazarova (2006) offer one of the few

comparative empirical studies of returnee skill transfer, finding that failure to connect with

colleagues prevents returnees from applying their skills in the workplace of their home countries.

Oddou, et al (2009) outline a theoretical model for understanding how a returnee's success re-

integrating into their home countries affects their propensity to share knowledge. Finally,

Lazarova and Tarique (2005) identify certain HR tools that can facilitate re-entry processes (see

also Berthoin Antal [2001] and Au and Fukuda [2002]). However, while this work identifies

returnee knowledge transfer as an important problem, few studies give clear evidence of which

organizational and individual factors lead to positive knowledge transfer outcomes.

Below, I offer a critical review of relevant work on employee mobility and knowledge

transfer, relating it to research on return migration. Following this, I develop theory about how

individual embeddedness and organizational evaluation serve as contingent determinants of

knowledge transfer success. I then motivate hypotheses about how organizational and cultural

context moderates the effect of returnee embeddedness on knowledge transfer outcomes. To test

my arguments, I use data from an original survey I administered to 4,183 skilled migrants from

81 different countries, all of whom had worked in the U.S. under J1 Visas before returning to

their home countries. Using these data, I analyze knowledge transfer as a two-stage process,

presenting two sets of models – one employing knowledge sharing and the other using

knowledge adoption as outcome variables. I present further analyses to evaluate the sensitivity

of my models and their robustness to omitted variable bias before concluding with an elaboration

of the empirical and theoretical contributions of this paper and a discussion of its limitations.

Toward a global view of employee mobility and knowledge transfer

Defining knowledge transfer. My study analyzes how returnees bring back organizational

practices their home countries. As such, I adopt Argote and Ingram's (2000) definition of

knowledge transfer success, which occurs when a practice from one organizational unit is

adapted as a routine in another. Knowledge, here, refers to a repeated and observable practice

(Nelson and Winter 1982, Winter 1995). In this sense, this knowledge is procedural – i.e.,

organizationally embedded and only expressed when a task is being done (Cohen and Bacdayan

1994). Examples include the adoption of safety routines in a manufacturing firm or the

implementation of procedures for checking code quality in a software company. Studies of mobility have primarily focused on technical knowledge transfer, often using patent data as a way to study how the movement of technical personnel leads to knowledge spillovers (Almeida and Kogut 2003, Singh 2005, Jaffe, et al 1993). For instance, Song, et al (2003) show that firms tend to adopt the technical knowledge of newcomer engineers whose expertise is outside the firms' core expertise in what they call 'learning-by-hiring'. By contrast, studies of non-technical practices rely on proxy measures, such as performance, for knowledge transfer (Uzzi and Lancaster 2003, Ingram and Roberts 2000).

Individual explanations. Much work has focused on the embeddedness of individuals in social networks as a determinant of knowledge transfer success (Burt 1992). For example, Reagans and McEvily (2003) suggest that ties to a cohesive group boost the motivation to share knowledge while Levin and Cross (2004) argue that stronger ties reflect greater trust that can enhance the articulation of knowledge (see also Bechky 2003). In addition, newcomers use their connections to access knowledge valuable to their new organizational sites and to realize opportunities to share knowledge (Tsai 2001, Inkpen and Tsang 2005, McEvily and Zaheer 1999). These cross-organizational ties allow returnees, in particular, to offset institutional and cultural barriers to transferring knowledge across different countries as cross-border brokers. In other words, they empower returnees to move between distant ecologies. Saxenian (2006: 5) for example, traces the start of Taiwan's semiconductor sector to returnees' cross-border ties to the U.S., which enabled them to "identify promising new market opportunities, raise capital, build management teams, and establish partnerships with specialist producers located far away."

Some work, however, posits that a broker's structural advantages, especially when it comes to knowledge transfer, do not always exist. For example, the presence of other brokers can diminish the vision advantage of any one broker (Buskens and Van de Rijt 2008, Ryall and

Sorenson 2007, Reagans and Zuckerman 2003). Similarly, Podolny and Baron (1997) show that

the benefits of structural holes in an individual's network depend on the content of the ties.

Other research has examined the cultural context of a broker's advantage (Vasudeva, et al 2013,

Guler and Guillen 2010). In particular, Burt, et al (2000) warn that structural hole theory is

primarily supported by data gathered in western economies. Notably, Xiao and Tsui (2007)

argue that in organizations that value high commitment and have a collectivist culture – such as

many in China – brokers do not realize control benefits (see also Adler and Kwon 2002 and Ma,

et al 2011). Together, this work suggests that the cross-border embeddedness of returnees might

not translate into knowledge brokerage advantages across all home countries.

    Organizational explanations. At the organizational level, knowledge transfer between

two firms is more successful if they are in the same inter-firm network (Uzzi 1996, Powell, et al

1996), have similar capabilities (Darr and Kurtzberg 2000, Hamel 1991, Tushman 1977), or are

co-located (Almeida 1996). This research argues that knowledge is sticky, i.e., practices tend to

be organization-specific (Szulanski 1996). Thus, the more similar two organizations are, the

more easily a practice from one can be recreated in the other.

    In addition, because many organizations exchange resources across institutional and

cultural boundaries, researchers have also theorized about international knowledge transfer.

Kostova (1999: 312) argues that knowledge transfer is embedded in organizational and relational

contexts that affect "the ability and motivation of members of the recipient unit to engage in a

successful transfer." In particular, cultural differences between countries become reflected in

organizational differences, which can influence how individuals in a target organization might

evaluate newcomer knowledge (Kostova and Roth 2002). Indeed, many examples illustrate how

the institutional distance between organizations in two countries can stand in the way of the

potential knowledge transfer between them (Kogut and Singh 1988, Ambos and Ambos 2009).

Gaps and opportunities. Two issues persist in the study of mobility and knowledge transfer. First, in terms of measurement, few studies observe the transfer of organizational practices itself as a measurable outcome, and those that do, lack systematic data on a broad set of practices. Moreover, studies that account for the spread of practices lack explicit data on the individuals engaged in knowledge transfer, leading researchers to conflate mobility and knowledge spillover. Second, the two views of knowledge transfer via mobility I reviewed – embeddedness in networks and organizational fit and distance – refer to separate aspects of knowledge transfer. The first view concerns a newcomer's access to knowledge and motivation to share knowledge, and the second considers how shared knowledge is evaluated. Understanding knowledge transfer requires a comprehensive theorization from initiation to adoption (Szulanski 2000). I therefore look to work on contingent social capital to develop a framework that combines these views as interdependent elements of a multi-stage process.

Theory Development and Hypotheses

Knowledge Transfer as an Interpersonal Process. Past work suggests that organizational features affect knowledge transfer because adoption success depends on the fit of the knowledge with the environment. By extension, I argue that they matter because they inform the interpersonal interaction in which the knowledge transfer occurs (Bechky [2003] and Iskander and Lowe [2011]). According to my interview data, in recounting knowledge transfer experiences, returnees focused on their interactions more than on the content of their knowledge. Consider the experience of Jorge, who upon returning to his native Mexico, led an initiative to improve the safety standards of his company, a global supplier of building materials.

> In Mexico, safety is important of course, but in the U.S., it was much more important. *The main challenge was to convince my bosses [and coworkers] that I was right.* This was hard. They never had formal meetings about safety standards before, so we started [slowly]. (Interview with Jorge, emphasis added)

This example shows that in organizations, two actors are always involved in knowledge transfer – the transferor, e.g., the returnee, and the recipient(s), e.g., the returnee's home country coworkers. The example also reveals that knowledge transfer itself occurs in two stages. The transferor first communicates an idea or practice to the recipients, and the recipients then evaluate it. Whether the shared knowledge is adopted therefore depends on whether the transferor can access knowledge and communicate it effectively, and whether the recipients evaluate the knowledge and, more importantly, the transferor positively (Oddou, et al 2009).

The success of the first stage depends on the transferor's *individual embeddedness*. Transferors must first have some idea or practice worth sharing and the ability to identify opportunities to share it. Embeddedness refers to the extent to which an individual is situated in a network of people, organizations, and institutions, which can grant access to resources that belong to that environment (Granovetter 1985, Inkpen and Tsang 2005). Thus, newcomers who were highly embedded in their previous firms have greater access to resources indigenous to that firm and are likely to have more ideas worth sharing. In addition, transferors highly embeddedness in their new organizations also gain more knowledge about their new surroundings, enabling them to better identify opportunities for knowledge transfer.

Success in the second stage depends on *organizational evaluation*. Net of its content, recipients evaluate shared knowledge based on their attitudes toward the transferor, which come from recipients' identification with the values and practices of the organization and its surroundings. Whether groups or organizations are receptive to newcomers depends on the compatibility of their expertise and social backgrounds with those of the incumbent members (Rink, et al 2013). Specifically, similarity between a newcomer's expertise and an organization's competence can facilitate knowledge transfer because it is easier to find common ground. For example, a firm in the semiconductor industry is more likely to adopt suggestions

from newcomers with a background in semiconductor design rather than newcomers with experience with other electronic components. Too much similarity, however, can also render a newcomer's ideas redundant (Hedberg 1981). In particular, newcomers who do not achieve an optimal social distinctiveness from incumbent group members might be unable to convey the distinct value of their ideas (Brewer 1991).

Returnees, in particular, span organizational and country borders, each of which poses different challenges to knowledge transfer. While organizational features such as similarity in expertise and absorptive capacity can boost knowledge transfer success, country-level dimensions such as cultural differences might hinder successful knowledge transfer (Kedia and Bhagat 1988, Kirkman, et al 2006, Kostova 2000). I argue that country-level differences manifest themselves in organizational contexts by influencing recipient attitudes toward knowledge transferors. Therefore, recipient attitudes come from their membership in both the returnee's new organization and the returnee's home country. In other words, recipient attitudes reflect the beliefs and practices of organizational features that might be industry- and workplace-specific as well as cultural influences that are widespread in a given country.

What emerges from this interpersonal perspective is that a returnee's cross-border ties serve as potential channels of knowledge flows, but organizational and cultural barriers can prevent their ultimate adoption. In other words, a returnee's cross-border embeddedness forms the pathway that directs knowledge flows, but organizational evaluation serves as the filter that determines whether these flows reach their destination. Organizational evaluation therefore affects knowledge transfer by suppressing or activating the advantages that individual embeddedness confers on a knowledge transferor as a broker. Below, I develop hypotheses that explore this contingent relationship as it relates to knowledge transfer outcomes for returnees.

[Figure 1 here]

Home and Host Country Embeddedness

Skilled returnees are ideally situated to transfer knowledge back to their homelands because they are professionally embedded in both their home and host countries. *Host country embeddedness* refers to the extent to which returnees were integrated in the workplace and other professional activities while abroad, and *home country embeddedness* refers to the same involvement in their home countries. This comes from literature on employee involvement and participation, which links workplace embeddedness to the breadth *and* depth of one's engagement in professional activities such as attending conferences or socializing with co-workers (Cox, et al 2009, van Emmerik and Sanders 2004). Greater engagement deepens one's connection to a given environment, which in turn, grants greater access to the resources that are embedded within that environment.

Home and host country embeddedness advantage returnees differently as cross-border brokers. High host country embeddedness means that returnees have had the opportunity to build greater knowledge of organizational practices from overseas. These returnees are thus more likely to possess knowledge relevant for problem solving or improving practices in their home country organizations. Having greater knowledge from abroad also allows returnees to more aptly recognize opportunities in their home countries for knowledge transfer from overseas. Specifically, returnees with high host country embeddedness can make sharper comparisons between practices abroad and in their home countries. This enables them to better perceive issues in their home country organizations that their overseas knowledge might resolve.

Home country embeddedness can also help returnees recognize opportunities for knowledge transfer. Familiarity with local practices and values enables returnees to more effectively recognize areas in which overseas knowledge can improve organizational practices. High home country embeddedness can also instill greater trust in the relationship between

returnees and their home country co-workers, which can influence knowledge transfer success (Levin and Cross 2004, Tsai and Ghoshal 1998). This is especially relevant for newcomers who lack the familiarity with the organizational values that bind its existing employees together. For returnees who are highly embedded in their home countries, a strong local connection with their home country co-workers increases returnees' trustworthiness, facilitating knowledge transfer success. Having strong ties abroad and at home thus serve two different, but complementary purposes. Access to overseas networks facilitates a returnee's access to novel ideas, and being embedded in local networks allows a returnee to gain the necessary familiarity with local colleagues and practices to successfully convey those ideas.

> *H1a:* Higher *host country embeddedness* increases the probability of returnee knowledge transfer success.

> *H1b:* Higher *home country embeddednees* increases the probability of returnee knowledge transfer success.

Chen (2007), however, cautions that most returnees are weak knowledge brokers because few are deeply embedded in both overseas and local networks. For instance, according to Chen, many returnee entrepreneurs in China lack strong ties to both overseas and local networks because they often sacrifice one for the other. This suggests that the advantages of host and home country embeddedness for knowledge transfer are mutually contingent. After all, host country embeddedness might grant returnees greater access to overseas knowledge, but it means little without the trust from co-workers that comes from high home country embeddedness. Similarly, returnees with strong ties to their homelands might be able to easily communicate with coworkers, but lacking strong ties overseas can indicate that they might not have any relevant or worthwhile knowledge to offer.

> *H1c:* As *host country embeddedness* increases, the positive effect of *home country embeddedness* on returnee knowledge transfer success also increases (and vice versa).

Organizational evaluation: Workplace context and host country embeddedness

Organizational evaluation depends on the compatibility between a newcomer's expertise

and social background with those of the recipients (Joardar, et al 2007). This compatibility

serves as a lens through which recipients evaluate returnee newcomers' outsider status, a

category returnees inherit by virtue of their time spent overseas. In terms of expertise

compatibility, *industry similarity* between a returnee's previous and new organizations facilitates

knowledge transfer and moderates the effect of a returnee's host country embeddedness. I focus

on industry similarity because of its prominence in past work on inter-organizational knowledge

transfer. With respect to social background, returnees' most salient quality is their international

work experience. I therefore argue that *the presence of other returnees* (i.e., co-workers with

similar international work experience) in a home country workplace also influences the

evaluation of returnee newcomers and their host country embeddedness.

Industry similarity. Organizations that deploy similar strategies are better able to

assimilate practices from one another (Hamel 1991, Darr and Kurtzberg 2000). In practice,

Bechky (2003) argues that successfully communicating knowledge depends on the transferors

and recipients finding common ground, which is more easily achieved between similar partners.[1]

As such, similarity between organizations and newcomer expertise can affect the interpersonal

dynamic between returnee transferors and recipients. First, returning to a home country

organization in the same industry as opposed to a different industry increases the relevance of the

knowledge that returnees who are highly embedded abroad can access. In other words, having

high host country embeddedness might not help a returnee transfer knowledge if he worked for

---

[1] By contrast, Song, et al (2003) find that greater distance between an organization's and a newcomer's expertise
predicted greater knowledge spillovers. The reasoning is that dissimilar newcomers likely have more to contribute.
It should be noted, however, that common to the entire sample of newcomers Song, et al (2003) study is that they all
have technical expertise in semiconductors, making them a fairly homogeneous group to begin with. As I describe
in my results below, because the industry variation in my study is much greater, I find that the industry similarity
between returnee newcomers and their home country organizations facilitates knowledge transfer. Together with
Song, et al (2003), this suggests that similarity within coarse industry categories might boost knowledge spillover,
but within categories, differentiation might be responsible for greater knowledge transfer success.

an organization abroad that has little overlap with the practices of his new home country

organization. Second, returning to an organization in the same industry can also increase the

trust that recipients might place in a returnee's access to knowledge overseas. Specifically,

similarity in industry backgrounds between returnees and their coworkers allows them to refer to

shared experiences and access a common industry vernacular. As a result, a returnee transferor

and his coworker recipients are more likely to find common ground, which increases recipient

trust in the returnee and the likelihood of the knowledge the returnee shares being adopted.

> *H2a:* Returnees experience greater knowledge transfer success if they return to work in a
> home country organization in the same industry as their host country organizations.

> *Industry similarity and host country embeddedness.* Similarly, for returnee transferors,

having worked in the same industry abroad as their home country organizations can also enhance

the advantage of their host country embeddedness for knowledge transfer success. Specifically,

although higher host country embeddedness can increase the volume and quality of knowledge

returnees can access overseas and consequently share in their home countries, it does not

necessarily mean that the knowledge they share will be perceived as relevant. This is especially

be true if the overlap between a returnee transferor and recipients' background expertise is

minimal, in which case the positive effect of host country embeddedness on knowledge transfer

success is likely weaker.

However, if a returnee's host country employer belongs to the same industry as the

returnee's home country organization, the relevance of the knowledge the returnee can access

abroad is likely greater. This suggests that greater host country embeddedness confers ties to not

only more knowledge, but also more relevant knowledge, which itself is more likely to be

adopted. In addition, having similar industry backgrounds facilitates trust between returnee

transferors and their coworker recipients, activating the flows of overseas knowledge available to

returnees who are highly embedded in their host countries. As such, higher home country

embeddedness can lead to even greater knowledge transfer success if the returnee's industry

experience abroad matches the industry category of the returnee's home country organization.

> *H2b:* The positive effect of a returnee's host country embeddedness on knowledge
> transfer success increases if the returnee worked in an industry in the U.S. similar to that
> of the returnee's home country organization.

> *Presence of other returnees.* Organizations that hire individuals with international work

experience are arguably more prepared to adopt the knowledge that returnees bring from abroad.

However, although returnees might sense greater familiarity in workplaces that already have

other returnees, the advantage of having worked abroad for knowledge transfer also becomes less

apparent in these settings. A broker's advantage derives from his ability to monopolize control

over information flows between different groups (Burt 1992, 2005). As the number of

alternative paths of resource flow increase between these groups, the broker loses authority in

commanding this exchange (Reagans and Zuckerman 2003). Indeed, results from numerous

studies bear out the prediction that the structural advantages of a broker disappear as a network

becomes saturated with other brokers (Burt 1997, 2005, Buskens and van der Rijt 2008).

Thus, a returnee is more likely to successfully transfer knowledge if he is the only

member of a workplace who has worked abroad. First, the presence of others with overseas

experience might prevent the returnee from sharing any knowledge from abroad at all in the first

place. If there are other returnees with equally strong cross-border ties, they might have already

shared relevant knowledge from abroad. This, in turn, renders any single returnee's ideas appear

less novel, less valuable, and ultimately less worthy of sharing. Second, in workplaces with

other returnees, recipients might also be more resistant toward a returnee transferor. Past work

has found that a newcomer to a group is more likely to influence change if the newcomer is more

'socially distinctive' (Phillips, et al, 2009).[2] Specifically, if returnees choose to share

knowledge, they likely face more stringent evaluation criteria from the other returnees in the

workplace, who are better equipped to assess the quality of a returnee's knowledge sharing. In

other words, overseas knowledge from returnees is not subject to as high standards of 'peer-

review' in settings where co-workers lack overseas experience.

> *H3a:* Returnees experience less knowledge transfer success if there are other returnees in
> the workplace.

> *Presence of other returnees and host country embeddedness.* These same mechanisms

also suggest that the positive effect of host country embeddedness on knowledge transfer success

is weaker for returnees in workplace environments with other returnees. In particular, while

higher host country embeddedness confers a greater "vision advantage" on a returnee as a broker

of knowledge, the value of this advantage is relative. In workplace settings where other

returnees are present, higher host country embeddedness does not necessarily lead to greater

information control benefits. Therefore, the value of being more tied to overseas professional

communities diminishes in the presence of others who possess those same ties. In these settings,

higher host country embeddedness leads to fewer gains in terms of knowledge transfer success.

In essence, a returnee's advantage as a broker is conditional on the presence of other returnees.

> *H3b:* The positive effect of returnee's host country embeddedness on knowledge transfer
> success diminishes if there are other returnees in the workplace.

Organizational evaluation: Cultural context and host and home country embeddedness

---

[2] It would appear that hypothesis 2's industry similarity claim is contradictory to this argument. Note, however, that industry similarity is related to the overlap between the returnee transferor and coworker recipients' expertise – in other words, hypothesis 2's argument does not concern *social* distinctiveness. A returnee's international work experience places him in a different *social* category from coworkers who have had no such international work experience. According to Phillips, et al (2009), social categorization refers to membership based on social identity derived from commonality in cultural, normative, and status characteristics. Using this definition, returnees are less socially distinct from coworkers who have had international work experience, but not necessarily less socially distinct from coworkers with the same industry background.

Kostova (2000) suggests that because organizations are embedded in different institutional environments across countries, cultural distance can be a barrier to the cross-border transfer of organizational practices. Organizational values largely reflect the local environments in which they are situated (Powell and DiMaggio 1991, Stinchcombe 1965). Returnees' overseas experience in part categorizes them as cultural outsiders. As such, in terms of organizational evaluation, recipient attitudes toward returnee newcomers reflect the collective attitudes of locals toward outsiders or foreigners. These attitudes, in turn, influence how useful having strong ties abroad and at home is for returnee knowledge transfer.

Home country xenophobia. Pervasive cultural attitudes toward outsiders often manifest themselves in organizations (Kostova 1999). Thus, xenophobia, which refers to the fear of or resistance to foreigners, is especially relevant for shaping coworker attitudes toward returnees newcomers. For some, collective xenophobia reflects policies that are discriminatory toward foreigners (Choudry, et al 2009), economic protectionism (Campbell 2003), and ethnic nationalism (Hjerm 1998). Regardless of where these xenophobic attitudes originate, because workplace attitudes and practices tend to be congruent with national culture (Newman and Nollen 1996, Luthans, et al 1993), widespread xenophobia in a country is likely palpable in the country's workplaces as well. According to studies of workplace attitudes toward immigrants, xenophobia can undermine foreign newcomers' efforts to adjust to a host culture, constrain their career advancement, and limit their impact on the workplace (see Soylu 2007 for a review).

As such, because returnees partially inhabit a foreigner identity, strong 'xenophobic responses' (Adler 1981) can make domestic workers less receptive of returnee ideas from abroad. First, domestic workers in more xenophobic countries might perceive knowledge and other resources from beyond their country's borders as threatening the familiarity of their local social and professional lives. Second, xenophobia can be returnee-specific – that is, returnees are not

only penalized for being foreigners, but also turncoats. Thus, domestic workers sometimes

perceive returnees with even more disapproval than those who are entirely foreign because they

view returnees as actively abandoning their home countries (Bovenkerk 1979).

A compelling example comes from Bovenkerk's (1981) study of Surinamese returnees

who received professional training in the Netherlands only to be confronted with xenophobic

attitudes upon their re-entry. The hostility of native Surinamese toward returnees came from two

sources: some thought returnees posed a legitimate competitive threat in the labor market with

their better training, and others felt that returnees had turned their backs on their homeland. As a

result, although many Surinamese returnees were fully equipped to be "'agents of social

change'… natives in Suriname paid very little attention to their expert knowledge" because their

knowledge came from overseas (Bovenkerk 1981: 164). This lack of receptivity based on

xenophobia can therefore serve as a significant barrier to returnee knowledge transfer.

H4a: Returnees experience less knowledge transfer success in more xenophobic home
countries compared with those in less xenophobic home countries.

Home country xenophobia and host country embeddedness. Whereas host country

embeddedness can grant a returnee access to more and higher quality knowledge to share, it can

also express a returnee's stronger identification with overseas professional communities. In

xenophobic settings, this can, in turn, trigger resistance from co-workers, who might then

become less receptive to the returnee's ideas. As such, in xenophobic environments, returnees

who are strongly embedded overseas might be aware of their own host culture identification,

making them less willing to share their knowledge from abroad in anticipation of resistance from

their co-workers. As a result, the pervasive xenophobic attitudes of a returnee's home country

can effectively nullify the access to novel practices from abroad available through strong host

country embeddedness. In this sense, embeddedness in overseas networks becomes a prism

through which knowledge recipients in xenophobic countries might evaluate returnees negatively

rather than serving as a pathway for knowledge flow (Podolny 2001).

>   *H4b:* The positive effect of a returnee's host country embeddedness on knowledge
>   transfer success is lower in more xenophobic returnee home countries.

>   *Home country xenophobia and home country embeddedness.* Conversely, to overcome

xenophobia, returnees can demonstrate to their coworkers that they are highly embedded in their

home countries. Home countries that are xenophobic also value shared local identities more;

thus, strong home country ties can be more important for knowledge transfer than strong ties

overseas. In xenophobic settings, a returnee's ability to relate knowledge from outside contexts

to local organizational settings is more contingent on establishing a close kinship with coworker

recipients. Kane, et al (2005) illustrate the importance of shared identity for knowledge transfer

in an experiment, showing that in group work, even members of arbitrarily assigned groups

valued the contributions of in-group members more than out-group newcomers.

This collective appeal to a superordinate social identity relates to the experience of many

returnees (Kane 2009, Tajfel and Turner 1979). Specifically, returnee transferors can signal to

their coworker recipients through their high home country embeddedness that they subscribe to

the same set of cultural beliefs. Because of in-group favoritism, recipients of knowledge transfer

tend to view the knowledge shared by an individual with a common social identity more

positively. For returnees, signaling their commitment to their home countries can boost

knowledge transfer success in more xenophobic home country environments, which are more

likely to exhibit in-group favoritism. In xenophobic settings, recipients' desire to reinforce co-

national solidarity can compel them to more positively evaluate the knowledge from returnees

who identify strongly with their home countries. Thus, shared identity can be a more important

determinant of knowledge transfer in some country contexts than others. In countries with

cultures that tend to favor co-ethnic ties and distrust outsiders, like South Korea (Shin 2006,

1996), home country embeddedness is arguably more important than host country embeddedness

for knowledge transfer success.

> *H4c:* The positive effect of a returnee's home country embeddedness on knowledge
> transfer success is higher in more xenophobic returnee home countries.

Data

Two main barriers stand in the way of collecting systematic data on skilled returnees.

First, skilled returnees are highly mobile, making them a difficult-to-reach population. Second,

the definition of a return migrant is ambiguous, depending time spent abroad, age, and other

factors (Dumont and Spielvogel 2008). To address these challenges, I developed a survey for

individuals who came to the U.S. to work under a special category of the J1 Visa. To identify my

survey population, I worked with a non-profit professional exchange organization called

International-Exchange (IntEx), which is designated by the U.S. State Department to sponsor J1

Visas for skilled foreign nationals. The J1 Visa allows foreigners who have had education and

training in a professional field to work for a host company in the U.S. for between 3 and 24

months. Although several subcategories of the J1 Visa exist, IntEx sponsors only 'intern' and

'trainee' J1 Visas, which are functionally similar and only given to skilled workers, ages 21

through 35, with higher education and professional work experience.

Between 1997 and 2011, IntEx sponsored the J1 Visas of 11,434 individuals from 93

different countries, who have worked in such U.S.-based companies like Google, Merrill Lynch,

and over 2,000 other small- to large-sized companies (Table 1 summarizes data about this survey

population made available by IntEx). The J1 Visa requires that these workers return to their

home countries after their visa term, but many obtain another visa to extend their stays. One

advantage of studying IntEx-sponsored J1 Visa recipients is that all returnees in this sample have

had some meaningful professional experience in the United States.

[Table 1 – Descriptive Statistics for Survey Population]

4,183 alumni responded to the survey I administered (38% response rate; mean completion time: 43 minutes). I found no significant biases comparing respondents to non-respondents in basic demographic features; however, technology workers are overrepresented in the respondent sample.[3] Returnee respondents answered questions primarily about their work activity in the U.S. and home countries, their experience adjusting back to their home countries, and their experience transfer knowledge to their home country workplaces.

This sample of former J1 Visa recipients is ideal for my analysis because of its uniformity and heterogeneity. First, all returnees in this sample have had significant professional work experiences in the U.S., in which they engaged with American coworkers. Returnee respondents were therefore similar in all were potential cross-border brokers of organizational practices. Second, the respondent sample is diverse in the types of U.S. professional experiences. This allows for the generalizability of this study across industry and organizational domains. Thus, this sample captures a broad variety of knowledge sharing activity.

Also, because the sample includes returnees to over 70 different home countries, the survey data lend themselves to cross-country comparisons. This heterogeneity comes from the nature of the J1 Visa. By comparison, H1-B Visas (Kerr and Lincoln 2010) are primarily assigned to technology workers, most of whom are from India and China, and F-1 visas include immigrants seeking education in the U.S., but not always work experience. Importantly, the J1 Visa holders here cover a more diverse array of countries while also capturing skilled workers from Canada and Mexico, which typically send skilled migrants to the U.S. under the TN Visa. Despite the differences between visas, Table 2 reports substantial overlap among the top visa receiving countries for the J1, H1-B, and F1 visas. This similarity lends external validity to the results of my study, which arguably are not simply an artifact of selection into the J1 Visa.

---

[3] I also conducted 161 interviews with respondents. Interviews lasted between 30 and 90 minutes. I conducted interviews mostly over the phone. I oversampled interviewees from South America and Eastern Europe, which were the least represented in my survey.

[Table 2 – Top countries in terms of visa issuance by visa category]

Measurement and Variables

Dependent Variables. I conduct two main analyses of returnee knowledge transfer. In the first analysis, the dependent variable is returnee knowledge transfer success. This occurs when *a returnee shares knowledge in a home country organization, and the organization adopts the returnee's knowledge by altering or adding a routine practice*. Past studies identify evidence of knowledge transfer as the change in some organizational practice as a result of contact with another organization or the hiring of a new employee (Tsai, et al 2003, Almeida and Kogut 1999). However, it is sometimes impossible to tell whether the knowledge transfer itself is responsible for the change. Other studies, in turn, measure whether individuals share knowledge without specifying whether that knowledge become routinized (Reagans and McEvily 2003). The sample I analyze includes all returnee survey respondents. Because I argue that knowledge transfer success entails an individual first sharing knowledge and a recipient then adopting the knowledge, I separate the measurement of these two constructs on my survey. Specifically, I ask respondents, "Have you ever shared any knowledge based on your experience working in the U.S.?" Then, for those who indicate that they had shared knowledge, I ask, "Did your company implement any of the suggestions you made as a routine procedure or repeated practice?" If the answers to both these survey questions are 'yes', I code my dependent variable for knowledge transfer success as 1; otherwise, 0.

In the second analysis, I use the two survey questions above to compare knowledge sharing and knowledge adoption as separate outcomes. The goal is to isolate the stage of the knowledge transfer process that the organizational and cultural explanatory variables affect. In addition, because these dummy variables capture complex outcomes, it is important to assess their reliability. On my survey, I asked respondents who indicated that they shared knowledge to

describe the nature, setting, and aftermath of the knowledge transfer in an open-ended response. I

then compared these open-ended responses to their yes/no responses to the knowledge transfer

success question. Most open-ended responses indeed reflected a change in organizational

practices based on my definition above. For those that did not, I coded the knowledge adoption

variable as 'no'. Despite this effort, I acknowledge that these binary measures sacrifice precision

because they do not account for the type of knowledge shared and because they are self-reported,

they might introduce measurement error through personality bias. I address both issues in the

'Further Analysis' section below.

  Independent variable—Host and home country embeddedness. To measure a returnee's

host country embeddedness, I create an index out of the several survey questions about the

breadth and depth of the returnee's professional experience in the U.S. Past work suggests that

measuring both the range of activities in which an employee takes part and the intensity of this

engagement captures embeddedness by taking into account "the social pressures and structures

within organizations… [in] explaining how business decisions are made" (Cox, et al 2009:

2151). Measures of breadth entail counting the different forms of professional interaction (van

Emmerik and Sanders 2004, Frenkel 2003). Because I am concerned with the returnee's

embeddedness in U.S. professional environments, I look to survey questions about the returnee's

U.S. professional experience within and beyond the workplace. Thus, to capture the breadth of

host country embeddedness, I count the number of affirmative responses to the questions below:

1. Prior to your J1 experience, had you ever worked in the U.S.?
2. Have you completed an educational degree in the U.S.?
3. During your J1 experience, did you have at least weekly contact with your coworkers?
4. During your J1 experience, did you have at least weekly contact with your supervisor(s)?
5. During your J1 experience, did you attend any conferences or workshops related to your work?

  Measuring depth of workplace embeddedness is important because it reflects the quality

of involvement returnees had in the activities they specify. Measures of depth typically reflect

the frequency of engagement in the activities specified in the breadth aspect of embeddedness

(Felps, et al 2000). My measure of the depth of a returnee's host country embeddedness follows

the same logic, using the following survey questions:

1. Prior to your J1 Visa experience, how many years did you work in the U.S.? (scaled to a minimum 0 and maximum of 5)
2. During your J1 Visa experience, how frequent was your contact with your coworkers? (0 - weekly or less, 5 - multiple times each day)
3. During your J1 Visa experience, how frequent was your contact with your supervisor(s)? (0 – weekly or less, 5 – multiple times each day)

A good measure of host country embeddedness should take both depth and breadth into

account as complementary features. Thus, a single unit rise in depth should have the same

influence on host country embeddedness as a single unit rise in breadth. However, because

breadth and depth are complementary (Cox, et al 2009), for higher levels of breadth, each unit

rise in depth should increase host country embeddedness more than the last unit rise in depth

(and vice versa). [4] To satisfy these conditions, I combine depth and breadth in the following way.

First, I calculate b as the count the number of affirmative responses to the breadth questions,

which can have a maximum value of five. I compute d, which is the mean value of the responses

to the depth questions, each of which has a maximum value of five. Together, they form a

coordinate pair (b,d). The minimum joint values of (b,d) is $(0,0)$, and the maximum is $(5,5)$. To

measure host country embeddedness, I calculate the Euclidean distance of a returnee's (b,d)

score coordinates to the origin, $(0,0)$ using the formula, $\sqrt{b^2 + d^2}$.[5]

---

[4] Consider the (b,d) pair $(0,0)$. b is at its minimum possible value. Each one-unit increase of d results in a one unit increase in home country embeddedness based on the Euclidean distance formula. However, consider the (b,d) pair $(5,0)$. Here, b is at its maximum possible value. Increasing d from 0 to 1 increases host country embeddedness by .29 (5.39 – 5.10), increasing d from 1 to 2 increases embeddedness by .45 (5.83 – 5.38), and so forth.

[5] I also combined the survey items I describe below using factor analysis to measure host and home country embeddedness, which gave similar results. In addition, the composite host and home country embeddedness measures as calculated using Mahalanobis distance were highly correlated with those calculated using Euclidean distance ($r = .95$ for home country embeddedness, $r = .97$ for host country embeddedness), giving similar results as well. Both sets of analyses are available from the author upon request.

I calculate *home country embeddedness* in the same way. For breadth, I count the

affirmative responses to the questions below, which like host country embeddedness, reflect the

different forms of interaction returnees had prior to and during their experiences in the U.S.

1. Before your J1 Visa experience, did you have work experience in your home country?
2. Before your J1 Visa experience, did you work for more than one company in your home country?
3. Before your J1 Visa experience, did you complete a post-secondary degree in your home country?
4. During your J1 Visa experience, were there workers in your company from your home country?
5. During your J1 Visa experience, did you communicate with colleagues, friends, and family in your home country about professional opportunities or other work-related matters?

For depth, I used the following questions, which reflect the frequency of the returnees'

interaction with their home country contacts prior to and during their work experiences in the

U.S. Similar to host county embeddedness, I combine these two breadth and depth scores using

Euclidean distance to generate a home country embeddedness measure.[6]

1. Before your J1 Visa experience, how many years did you work in your home country? (scaled to a minimum of 0 and maximum of 5)
2. During your J1 Visa experience, how frequently did you communicate with colleagues, friends, and family in your home country about professional opportunities or other work-related matters? (0 – never, 5 – everyday or more)[7]
3. During your J1 Visa experience, how frequently did you interact with your coworkers who were also from your home country? (0 – weekly or less, 5 – multiple times each day)

Other independent variables. For hypotheses 2a and 2b, to measure whether a returnee's

previous organization in the U.S. and current organization in his home country are in the same

industry, I first asked respondents to select the primary industry of their current home country

organizations. I also had access to IntEx's data on the industries of the J1 Visa Alumni's host

organizations in the U.S. I then coded whether the reported industry of the returnee's current

---

[6] Cronbach's alpha for the component variables of host country embeddedness is .63, and .68 for for home country embeddedness. These values are acceptable, but not especially high. This is expected since the component variables in each index are meant to capture different dimensions of host and home country embeddedness.

[7] In my survey, I first asked respondents how often they communicated with friends and family in their home countries. I then asked what the content of their conversation was, to which they could give one of three answers: 1) Professional/work related matters, 2) Personal matters, 3) Both. For this scale, I included the value the frequency of contact if the content was 'Professional/work related matters' only. Thus, if the content were 'Personal Matters' or 'Both', then the frequency of contact = 0.

organization was the same as that of his U.S. host organization.[8] Regarding hypotheses 3a and

3b, I observe the presence of other returnees in a returnee respondent's workplace with the survey

question, "Do any of your current co-workers have U.S. career experience?"[9]

Finally, I operationalize the level of a returnee home country's xenophobia (hypotheses

4a, 4b, and 4c) using a measure from the World Values Survey (WVS). The WVS is a cross-

national survey of attitudes toward moral, political, social, and economic issues from

respondents around the world, conducted almost every year. 1,000 respondents are selected

through clustered random sampling from each country to ensure the representativeness of the

data. For my analysis, I used the latest waves available for each respondent's country. On the

WVS, all respondents were asked, "Of the following groups, whom would you NOT want as a

neighbor?" For each country, I calculated the proportion of respondents who selected 'foreigners'

as an answer. I dichotomized this variable such that a value of one indicates that returnee's home

country scored above the median of this xenophobia index (among all countries included in the

WVS).[10] Table 3 reports this xenophobia index for the survey respondents' home countries.[11]

[Table 3 – World Values Survey Xenophobia index]

---

[8] I used IntEx's industry list on the survey to facilitate comparison. Industries were classified into 25 broad categories, ranging from architecture to healthcare, for example.

[9] The survey also contained the question, "Do any of your co-workers have career experience outside of your home country?" Including this variable did not dramatically alter the results of model estimation.

[10] Because my sample includes only individuals worked abroad in the U.S., I also created a measure for country-level attitudes toward the U.S. based on the Pew Global Attitudes Survey, which generated similar results. Respondents from 35 countries were asked about their attitudes toward the U.S., which range from "very favorable" to "very unfavorable." I took the proportion of those from a given country who answered "very unfavorable" as an anti-U.S. sentiment index. I used the latest wave available for each country in the Pew Data. This measure is meant to be an approximation in which relative differences between countries matter more than absolute numbers. The Pew Global Attitudes Project is a global opinion survey that has been conducted since 2001. Within each country, 800-1200 respondents are chosen. Sampling methods vary depending on country infrastructure. Surveys are conducted face-to-face when possible, and by telephone otherwise. 35 total countries have been included in the survey, out of which a rotating group of 20-25 countries are surveyed in each semi-annual wave. Please see www.pewglobal.org for more information.

[11] Hjerm (2001) found a strong negative relationship between xenophobic attitudes and education at the country level using data from the International Social Survey Programme, a cross-sectional survey in 15 European countries. Hjerm argues that education sensitizes people to multicultural values. Also, individuals who are predisposed to multicultural thinking are also more likely to select into higher education. As an external check of my xenophobia index, I calculated its rank correlation with the proportion of a country's adult population who have been enrolled in post-secondary educational institutions, which was strongly negative, as expected ($r = -.65$).

Using a country-level measure such as xenophobia to explain individual returnee behavior might suggest an ecological fallacy. Although a returnee's home country might have a high xenophobia index according to the WVS, it does not necessarily mean that the returnee encounters xenophobic attitudes more frequently in his specific workplace. To address this, I look to a question on my survey that asks returnee respondents, "To what extent do you think your (domestic) coworkers feel threatened by your work experience in the U.S.?" with responses on a five-point scale ranging from "not at all" to "very much." Figure 2 graphs the mean xenophobia score of returnees' home countries by their responses to this survey question.

[Figure 2 here – Xenophobia]

According to Figure 2, the returnee respondents who do not think their coworkers feel threatened by their U.S. work experience tend to be from the least xenophobic home countries, and the returnees who think their coworkers feel the most threatened are from the most xenophobic home countries. This cursory analysis imparts validity to using the WVS variable for country-level xenophobia, removing some of the concern of an ecological fallacy.

Control Variables. I include returnee's gender, age, and educational attainment as basic demographic controls in my models. I also include the amount of time the respondent has lived in his home country since coming back from the U.S. and the amount of time that the respondent lived and worked in the U.S., two variables that can be confounded with the host and home country embeddedness. For workplace context, I control for the size of the returnee's home country organization, whether the organization does business in the U.S., and whether the returnee reports to a direct supervisor. I also add a dummy variable for whether a returnee works in a high-tech industry.

At the country-level, returnees from countries that are more institutionally similar to the U.S. might also be able to find greater success in transferring knowledge. To control for this, I

calculated measures of economic, political, and cultural distance based on Berry, et al (2009).

Economic distance involves gathering the following data for the U.S. and a home country:

income (GDP per capita), inflation (GDP deflator), foreign direct investment inflows (% GDP)

and outflows (% GDP).[12] I calculate Mahalanobis distance based on the standardized versions of

the four measures listed above to generate economic distance between the U.S. and a home

country. For political distance, I use a democracy index (*The Economist* 2013), membership in

WTO, and attitudes on state responsibility for business and its citizenry (gathered from the

WVS). For cultural distance, I use aggregated responses to World Values Survey questions

about authority, work, trust, and family.

[Table 4 – Summary Statistics for Variables used in Regression Analysis]

[Table 5 – Correlation Matrix]

Common method bias. Because of the nature of survey data collection, respondents might

respond to questions to a certain profile, also known as a consistency motif, a source of common

methods bias (Podsakoff, et al 2003). For example, respondents who are gregarious might be

simultaneously more likely to share knowledge and to develop strong social ties at home and

abroad. Podsakoff, et al (2003) suggest several remedies for this bias. First, in terms of research

design, one should only use data about behavioral variables, which are less subject to bias than

attitudinal measures. For my analysis, my measures of knowledge transfer and host and home

country embeddedness are based on behavioral questions. Second, different questions measuring

a similar construct should not be closely co-located on questionnaires because this might induce

an artificial correlation. The items that comprise the measures of host and home country

---

[12] Berry, et al (2009) actually recommend using value of total exports and imports rather than FDI in- and outflows. However, export and import data were inconsistent and difficult to find, which would have resulted in dropping respondents from over half of the home countries in my sample. FDI data, which similarly account for a country's global economic connectedness, were far more systematically available from the World Bank.

embeddedness are scattered throughout my survey, and the knowledge transfer question has its

own section, creating greater distance.

Outside of survey design, I also use control variables in my models to reduce common

methods bias. I add a dummy variable for whether the respondent reports sharing any

knowledge while working in the U.S. I also control for the time the respondent spent on the

survey and the length of a respondent's answer to the open-ended questions on the survey. This

helps to assure that a respondent's likelihood of reporting positive knowledge transfer is not

simply attributable to a high baseline willingness to share information in general.[13]

Finally, I also follow Podsakoff, et al (1990), who recommend controlling for common

methods bias using an unmeasured latent method factor. This involves generating a latent

variable through factor analysis that captures the covariance between all of the variables

suspected of suffering from common methods bias. Here, I load my dependent variable for

knowledge transfer success and my composite measures for host and home country

embeddedness into a single factor (which explains 17.4% of their total variation). I then use the

factor scores as a control variable in my models. This factor should account for the common

variation of its component variables, which arguably comes from common methods bias.

Methods

Because I operationalize outcomes for my first analysis on successful returnee knowledge

transfer and my second analysis comparing knowledge sharing and knowledge adoption using

dummy variables, I estimate logistic regression models. To adjust for survey response bias, I

estimate these logit models, using all 11,434 survey *recipients*, as part of a sample selection

model (Heckman 1979). I first estimate a probit model with all survey recipients, predicting

---

[13] In addition, when respondents submitted their surveys does not appear to affect the final results. Comparing early
and late respondents revealed only marginal differences in most of the variables used in the analysis. Using
subsamples of early and later respondents also does not change the overall results.

whether a recipient completed the survey. I then calculate an inverse Mills ratio from this model, which I include as an independent variable in the second-step logit models predicting knowledge transfer success for returnee respondents.[14]

The Heckman model's exclusion restriction states that at least one independent variable in the first-stage model – essentially, an instrument – must predict selection into the second-stage model's sample and not be correlated with second-stage model's outcome variable. Here, I use a dummy variable for whether a recipient's J1 visa application was handled by the Professional Development Program department (PDP) in IntEx. In IntEx, specialized departments handle applicants working for select large host companies whereas the PDP department processes all other applications. My interviews with IntEx staff members confirmed that because of their larger application load, PDP staff members communicate with their J1 applicants less frequently. This makes J1 participants processed by PDP less likely to respond to a survey. Furthermore, I argue that there is little reason to suspect that respondents' affiliation with PDP affects the knowledge transfer dependent variable in the outcome model.[15] Although this exogeneity assumption cannot be directly tested, a Wald test of the PDP variable in the first-stage probit indicated that it is relevant and a strong instrument (F-statistic = 33.035; strong instruments typically have the F-statistic values that exceed 20).

Results: Organizational and Cultural Contingencies

---

[14] Dubin and Rivers (1989) showed that this procedure yielded unbiased and efficient results for second-step logit models. See Appendix A for results.

[15] Another confounding factor is that the reason returnees elect to go abroad in the first place is to develop strong ties overseas in order to transfer knowledge upon re-entry into their home countries. I therefore estimated a model controlling for the reasons that led respondents to leave the U.S. I also estimated a model using only a subsample of those returnee respondents who indicated they only left the U.S. because of personal reasons. My results were robust to these specifications. This analysis removes some concern that the reasons for a returnee's return drive the relationship between embeddedness and knowledge transfer. These analyses are available upon request.

Models. For my first analysis, the results of seven logistic regression models are reported in Table 7. Model 1 contains control variables and main independent variables, model 2 adds the interaction between home and host country embeddedness, model 3 interacts host country embeddedness with the same-industry dummy variable, model 4 contains the interaction between the host country embeddedness and the presence of other returnees, models 5 and 6 contain interactions between the embeddedness variables and home country xenophobia, and model 7 contains all interactions. I interpret all interaction effects using model 7, which is the full specification. The negative and significant coefficient of the inverse Mills ratio indicates that the effects of the independent variables are downwardly biased without correcting for response bias. However, estimating models without the inverse Mills ratio gave almost identical results. Table 6 summarizes the samples I use in the first analysis below, which includes all returnee respondents, and in the second analysis, which compares this same sample of returnee respondents to only those returnee respondents who reported sharing knowledge.

[Table 6 – Sample Summary]

Out of the three institutional distance measures, only economic distance has any consistent effect on knowledge transfer success across models. As the economic distance between a returnee's home country and the U.S. grows, the returnee is more likely to successfully transfer knowledge. This suggests that less developed countries are more receptive to overseas ideas from returnees.

Because the effect of a unit change in an independent variable on the probability of the dependent variable taking on a positive value is non-linear, I interpret the marginal effects in my models based on a hypothetical returnee with a baseline probability for knowledge transfer success of 45% (equal to the proportion of respondents reporting knowledge transfer success). Figures 3 and 4 graph these effects for this and other baseline probabilities (Zelner 2009).

Host and home country embeddedness (H1a, H1b, and H1c). The model estimates in

Table 7 support hypotheses 1a and 1b, which state that a returnee's host and home country

embeddedness both increase knowledge transfer success. Specifically, increasing host country

embeddedness from its mean value by one standard deviation boosts the probability of successful

knowledge transfer 4%, The same one standard deviation increase in the respondent's home

country tie strength increases the probability of knowledge transfer success 6%. This suggests

that returnees with higher host and home country embeddedness tend to have access to broader

repositories of knowledge and can better identify opportunities for knowledge transfer.

[Table 7 – Full results]

In models 2 and 7 the interaction of home and host country embeddedness has a positive

and significant effect on knowledge transfer success, offering support for Hypothesis 1c. Thus,

the advantages of home and host country embeddedness for knowledge transfer are mutually

contingent. According to the left-hand panel of Figure 3, at one standard deviation below the

mean level of home country embeddedness, the effect of increasing host country embeddedness

is almost non-existent. However, at one standard deviation above the mean for home country

embeddedness, increasing in host country embeddedness by one standard deviation boosts the

probability of knowledge transfer success almost 10%. The right-hand panel reveals the same

pattern for the effect of home country embeddedness as being contingent on host country

embeddedness. This result gives support to the claim that returnees are most valuable to their

home countries if they have strong ties both at home and overseas.

[Figure 3 – Interaction Plots of H1c]

[Figure 4 –Plots of H2, H3, H4, H5]

Host country embeddedness and industry similarity (H2a, H2b). Models 1 and 7 do not

support hypothesis 2a (table 7). Specifically, although the main effect of industry similarity on

knowledge transfer success is positive, it is not significant. However, the statistically significant interaction in models 3 and 7 (table 7) support hypothesis 2b, suggesting that the positive effect of host country embeddedness on returnee knowledge transfer increases if the returnee's current home country organization is in the same industry as his organization in the U.S. In particular, as host country embeddedness increases by one standard deviation, the probability of knowledge transfer success increases by almost 10% when the returnee's host and home country organizations are in the same industry (Figure 4). However, the same increase in host country embeddedness leads to only a 5% boost in knowledge transfer success if the returnee comes back to an organization in a different industry. Industry similarity, therefore, has an indirect positive effect on knowledge transfer success. Specifically, it increases the relevance of returnees' experiences abroad to their coworker recipients, which enhances the advantage that host country embeddedness confers on them as knowledge brokers.

Host country embeddedness and the presence of other returnees (H3). The main effect of the presence of other returnees as coworkers does not reach significance across models thereby lending no support to hypothesis 3a. However, results from models 4 and 7 (table 7) indicate that host country embeddedness gives returnee respondents less of a brokerage advantage if the returnee's coworkers also have experience working in the U.S., supporting hypothesis 3b. A one standard deviation rise in host country embeddedness leads to a boost in the probability of knowledge transfer success by 11% in workplaces in which the returnee is the only worker with U.S. experience. By contrast, in workplaces that have other returnees, the effect of host country embeddedness on knowledge transfer success is flat. This supports the notion that when returnees do not serve as the sole links to resources abroad for an organization, their structural advantage as cross-border brokers disappears.

Upon first glance, this result appears counterintuitive. After all, the presence of other

returnees might reflect the international orientation of a home country workplace, increasing its

absorptive capacity (Cohen and Levinthal 1989, Szulanski 2000). This would suggest that a

returnee's host country embeddedness should have an even larger positive on knowledge transfer

success, not smaller. One reason for the observed effect, though, is that a home country

organization's international orientation affects a returnee's knowledge transfer directly while the

presence of other returnees moderates the effect of a returnee's individual embeddedness as part

of the interpersonal knowledge transfer process. Indeed, the negative interaction remains even

controlling for whether the home country organization has business contact with the U.S., which

by itself increases knowledge transfer success (model 7, table 7). Viktor, a Bulgarian returnee I

interviewed, related these opposing logics based on his experience in a U.S.-based software firm

in his homeland after working at Google in the U.S.:

> At VMWare in Sofia, I felt much more comfortable because there was already a unit-testing
> procedure in place, which my colleagues were used to because they also worked abroad. In some
> ways, it was easier for me to adapt to… [So,] learning to work on large-scale projects at Google
> was definitely useful for my projects at VMWare since the software development processes were
> similar. *But I don't think I was able to bring anything new or different to the team*. (interview
> with Viktor, emphasis added)

Embeddedness and home country xenophobia (H4a, H4b, H4c). Across all models, the

main effect of home country xenophobia is not statistically significant, lending no support to

hypothesis 4a. However, it is possible that some returnees are more likely to face xenophobic

responses than others, as hypotheses 4b and 4c predicts. The results in models 5 and 7 support

hypothesis 4b, which asserts that the positive effect of host country embeddedness on knowledge

transfer diminishes in more xenophobic returnee home countries (model 7). I dichotomized my

index of xenophobia to facilitate the interpretation of this interaction.[16] According to model 7

---

[16] Interacting host country embeddedness with a continuous version of the WVS xenophobia index gives similar.
However, the interaction effects here were only significant at the $p < .10$ level. This could be evidence of a non-
linear effect. Specifically, I found that the magnitude of the interaction effect is primarily driven by countries with

(table 7), the interaction between the host country embeddedness and the home country

xenophobia dummy variable is negative and significant. Specifically, in a non-xenophobic home

country, a standard deviation increase in a returnee respondent's host country embeddedness

increases the probability of knowledge transfer success by approximately 6% whereas in a

xenophobic home country, the same increase in host country embeddedness boosts the

probability of knowledge transfer by less than 1%. In other words, in xenophobic countries,

knowledge recipients perceive the overseas embeddedness of returnee transferors negatively,

transforming it into a liability rather than an advantage when it comes to knowledge transfer.

Maria, a returnee architect to Uruguay, which has a high xenophobia index, illustrates the trouble

she had in implementing her ideas in construction projects for local clients:

> Uruguayans like to keep to themselves, they don't really like new things from the outside. When
> I first tried to tell my client my ideas came from my experience working on rural schools in the
> US, they were very much against them. I learned that if I wanted to use any of my new skills, I
> always had to hide that I learned them in the United States. (Interview with Maria)

Hypothesis 4c also receives support in models 6 and 7 as the interaction between the

home country xenophobia dummy and home country embeddedness is positive and significant

(table 7). Increasing home country embeddedness by one standard deviation in a non-

xenophobic country leads to a 3% boost in the probability of knowledge transfer success whereas

the same increase in home country embeddedness in a xenophobic country amplifies the

probability of knowledge transfer success by almost 10%. Together, these findings suggest that

the importance of host and home country embeddedness for knowledge transfer varies by the

pervasive cultural attitudes in a returnee's home country. Thus, cultural views play an important

role in organizational evaluation as part of an interpersonal knowledge transfer interaction.[17]

---

high levels of xenophobia by including a squared term for xenophobia. In other words, for example, moving from
low xenophobia to average xenophobia moderately diminishes the positive effect of host country embeddedness, but
moving from average to high xenophobia greatly reduces the effect of host country embeddedness.

[17] I also investigated whether host country attitudes might also directly or indirectly affect returnees' knowledge
transfer success. Specifically, I generated a variable from Gallup's World Affairs Survey, using yearly proportions

Results: Decomposing Knowledge Transfer

In my second analysis, I disentangle knowledge sharing and knowledge adoption as

separate outcomes by estimating a logit model of whether a returnee respondent shares

knowledge and a logit model of whether the shared knowledge is adopted.[18]

[Table 8 – Poisson and Logit models]

The main effects of home and host country embeddedness on knowledge sharing are positive and

significant (model 1, table 8). Thus, embeddedness in overseas workplaces confers access to

more knowledge worth sharing, and home country embeddedness grants returnees more

knowledge transfer opportunities, making returnees more willing to share. Model 2 (table 8),

however, shows that the positive effect of home country embeddedness on knowledge adoption

is significantly greater than that of host country embeddedness (*p < .01*). Here, although home

country embeddedness can activate trust among coworkers, making them more receptive to

returnee ideas, host country embeddedness does not necessarily engender as strong of an effect.

Model 2 (table 8) also reports that the interaction between home and host country

embeddedness is positive and significant for knowledge sharing. Although host country

embeddedness might boost the amount of knowledge a returnee can share from overseas, a

returnee must, at the same time, realize opportunities for knowledge sharing, which comes from

stronger home country embeddedness. A similar reasoning might explain the same positive

---

of U.S. respondents who report having an "unfavorable" opinion toward a given returnee's country (22 countries in total). Using a dichotomized version of this variable, I found that interacting it with home and host country embedddedness gave similar results as their interactions with home country xenophobia, in part because it is highly correlated with xenophobia (Spearman's rho = .58). As a robustness check, the home country xenophobia interaction effects also remained when controlling for this U.S. unfavorable attitudes variable.

[18] 67%, or 2033 out of 3012 respondents in my analysis sample, report sharing any knowledge, and 71%, or 1445 out of the 2033 respondents who report having shared knowledge, report the knowledge being adopted. See Table 6 for a summary.

interaction effect for knowledge adoption (model 4, table 8), but the smaller sample analyzed in model 4 is likely responsible for the non-significant coefficient.

In addition, whereas the interactions of host country embeddedness with the organizational evaluation variables – same industry background, the presence of other returnees, and xenophobia – are positive and significant for knowledge adoption (model 4, table 8), they are not for knowledge sharing (model 2, table 8). This is consistent with my main arguments. Regarding hypothesis 2b, industry similarity increases the positive effect of host country embeddedness on knowledge *adoption* because the knowledge that same-industry returnees share is likely to be more relevant and thus more likely to be accepted. However, while the potential for greater relevance might motivate returnees who are strongly embedded abroad to share more knowledge, the knowledge accessible by same-industry returnees also might be redundant, making them less willing to share it, thereby weakening the influence of host country embeddedness on knowledge sharing. These opposing mechanisms likely account for the non-significance of this interaction effect for knowledge sharing (model 4, table 8). For hypothesis 3b, the presence of other returnees in the workplace heightens the criteria used to evaluate the knowledge that a returnee shares, which explains its negative interaction effect with host country embeddedness on knowledge *adoption*. However, it is unclear that the presence of other returnees would dampen the positive effect of host country embeddedness on knowledge *sharing* because it would not diminish returnee access to overseas knowledge.

Finally, hypothesis 4b concerns why recipients in xenophobic settings would be unlikely to adopt the knowledge shared by returnees who have strong overseas ties, which is supported by model 4 (table 8). The interaction effect, however, is not significant for knowledge sharing (model 2, table 8). Although some returnees would be disinclined to share overseas knowledge in xenophobic settings, it is unclear why xenophobia would systematically weaken the positive

association between host country embeddedness and knowledge sharing. Curiously, the positive

interaction between home country embeddedness and xenophobia is significant for knowledge

sharing, but not for knowledge adoption. Because in-group members value in-group connections

more in xenophobic settings, returnees with stronger homeland ties might be given more

opportunities to share knowledge thereby making them more willing to do so. It seems intuitive

that recipients in xenophobic settings would be more likely to adopt the knowledge of returnees

with stronger homeland ties as well, but model 4 (table 8) does not support this assertion.

Further Analysis

I also conducted a sensitivity analysis to identify how strongly an unobserved variable –

specifically, a respondent's personality – must be simultaneously correlated with a treatment,

such as host country embeddedness, and a dependent variable, knowledge transfer, in order to

render the coefficient of the treatment variable statistically null. If such an omitted variable is

unlikely to exist, then the 'unconfoundedness assumption' of the model is reasonably satisfied

(Imbens 2003, Rosenbaum and Rubin 1983).

Figure 5 reports the results of a sensitivity analysis for the effects of host and home

country embeddedness on returnee knowledge transfer (based on Harada 2012). The upper panel

in figure 5 plots two items: (1) the points representing the correlations of selected independent

variables with host country embeddedness and knowledge transfer success and (2) a curve

representing the threshold of these correlations for an omitted variable, beyond which the

coefficient of host country embeddedness becomes non-significant at the $p < .05$ level in a two-

tailed test. Figure 5 shows that all of the independent variables in model 1 fall well below this

curve. Intuitively, the variable closest to the curve is whether the returnee respondent had made

suggestions in his workplace while working in the U.S., which represents a baseline willingness

to share knowledge. The curve shows that for an omitted variable to disrupt the effect of host

country embeddedness, it must be simultaneously almost twice as correlated with host country

embeddedness and knowledge transfer success as this baseline willingness variable. This is

improbable, making the models in table 7 insensitive to violations of the unconfoundedness

assumption. Figure 5 also plots a sensitivity analysis of the effect of home country

embeddedness on knowledge transfer success with similar results.[19]

[Figure 5 – Sensitivity Analysis]

In addition, if home country embeddedness and knowledge transfer success were

reflections of a respondent's personality, they should have a positive relationship regardless of

the respondent's work environment. That is, were the respondent not working in his home

country, home country embeddedness should still increase knowledge transfer success, if

personality traits are driving these results. I explore this by estimating a logistic regression

model using those respondents who reported that they were working in the U.S. ($n = 667$, i.e.,

non-returnees, see Appendix B). As expected, I find that the effect of home country

embeddedness on knowledge transfer success is not significant for respondents working in the

U.S., whereas host country embeddedness has a positive and significant effect.[20]

Discussion and Conclusion

Why are some returnees more effective cross-border brokers of knowledge flow than

others? The answer lies in conceptualizing knowledge transfer as an interpersonal process with

two contingent components – the individual embeddedness of a knowledge transferor and the

---

[19] Appendix C contains a description and results for an additional instrumental variable regression analysis, in which I attempt to capture only the exogenous variation in transnational and local tie strength. The results in Table C1 of Appendix C reveals that the tie strength variables are endogenous, but their positive and significant effects do not disappear under the instrument variable model estimation.

[20] In addition, the reason for a returnee's return might be driving the relationship between embeddedness and knowledge transfer. Further analysis, available from the author, using a subsample of returnees who reported returning to their home countries for personal, not professional, reasons, showed that the main results were robust.

organizational evaluation by the knowledge recipients. Specifically, whether transferors can initiate knowledge spillover first depends on the extent to which they are embedded in their current and past organizational surroundings. For the process to be successful, though, knowledge recipients must positively evaluate the knowledge, and more importantly, the transferor. This depends on recipient attitudes toward the transferor, which come from their organizational and cultural surroundings.

I find that being more embedded in their host and home countries increases a returnee's probability of successfully transferring knowledge back to an organization in his home country. However, because the effects of host and home country embeddedness interact positively, their advantages are also contingent on one another. Also, the positive effects of host country embeddedness on knowledge transfer success diminish when other returnees are present in the home country workplace. By contrast, when returnees' industry experience from abroad matches the industry category of their home country organizations, host country embeddedness tends to have an even greater positive effect on knowledge transfer success. Finally, stronger host country embeddedness does not increase knowledge transfer in xenophobic home countries whereas higher home country embeddedness becomes a greater advantage in such settings.

These findings underscore the need for a clearer theoretical understanding of the context of knowledge diffusion outcomes through brokerage ties (Burt 1997). A chief theoretical contribution of this paper is the analytical separation between the structural and functional definitions of a broker. While others have shown how brokers' relational advantages erode under certain structural conditions (Reagans and Zuckerman 2003, Buskens and van der Rijt 2008), I have demonstrated how the cultural and organizational context of brokers' surroundings can moderate their effectiveness in commanding knowledge flows. Thus, while all returnees have

the potential to conduct knowledge between their host and home country settings, key non-structural features of their positions can hinder or enhance their ability to do so.

This study also makes several empirical contributions to work on cross-national knowledge spillovers through global mobility. First, I find evidence that certain institutional and cultural barriers can erode the structural advantages that scholars assume returnees possess (Chaparro, et al 2006, Dai and Liu 2009). Whether returnees can effectively bring back novel practices from abroad depends on the settings in which they activate their cross-border embeddedness. Second, my analysis utilizes data from an original survey that systematically identifies instances of knowledge transfer. I avoid the use of proxy measures of knowledge transfer success by asking respondents directly whether their knowledge transfer led to some change in organizational practices, validating their responses with open-ended survey questions.

These contributions join a chorus of research that has crystallized around exploring the relationship between the global flows of people and expertise (Brown, et al 2001, Filatotchev, et al 2011, Kogut and MacPherson 2011). My findings encourage readers to interpret arguments about the benefits of return migration cautiously (Obukhova [2011] and Lazarova and Tarique [2005]). Recent work has cast skilled returnees as agents of economic transformation, but they have done so without systematic data (Saxenian 2006, Mountford 1997, Mayr and Peri 2008). Moreover, this work often takes knowledge spillovers for granted in linking reverse migration to economic growth (Borjas and Bratsberg 1996, Dustmann and Weiss 2007). By contrast, the evidence from this paper highlights the multiplex challenges returnees encounter in their homelands despite being characterized as ideally positioned to broker cross-border expertise.

A key limitation of my analysis is that I analyze returnees who have only had overseas experience in the U.S. Because past work has shown how managerial and technical practices from the U.S. have become more widespread than those from other countries, the rates of

returnee knowledge transfer in my data might be upwardly biased (Djelic 1998, Guillen 1994).

Different host country experiences can lead to different knowledge transfer outcomes. Although

some research has compared returnees from different host countries, little work has done so for a

skilled migrant population (Furuya et al, 2009, Hirshon, et al 1997, Rohrlich and Martin 1991).

This represents an opportunity for future researchers to compare returnees not only from

different host countries but also with different cultural experiences from the same host country.

In addition, methodologically, the data in this study come from a cross-sectional survey,

which relies on respondent memory in recalling behaviors related to, for example, embeddedness

in overseas work practices. One possible implication is that these data might be underestimating

the extent and range of activities in which a returnee was involved while working abroad. This

would diminish the variation in host country embeddedness, which can lead to an upwardly

biased effect on knowledge transfer success (assuming there is no bias in this outcome variable).

Addressing this important measurement issue would entail gathering longitudinal data on

returnee knowledge transfer, which would bring greater credence to future studies of

international migration and knowledge transfer.

The process of how knowledge brokers share, reconstruct, and implement their

knowledge still stands as a black box. Although my work focused on the transfer of

organizational practices, mobility is also responsible for the movement of technical knowledge,

the diffusion of which has been studied extensively, representing an opportunity for future

research on returnees. Regardless, many researchers have assumed that the main value that

returnees bring to their home country lies in their expertise, however it is defined. How they

actually apply their know-how, however, remains shrouded. Future work should focus on

investigating cross-border knowledge transfer as a negotiated and contentious process as a

frontier for understanding the links between international mobility and economic globalization.

Appendix A – First Stage Heckman

[Table A1 here]

Appendix B – Logistic regression of knowledge transfer among non-returnees

[Table B1 here]

Appendix C - Instrumental Variable Regression

I address endogeneity in the models in table 5 by capturing only the exogenous variation

in home and host tie strength using an instrumental variable identification strategy. Under this

framework, I first determine an instrumental variable that satisfies both the relevance and

exogeneity assumptions of the model. According to the relevance assumption, an instrument, Z_i,

must be correlated with the treatment variable, X_i, in the model:

$$Y_i = \beta_0 + \beta_1 X_i + u_i \mid Z_i \qquad (1)$$

At the same time, under the exogeneity assumption, Z_i must not be correlated with the error term

of the endogenous regression model (Stock and Watson 2007).

Because I have two potentially endogenous treatment variables, host and home country

professional tie strength, I apply identify a different instrumental variable for each. For host

country professional embeddedness, I create an index of a returnee respondent's *personal*

embeddedness in the U.S. as an instrument. Specifically, I construct the index out of the

following five survey questions:

1. Prior to working in the U.S., did you have any relatives who lived there?
2. Prior to working in the U.S., did you have friends who lived there?
3. How often did you socialize with American non-coworkers outside of work? (dichotomized)
4. Prior to working in the U.S., had you ever been to the U.S. for leisure?
5. Prior to working in the U.S., did you study abroad or complete a degree program in the U.S.?

Together, these five questions measure the extent to which a returnee had *non-professional*,

personal connections with the U.S. Arguably, such ties would facilitate the returnee's adaptation

to work environments in the U.S. because having greater cultural familiarity would make the

returnee more apt to socialize and communicate in the workplace (Black, et al 1991). This, in

turn, boosts the returnee's potential for strengthening his professional embeddedness abroad.

The correlation between this non-professional host country embeddedness index and the

returnee's host country embeddedness is moderately positive at .10.

At the same time, it not apparent why any of the five component elements of this non-

professional host country embeddedness index would be correlated with a returnee's success in

transferring professional knowledge or practices to an organization in his home country. A

returnees' value to employers in their home countries depend on the strength of their *professional*

ties abroad, i.e. the extent of their professional experience working overseas. In my analysis, it is

not obvious whether a returnee has had family or friends in the U.S. would directly affect the

probability of returnee successfully adapting organizationally specific practices or knowledge to

his home country workplace. Under this logic, I argue that this personal host country tie strength

index satisfies the exogeneity assumption.

Borrowing the same reasoning, I also construct a *personal* home country embeddedness

index as an instrument to identify the exogenous variation in a returnee's *professional* home

country embeddedness. I use the following five questions about returnees' non-work-related

embeddedness in and cultural affinity toward their home country:

1. Prior to working in the U.S., were you married to a co-national in your home country?
2. Prior to working in the U.S., did you have any children in your home country?
3. While working in the U.S., how often did you contact friends or family in your home country about only non-work related matters?
4. While working in the U.S., how often did you communicate with co-nationals also in your company about non-work related matters?
5. Did you decide to return to your home country for non-work related personal reasons?

Again, having stronger personal roots in one's home country prior to working in the U.S.—as

well as maintaining those personal connections while abroad—makes returnees feel more

comfortable in their home countries, which is positively associated with their professional

embeddedness in their homelands. In my data, the correlation between a returnee's personal

home country embeddedness and professional home country embeddedness stands at .46.

Similar to above, I argue that the personal home country tie strength index satisfies the

exogeneity assumption because its components do not have any apparent relationship with the

error term in the ultimate outcome model. Stronger *professional* home country embeddedness

enables returnees to translate organizational knowledge and practices from overseas in relevant

and useful ways in the workplace. However, it is not clear why elements of returnees' personal

lives in their homelands would affect the success of such cross-border knowledge transfer

activity.

I estimate my models in two stages. While estimates for instrumental variable regression

tend to be efficient and unbiased for outcome and endogenous treatment variables that are

continuous, some have challenged the validity of instruments for outcome models involving

dichotomous dependent variables. I follow, Rassen, et al (2009), who compare of two-stage

logistic regression models estimated by maximum likelihood, probit structural equation models,

and models estimated by the generalized method of moments, noting little substantive difference

in their models.[21] The equations below illustrate my application of their recommended method:

$$X_i = Z_i\beta_1 + W_i\beta_2 + \varepsilon_i \qquad\qquad (2)$$

$$\Pr(Y_i = 1 \mid \hat{X}_i, W_i) = \frac{\exp(\hat{X}_i\beta_1 + W_i\beta_2)}{1 + \exp(\hat{X}_i\beta_1 + W_i\beta_2)} \qquad (3)$$

In the first stage, I estimate a linear regression model (equation 2) predicting host country

professional embeddedness, X_i, using *personal* host country embeddedness, Z_i, and the other

independent variables, W_i, also in the second stage equation. In the second stage (equation 3), I

---

[21] Rassen, et al (2009) do discover, however, that estimates from the two-stage logistic regression models are less efficient than the other two methods, making it a conservative test given their inflated standard errors. I also estimated instrumental variable probit models and used GMM to estimate my logistic regression models, yielding similar results. I present the results of the two-stage logistic regression models to facilitate interpretation.

use the predicted values of X_i, $\widehat{X}_i$, from the first stage model (equation 3), in a logistic regression of Y_i, the probability of successful knowledge transfer. I do the same for home country *professional* embeddedness, and include both instrumented variables in my second stage logistic regression model. A Wald-test of including non-professional home country embeddedness in the first stage equation predicting professional home country embeddedness indicates that it is a strong instrument (F-statistic = 603.75). A Wald test for host country embeddedness also gave evidence for its instrument being strong (F-statistic = 19.271).

[Table C1 – Instrumental Variable Regressions]

Table C1 reports the results of the second stage equation, which has the same specification of the models in Table 5. According to Hausman tests, the estimated models using instrumental variables are more consistent than the models in Table 5. This serves as evidence of endogeneity in my original models in Table 5.[22] Nonetheless, almost all of the main treatment variables and their interaction effects remain statistically significant, attesting to the robustness of my results.

---

[22] In addition, a Wald test of exogeneity for a set of models I estimated as instrumental variable probit regressions did not indicate that there were multiple endogenous variables in these second stage outcome probit models.

Table 1. Descriptive statistics for survey population

	Mean	SD
Female	.36	
Age	30.02	(4.37)
Education Level (in years of tertiary education)		
< 1 Year	.07	
1 Year	.05	
2 Years	.19	
3 Years	.26	
4 Years	.20	
5 Years	.11	
> 6 Years	.10	
Home Country Region		
East Asia & Pacific Island	.12	
Europe & Central Asia	.56	
Latin America & Caribbean	.04	
Middle East & North Africa	.01	
North America	.25	
South Asia	.01	
Sub-Saharan Africa	.01	
Field		
Engineering and Natural Sciences	.51	
Finance, Management, Marketing	.35	
Architecture	.06	
Arts and Culture	.03	
Communications Media	.03	
Other	.02	
Average Duration in U.S. (in Days)	226.07	(176.44)
Previous U.S. Visa	.13	

N = 11,434 former J1 Visa holders, survey recipients.

Table 2. Top 10 countries-of-origin by U.S. visa category

Rank	J-1 from IntEx	J-1 (250,000-350,000)	H-1B (65,000)	F-1 (300,000-350,000)
1	**Germany**	China	India	China
2	Canada	Germany	China	S. Korea
3	**China**	Russia	Philippines	India
4	France	Brazil	S. Korea	Japan
5	Switzerland	U.K.	U.K.	Sa. Arabia
6	**U.K.**	France	Japan	Taiwan
7	Singapore	Turkey	Mexico	Brazil
8	**Mexico**	S. Korea	Taiwan	Vietnam
9	**S. Korea**	Thailand	France	Germany
10	**Japan**	Ukraine	Germany	Mexico

Note: Countries in bold from IntEx's top J1 visa recipient countries appear at least two of the other top ten country rankings in this table. Values in parentheses indicate number of visas of a specific type issued each year.

Table 3. Summary of xenophobia measures by country

Home country in survey sample	Xenophobia score (World Values Survey)	Anti-US score (Pew Survey)
Afghanistan		
Argentina	0.04	
Australia	0.06	
Brazil	0.08	0.06
Bulgaria	0.19	
Canada	0.05	
Chile	0.11	
China	0.2	0.11
Congo		
Egypt, Arab Rep.		0.49
Finland	0.17	
France	0.43	0.04
Germany	0.16	0.03
Ghana	0.26	
Guatemala	0.04	
Hong Kong	0.94	
India	0.39	0.05
Indonesia	0.36	0.10
Iran, Islamic Rep.	0.6	
Iraq		
Israel		0.10
Italy	0.16	
Japan		0.01
Jordan	0.68	0.49
Kenya		0.05
Lebanon		0.34
Lithuania		0.60
Malaysia	0.57	
Mexico	0.11	0.10
Moldova	0.19	
Morocco	0.24	
Netherlands	0.1	
New Zealand	0.08	
Nigeria		
Norway	0.08	
Pakistan		
Peru	0.06	
Philippines		
Poland	0.15	0.03

Romania	0.19	
Russia	0.33	0.08
Saudi Arabia		
Senegal		
Serbia	0.26	
South Africa	0.25	
South Korea	0.39	
Spain		0.07
Sri Lanka		
Sweden	0.02	
Switzerland	0.08	
Tanzania		
Thailand	0.44	
Turkey	0.31	0.62
Ukraine	0.19	
United Kingdom	0.16	0.06
Uruguay	0.08	
Vietnam	0.45	
Zimbabwe		

Note: Xenophobia score reflects proportion of respondents in a given country who indicated that they would prefer not to have a foreigner for a neighbor on World Values Survey. The anti-US score refers to the proportion of respondents on the Pew Global Attitudes Survey who indicated that they held a "very unfavorable" opinion of the U.S. See footnote 8 for more description of this variable. Countries in table without values in either column are represented by respondents in the sample, but not by the Pew Survey and World Values Survey.

Table 4. Descriptive statistics for analysis sample of returnees (n = 3,012 returnee survey respondents)

Variable	Mean	SD	Description
Dependent Variable			
Knowledge Transfer Success	.483		1 = returnee shared knowledge from U.S. and home ctry. org adopted shared knowledge
Independent Variables			
Host country embeddedness	3.99	(0.66)	Scale of returnee's professional involvement in the U.S. (min: 0, max: 7.07, see Variables section)
Home country embeddedness	3.69	(1.16)	Scale of returnee's professional involvement in home country (min: 0, max: 7.07, see Variables section)
Same industry	.83		= 1 if industry of returnee's home country organization is same as that of organization in the U.S.
Presence of other returnees	.40		= 1 if returnee's coworkers have had work experience in U.S.
Home country xenophobia	.23		= 1 if returnee's home country exceeds median xenophobia score based on world values survey (see Variables section)
Control Variables			
Female	.35		= 1 if returnee is female
Age	29.00	(3.84)	Returnee's age in years
Some undergraduate	.01		= 1 if returnee has only some undergraduate education
Undergraduate degree	.15		= 1 if returnee has earned only an undergraduate degree
Some graduate school	.52		= 1 if returnee has some graduate education
Graduate degree	.33		= 1 if returnee has earned a graduate degree
Years since return	3.73	(2.29)	Years since the returnee's return to home country from working in U.S.
Total days in U.S.	221.67	(129.48)	Total amount of time spent working in U.S. under J1 Visa
Current company > 500 employees	.56		= 1 if returnee current employer has greater than 500 employees
Has Supervisor	.83		= 1 if returnee has direct supervisor in home country
Does business in US	.25		= 1 if returnee helps company conduct business and manage relationships with other organizations in U.S.
Tech Industry	.50		= 1 if returnee's company is in technology industry
Home Country in North America	.15		= 1 if returnee's home country is in North America
Economic Distance	2.16	(3.17)	Mahalanobis distance between U.S. and returnee's home country based on GDP, inflation, FDI in- and outflows
Political Distance	9.01	(6.21)	Mahalanobis distance between U.S. and returnee's home country based on democracy index, WTO membership, and attitudes toward state
Cultural Distance	8.93	(2.88)	Mahalanobis distance between U.S. and returnee's home country based on attitudes on authority, work, trust, and family
Made suggestion in Host Company	.84		= 1 if returnee volunteered a suggestion in workplace while working in U.S. under J1 Visa
Length of open-ended survey response	120.89	(211.50)	Number of characters in returnee's open-ended response on survey
Survey Duration	27.19	93.14	Amount of time (in minutes) it took for the returnee to complete the survey

Table 5. Correlation between variables used in regression analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	1.00																											
2	-0.06	1.00																										
3	-0.02	-0.06	1.00																									
4	-0.03	0.15	0.08	1.00																								
5	0.06	0.00	0.03	0.04	1.00																							
6	-0.01	-0.10	0.01	-0.09	-0.01	1.00																						
7	0.08	0.14	-0.05	-0.06	0.13	-0.03	1.00																					
8	-0.01	-0.02	0.00	0.02	-0.04	0.01	-0.11	1.00																				
9	0.04	0.04	-0.04	-0.06	-0.10	0.05	-0.03	-0.04	1.00																			
10	-0.04	-0.10	0.02	0.00	-0.06	0.08	-0.07	-0.10	-0.40	1.00																		
11	0.01	0.08	0.01	0.04	0.15	-0.13	0.11	-0.07	-0.28	-0.75	1.00																	
12	-0.04	-0.06	-0.05	-0.06	-0.06	0.06	0.51	-0.10	0.09	-0.04	-0.01	1.00																
13	0.06	-0.15	0.02	-0.09	0.16	0.14	0.15	-0.03	-0.04	0.18	-0.15	0.04	1.00															
14	-0.03	0.20	-0.14	0.09	0.05	-0.07	0.06	-0.02	-0.01	-0.07	0.09	0.01	-0.11	1.00														
15	-0.03	0.05	-0.03	0.06	0.02	-0.02	-0.08	0.01	-0.01	0.01	-0.01	-0.06	-0.04	0.17	1.00													
16	-0.01	0.21	-0.01	0.26	0.07	-0.09	0.02	0.01	-0.05	0.05	-0.02	-0.05	-0.02	0.29	0.13	1.00												
17	0.00	0.24	-0.09	0.10	0.16	-0.25	0.06	-0.04	-0.09	-0.02	0.09	-0.07	-0.05	0.15	0.08	0.27	1.00											
18	-0.02	0.19	-0.03	0.14	0.35	-0.11	0.21	-0.05	-0.22	0.02	0.15	-0.10	-0.08	0.13	0.08	0.21	0.32	1.00										
19	0.01	0.20	-0.05	0.14	0.52	-0.12	0.31	-0.06	-0.21	-0.04	0.21	-0.08	-0.03	0.14	0.06	0.21	0.35	0.91	1.00									
20	0.06	0.11	-0.08	0.03	0.49	0.02	0.31	-0.03	-0.04	-0.06	0.10	0.02	0.14	0.11	0.00	0.11	0.17	0.51	0.61	1.00								
21	-0.08	-0.04	0.03	0.02	-0.50	-0.01	-0.33	0.02	-0.05	0.16	-0.14	-0.09	-0.17	-0.09	0.05	0.01	-0.08	-0.19	-0.41	-0.60	1.00							
22	0.24	0.13	-0.02	0.01	0.01	-0.10	0.04	0.01	0.01	-0.03	0.03	-0.10	0.02	0.00	-0.03	0.02	0.04	0.01	0.01	0.02	0.00	1.00						
23	0.06	-0.07	0.05	0.02	-0.05	0.09	-0.03	0.02	0.04	0.04	-0.07	0.01	0.07	-0.06	0.02	-0.02	-0.08	-0.09	-0.12	-0.07	0.08	0.07	1.00					
24	0.02	-0.05	0.01	0.01	0.01	0.02	-0.03	-0.01	-0.03	-0.01	0.03	0.00	-0.02	0.01	-0.01	-0.04	0.00	0.04	0.04	0.03	-0.02	-0.02	0.03	1.00				
25	0.36	0.90	-0.06	0.13	0.02	-0.10	0.16	-0.02	0.05	-0.10	0.07	-0.07	-0.11	0.17	0.04	0.20	0.22	0.17	0.19	0.13	-0.07	0.22	-0.04	-0.04	1.00			
26	0.08	-0.07	0.98	0.05	0.01	0.01	-0.03	-0.01	-0.01	0.02	-0.01	-0.05	0.06	-0.14	-0.02	0.00	-0.06	-0.05	-0.07	-0.08	0.04	0.05	0.04	-0.01	-0.03	1.00		
27	0.11	0.15	0.05	0.98	0.05	-0.09	-0.04	0.02	-0.06	-0.01	0.05	-0.07	-0.09	0.08	0.06	0.26	0.10	0.14	0.15	0.04	0.01	0.05	0.02	0.02	0.19	0.06	1.00	
28	0.36	-0.02	0.00	0.03	0.94	-0.01	0.14	-0.04	-0.08	-0.07	0.13	-0.06	0.17	0.03	0.01	0.06	0.15	0.30	0.46	0.45	-0.47	0.09	-0.03	0.02	0.13	0.03	0.07	1.00
29	0.02	0.60	-0.05	0.14	0.76	-0.07	0.21	-0.04	-0.07	-0.10	0.16	-0.09	0.04	0.15	0.05	0.19	0.27	0.43	0.53	0.47	-0.44	0.08	-0.08	-0.01	0.56	-0.04	0.14	0.70

Note: 1 - Host country embeddedness, 2 - Home country embeddedness, 3 - Same industry, 4 - Presence of other returnees, 5 - Xenophobia index, 6 - Female, 7 - Age, 8 - Some undergrad. (Edu.), 9 - Undergrad. degree (Edu.), 10 - Some grad (Edu.), 11 - Graduate degree (Edu.), 12 - Years since return, 13 - Total days abroad, 14 - Home country org. > 500 employees, 15 - Has Supervisor, 16 - Home country org. does business in U.S., 17 - Technology industry, 18 - Economic distance, 19 - Political distance, 20 - Cultural distance, 21 - Home country in N. America, 22 - Made suggestion at work in U.S., 23 - Open-ended response length, 24 - Survey time, , 25 - Host Country Embed. × Home Country Embed, 26 - Host Country Embed. × Same Industry, 27 - Host Country Embed. × Presence of other returnees, 28 - Host Country Embed. × Xenophobia index, 29 - Home Country Embed. × Xenophobia

Table 6. Summary of Samples and Outcomes Analyzed

		Reported Knowledge was Adopted		
		Yes	No	Row Totals
Reported Sharing Knowledge	Yes	1455	578	2033[b]
	No	-	979	979
	Column Totals	1455	1557	3012[a]

Note: a) Size of sample analyzed in Table 7 models, b) Size of sample analyzed in Table 8 models.

Table 7. Estimated coefficients from second stage outcome logistic regression models of successful knowledge transfer

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Host country embeddedness	0.147***	0.159***	0.107**	0.240***	0.197***	0.142***	0.252***
	[0.051]	[0.051]	[0.057]	[0.065]	[0.055]	[0.051]	[0.071]
Home country embeddedness	0.202***	0.203***	0.202***	0.204***	0.207***	0.132**	0.130**
	[0.051]	[0.051]	[0.051]	[0.051]	[0.051]	[0.059]	[0.059]
Host country embeddedness × Home country embeddedness		0.080**					0.107**
		[0.047]					[0.048]
Same industry	0.088	0.088	0.100	0.074	0.093	0.091	0.095
	[0.102]	[0.102]	[0.103]	[0.103]	[0.102]	[0.102]	[0.104]
Host country embeddedness × Same industry			0.151*				0.182**
			[0.099]				[0.101]
Presence of other returnees	0.034	0.03	0.04	0.022	0.041	0.031	0.028
	[0.094]	[0.094]	[0.095]	[0.094]	[0.095]	[0.094]	[0.095]
Host country embeddedness × Presence of other returnees				-0.209***			-0.214***
				[0.088]			[0.091]
Xenophobic home country	0.497	0.503	0.484	0.515	0.513	0.553	0.584
	[0.370]	[0.370]	[0.371]	[0.370]	[0.368]	[0.368]	[0.368]
Host country embeddedness × Xenophobic home country					-0.276***		-0.251**
					[0.114]		[0.116]
Home country embeddedness × Xenophobic home country						0.258***	0.283***
						[0.108]	[0.108]
Female	-0.428***	-0.432***	-0.422***	-0.421***	-0.411***	-0.428***	-0.404***
	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]	[0.118]	[0.119]
Age	0.117**	0.122**	0.112**	0.130**	0.138**	0.099*	0.130**
	[0.066]	[0.066]	[0.066]	[0.066]	[0.066]	[0.066]	[0.067]
Undergraduate degree	-1.153**	-1.150**	-1.132**	-1.134**	-1.125**	-1.083**	-1.005**
	[0.579]	[0.579]	[0.579]	[0.580]	[0.580]	[0.578]	[0.581]
Some graduate school	-0.047	-0.032	-0.049	-0.04	-0.056	-0.036	-0.017
	[0.482]	[0.482]	[0.482]	[0.483]	[0.483]	[0.481]	[0.483]
Graduate degree	-0.63	-0.619	-0.613	-0.6	-0.616	-0.58	-0.496
	[0.546]	[0.547]	[0.547]	[0.548]	[0.548]	[0.545]	[0.548]
Years since return	0.150**	0.148**	0.151**	0.137**	0.137**	0.150**	0.124**
	[0.065]	[0.065]	[0.065]	[0.065]	[0.065]	[0.065]	[0.066]

Total days in U.S.	0.076*	0.073*	0.075*	0.070*	0.074*	0.074*	0.061
	[0.053]	[0.053]	[0.053]	[0.053]	[0.053]	[0.053]	[0.053]
Current company > 500 employees	-0.217**	-0.222**	-0.215**	-0.229**	-0.224**	-0.206**	-0.225**
	[0.098]	[0.098]	[0.098]	[0.098]	[0.098]	[0.098]	[0.099]
Has a supervisor	-0.262**	-0.260**	-0.258**	-0.255**	-0.254**	-0.264**	-0.241**
	[0.124]	[0.124]	[0.125]	[0.124]	[0.125]	[0.124]	[0.125]
Does business in US	0.117	0.116	0.119	0.12	0.119	0.127	0.135*
	[0.102]	[0.102]	[0.102]	[0.102]	[0.102]	[0.102]	[0.102]
Tech Industry	-1.753***	-1.772***	-1.702***	-1.716***	-1.647***	-1.687***	-1.517***
	[0.553]	[0.553]	[0.554]	[0.554]	[0.556]	[0.552]	[0.558]
Home Country in North America	0.559***	0.557***	0.554***	0.565***	0.580***	0.541***	0.553***
	[0.188]	[0.187]	[0.188]	[0.188]	[0.188]	[0.186]	[0.187]
Economic distance	0.260**	0.248**	0.268**	0.244*	0.242*	0.245**	0.205*
	[0.150]	[0.149]	[0.151]	[0.150]	[0.149]	[0.147]	[0.146]
Political distance	-0.001	<0.001	-0.003	0.002	-0.017	-0.031	-0.048
	[0.145]	[0.145]	[0.146]	[0.145]	[0.145]	[0.144]	[0.145]
Cultural distance	0.012	0.011	0.011	0.013	0.011	0.021	0.02
	[0.071]	[0.071]	[0.071]	[0.071]	[0.071]	[0.070]	[0.070]
Made suggestion in Host Company	0.959***	0.966***	0.959***	0.954***	0.984***	0.963***	0.989***
	[0.122]	[0.122]	[0.122]	[0.122]	[0.123]	[0.122]	[0.123]
Length of open-ended survey response	-0.069*	-0.070*	-0.072*	-0.070*	-0.070*	-0.070*	-0.074**
	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]	[0.045]
Survey duration - 1st quartile	0.523***	0.517***	0.530***	0.518***	0.508***	0.524***	0.503***
	[0.149]	[0.149]	[0.149]	[0.149]	[0.149]	[0.149]	[0.150]
Survey duration - 2nd quartile	0.759***	0.760***	0.762***	0.761***	0.769***	0.741***	0.752***
	[0.150]	[0.150]	[0.150]	[0.151]	[0.151]	[0.151]	[0.152]
Survey duration - 3rd quartile	0.681***	0.689***	0.687***	0.676***	0.691***	0.665***	0.685***
	[0.154]	[0.154]	[0.154]	[0.155]	[0.155]	[0.155]	[0.156]
Inverse Mills Ratio	-1.333***	-1.349***	-1.293***	-1.307***	-1.269***	-1.290***	-1.178***
	[0.422]	[0.422]	[0.423]	[0.423]	[0.424]	[0.421]	[0.425]
Latent factor (common methods bias)	0.041	0.079*	0.045	0.031	0.036	0.031	0.072
	[0.053]	[0.058]	[0.053]	[0.053]	[0.053]	[0.053]	[0.058]
Intercept	2.171**	2.187**	2.086**	2.111**	1.996**	2.029**	1.723**
	[1.001]	[1.001]	[1.003]	[1.003]	[1.006]	[1.001]	[1.009]
df	28	29	29	29	29	29	33

Log-Likelihood	-1552	-1550	-1551	-1549	-1549	-1549	-1540
n	3012	3012	3012	3012	3012	3012	3012

* p < .05, ** p < .01, *** p < .001 (two-tailed tests)

Note: There were 4,183 respondents out of 11,434 survey recipients. Out of these, 662 were excluded because they currently were still in the U.S. at the time of the survey, leaving 3,521 returnee respondents. Out of these respondents, 334 had home countries that were not included in either the World Value Survey or the World Bank Data relevant for constructing country level measures. Out of the remaining 3,187 respondents, 175 respondents had missing data in their survey responses, leaving a final analyzable sample size of 3,012.

Table 8. Estimated coefficients from logistic regression models of knowledge transfer

Variable	DV: Knowledge sharing		DV: Knowledge adoption	
	Model 1	Model 2	Model 3	Model 4
Host country embeddedness	0.301***	0.393***	0.097*	0.221**
	[0.054]	[0.076]	[0.067]	[0.099]
Home country embeddedness	0.289***	0.106**	0.232***	0.133*
	[0.057]	[0.065]	[0.076]	[0.085]
Host country embeddedness × Home country embeddedness		0.076*		0.069
		[0.052]		[0.066]
Same industry	0.092	0.070	0.106	0.241*
	[0.113]	[0.115]	[0.158]	[0.156]
Host country embeddedness × Same industry		-0.096		0.236*
		[0.106]		[0.145]
Presence of other returnees	0.146	0.119	0.078	0.016
	[0.105]	[0.106]	[0.150]	[0.141]
Host country embeddedness × Presence of other returnees		-0.122		-0.288**
		[0.098]		[0.129]
Xenophobic home country	0.234	0.549	-0.066	0.369
	[0.309]	[0.408]	[0.375]	[0.376]
Host country embeddedness × Xenophobic home country		-0.047		-0.401***
		[0.132]		[0.165]
Home country embeddedness × Xenophobic home country		0.775***		-0.151
		[0.130]		[0.170]
Knowledge Type				
Client relationships			-0.064	-0.179**
			[0.084]	[0.078]
Financial			0.184***	0.048
			[0.079]	[0.073]
Hiring			-0.542***	-0.197**
			[0.096]	[0.086]
Organizational partners			0.225***	0.165**
			[0.081]	[0.078]
New clients			0.277***	0.265***
			[0.099]	[0.093]
New markets			-0.138*	-0.058
			[0.096]	[0.095]
Product			0.290***	0.322***
			[0.071]	[0.071]
Technical			0.366***	0.155***
			[0.051]	[0.049]
Workflow			0.126***	0.037
			[0.050]	[0.049]
Workplace relations			0.311***	0.135**
			[0.072]	[0.069]
df	28	33	36	43
Log-Likelihood	-1317	-1297	-684	-814
n	3012	3012	2033	2033

* p < .05, ** p < .01, *** p < .001 (two-tailed tests)
Note: Control variables included in models but omitted from table. Model 1 and 2 sample = 3012 returnee respondents; Model 3 and 4 sample = 2033 returnee respondents who shared knowledge.
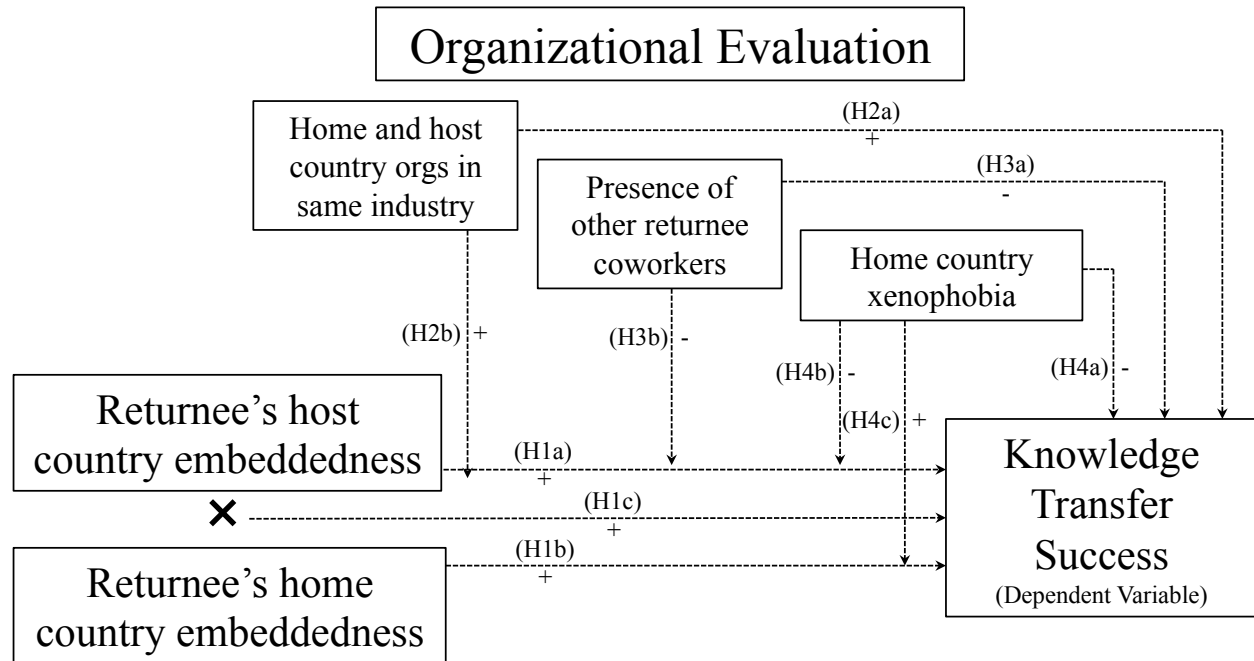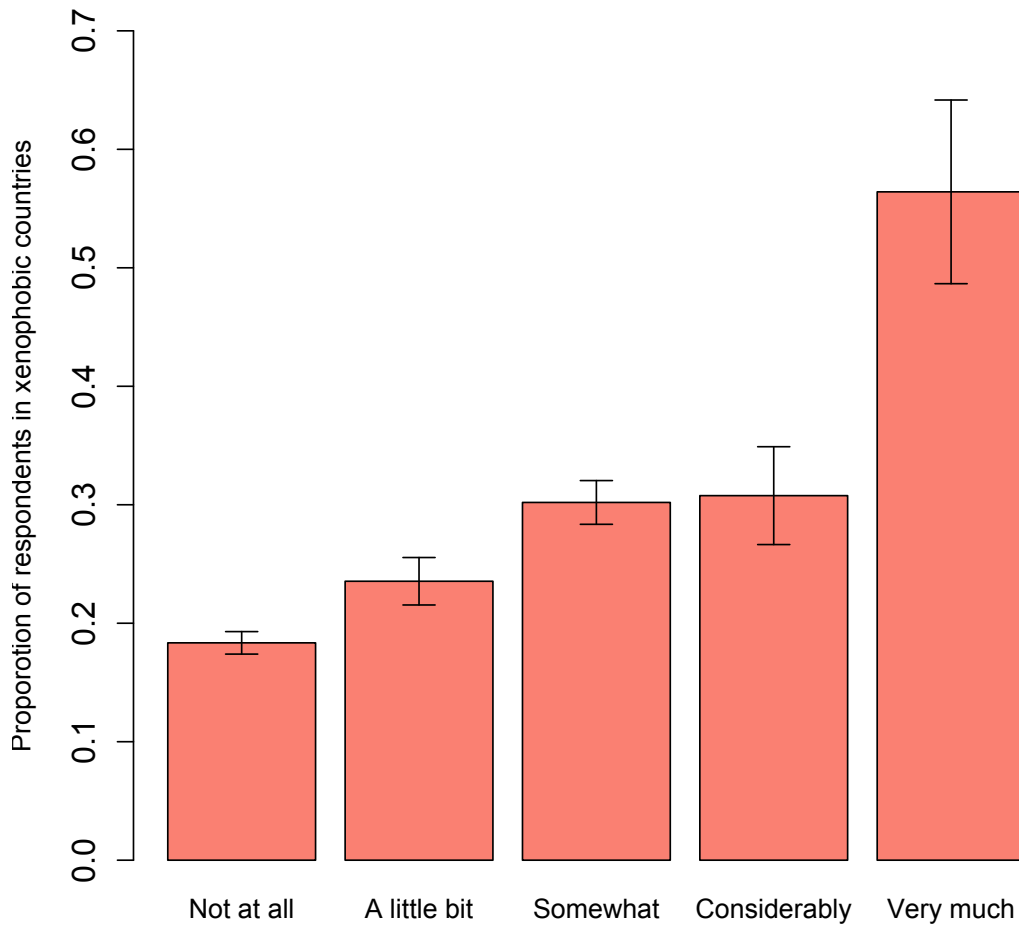
Figure 1. Outline of hypotheses about returnee embeddedness and organizational evaluation

Figure 2. Bar graph of proportion of respondents in xenophobic countries by self-perceived xenophobia.
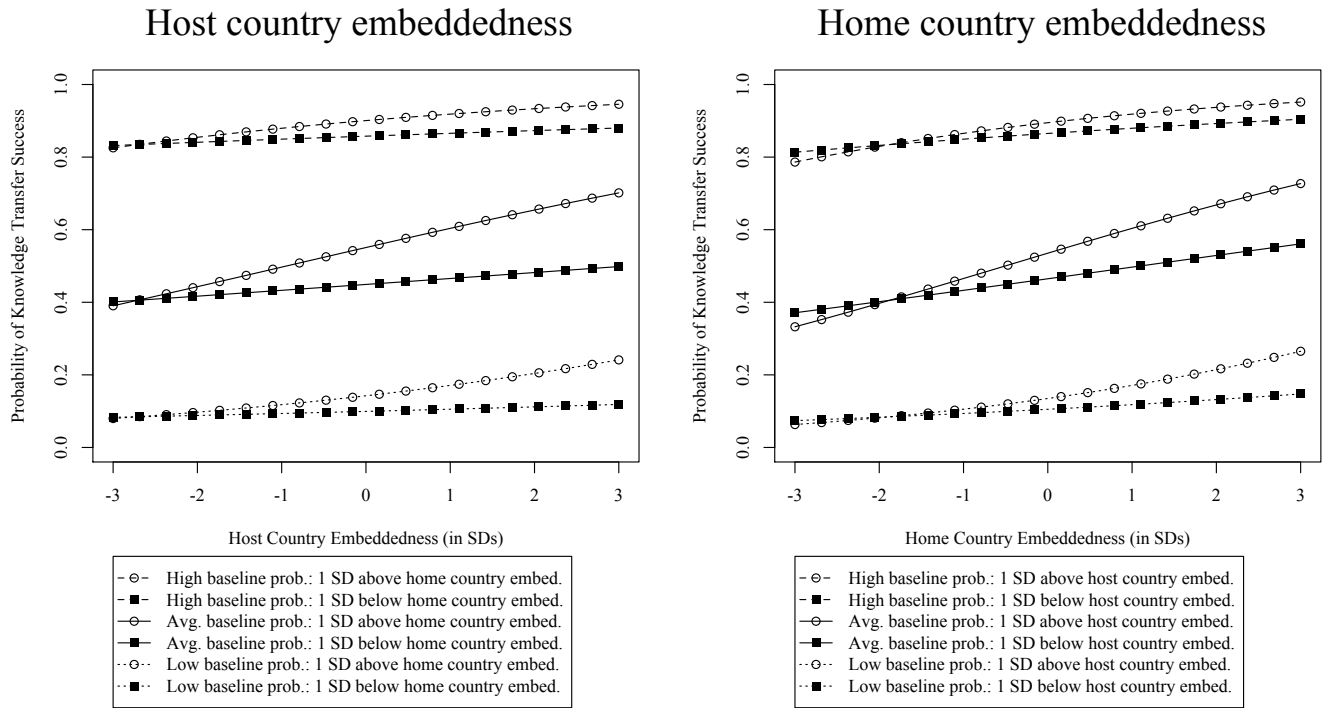
Figure 3. Predicted probabilities based on interacting host and home country embeddedness in (model 7, table 7).

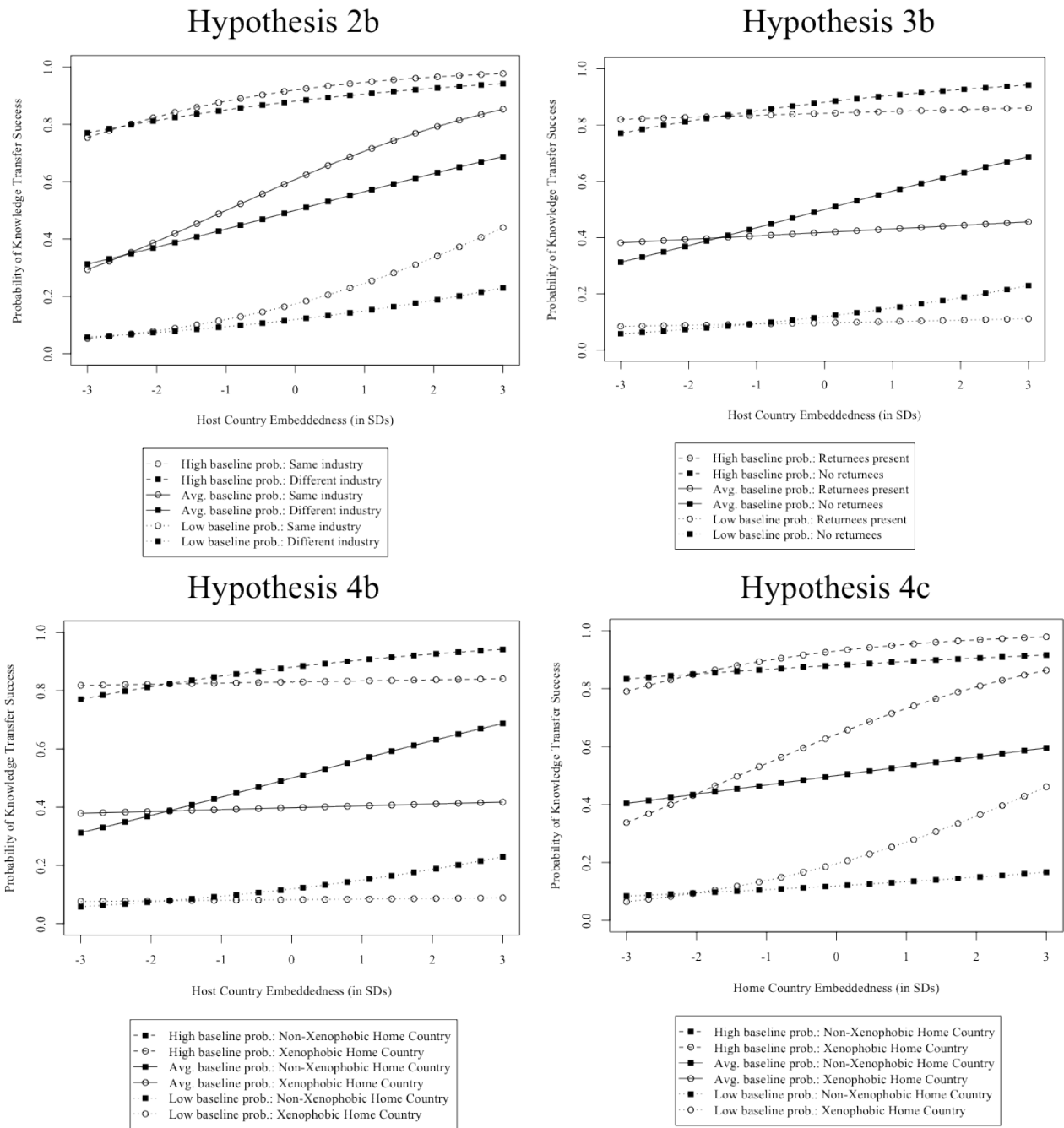*Note:* These plots are based on Zelner (2010).

Figure 4. Predicted probabilities based on interacting host and home country embeddedness with organizational-level and country-level variables (model 7, table 7).

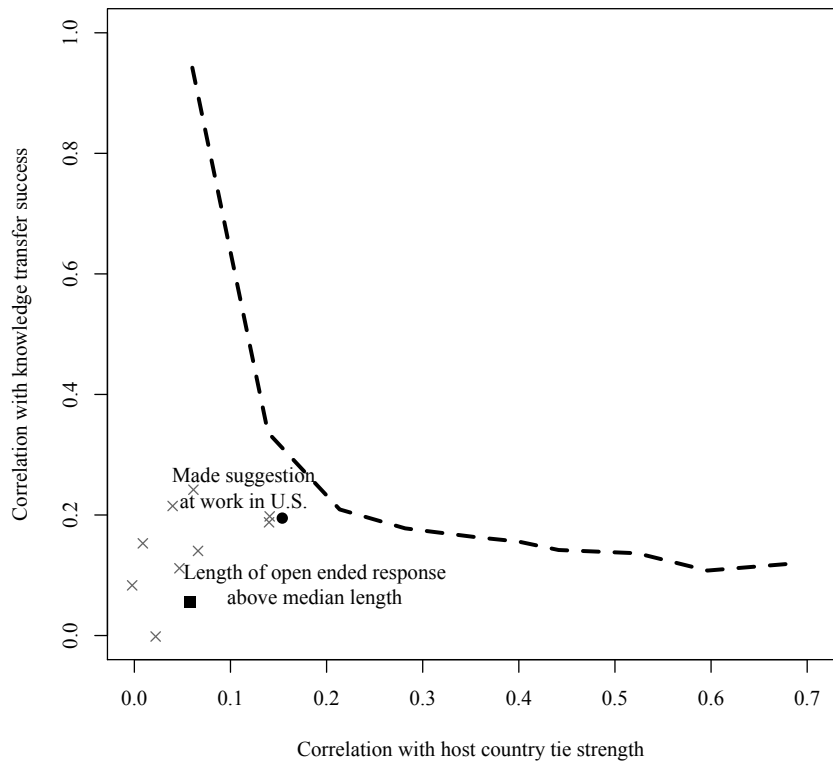*Note:* These plots are based on Zelner (2010).
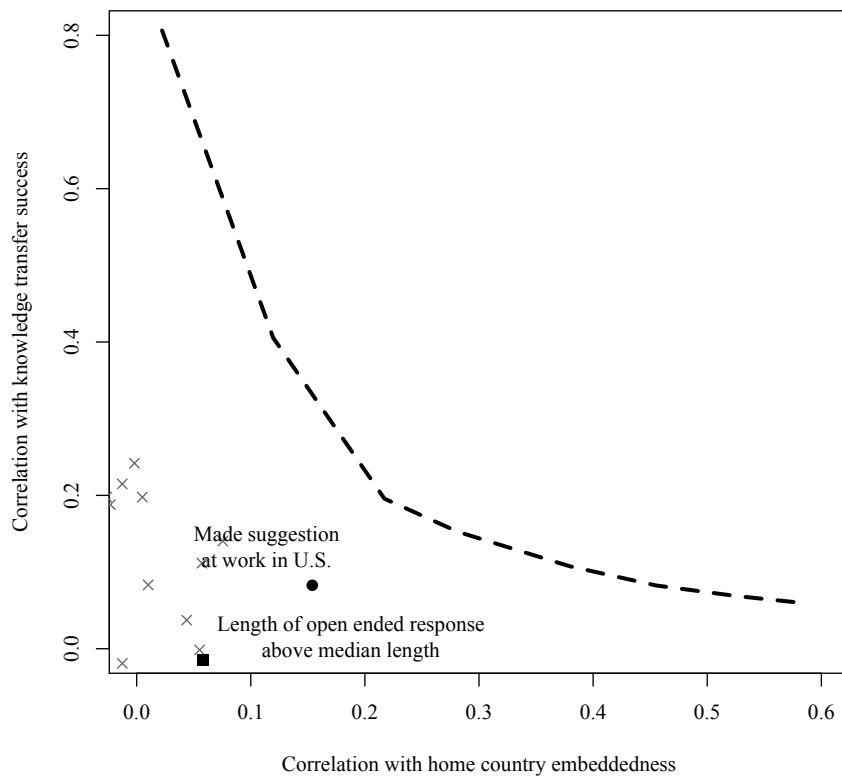
Figure 5. Generalized sensitivity analysis of model 1 in Table 7. Points represent simultaneous correlations of selected independent variables.

Table A1. Estimated coefficients from first-stage
probit regression of sample selection model

Variable	Model 1
J1 Application Processed through PDP department	-0.130*** [0.035]
Undergraduate degree	1.190*** [0.117]
Some graduate school	0.160* [0.109]
Graduate degree	1.062*** [0.112]
Female	0.185*** [0.030]
Age	-0.063*** [0.024]
Total days in U.S.	0.006 [0.014]
Tech Industry	2.131*** [0.042]
Years since return	-0.043*** [0.008]
Total days in U.S.	0.006 [0.015]
Intercept	-1.300 [1.046]
Country dummies included?	Yes
Df	97
Log-Likelihood	-6323
N	11,434

Note: Inverse Mills Ratio calculated manually for
respondent sample based on this model.

Table B1. Estimated coefficients from logistic regression models of knowledge transfer success, non-returnees

Variable	Model 1
Host country embeddedness	0.535*** [0.145]
Home country embeddedness	0.16 [.147]
Intercept	23.38 [604.281]
Df	20
Log-Likelihood	-232
N	525

*** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed tests)

Note: All relevant control variables included in models but omitted from table.

Table C1. Estimated coefficients from
instrumental variable logistic regression models
of knowledge transfer success

Variable	Model 1
Host country embeddedness	0.139* [0.080]
Home country embeddedness	0.107** [0.064]
Same Industry	0.075 [0.102]
Presence of other returnees	0.043 [0.094]
Xenophobic Home Country	0.494** [0.269]
Female	-0.416*** [0.118]
Age	0.021 [0.107]
Undergraduate degree	-1.358** [0.604]
Some graduate school	-0.122 [0.487]
Graduate degree	-0.747* [0.556]
Years since return	0.236*** [0.099]
Total days in U.S.	0.048 [0.062]
Current company > 500 employees	-0.177** [0.097]
Has Supervisor	-0.267** [0.124]
Does business in US	0.153* [0.101]
Tech Industry	-1.903*** [0.565]
Home Country in North America	0.508*** [0.188]
Economic distance	0.094** [0.048]
Political distance	0.001 [0.024]
Cultural distance	-0.015 [0.028]
Made suggestion in Host Company	1.085*** [0.117]
Length of open-ended survey response	-0.074** [0.045]

Survey duration - 1st quartile	0.494*** [0.148]
Survey duration - 2nd quartile	0.766*** [0.149]
Survey duration - 3rd quartile	0.672*** [0.153]
Inverse Mills Ratio	-1.431*** [0.428]
Latent factor (common methods bias)	0.051 [0.044]
Intercept	2.229** [1.071]
df	28
Log-Likelihood	-1562
n	3022

*** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed tests)

Note: A Wald-test of including non-professional home country embeddedness in the first stage equation predicting professional home country embeddedness indicates that it is a strong instrument (F-statistic = 603.75). A similar Wald test for host country embeddedness also gave evidence for its instrument being strong (F-statistic = 19.271)

Works Cited

Adler, N. J. 1981. "Re-entry: Managing cross-cultural transitions." *Group and Organisational Studies*. 6 (3). 341-356.

Almeida, P. 1996. "Knowledge Sourcing by Foreign Multinationals: Patent Citation Analysis in the U.S. Semiconductor Industry." *Strategic Management Journal*. 17: 155-165.

Almeida, P. and B. Kogut. 1999. "Localization of Knowledge and the Mobility of Engineers in Regional Networks." *Management Science*. 45 (7): 905-917.

Ambos, T.C. and Ambos, B. 2009. "The impact of distance on knowledge transfer effectiveness in multinational corporations." *Journal of International Management*. 15(1): 1-14.

Argote, L. 1999. *Organizational Learning: Creating, Retaining, and Transferring Knowledge.* New York, NY: Springer Science.

Argote, L. and P. Ingram. 2000. "Knowledge Transfer: A Basis for Competitive Advantage in Firms." *Organizational Behavior and Human Decision Processes*. 81(1): 150-169.

Au, K.Y. and J. Fukuda. 2002 "Boundary spanning behaviors of expatriates." *Journal of World Business*. 37(4): 285-296.

Azoulay, P., J.S. Graff Zivin, and B.N. Sampat. 2011. "The diffusion of scientific knowledge across time and space: Evidence from professional transitions for the superstars of medicine." *NBER Working Paper No. 16683.*

Bechky, B.A. 2003. "Sharing Meaning Across Occupational Communities: The Transformation of Understanding on a Production Floor." *Organization Science*. 14 (3). 312-330.

Berry, H., M.F. Guillen, and N. Zhou. 2000. "An institutional approach to cross-national distance." *Journal of International Business Studies*. 41(9): 1460-1480.

Bertoin Antal, A. 2001. "Expatriates' contributions to organizational learning." *Journal of General Management.* 26(4): 62-84.

Bhagwati, J. and K. Hamada. 1974. "The Brain Drain, International Integration of Markets for Professionals and Unemployment: A Theoretical Analysis." *Journal of Development Economics*. 1 (1): 19-42.

Bovenkerk, F. 1981. "Why returnees generally do not turn out to be 'agents of change': The case of Suriname." *Nieuwe West Indische Gids*. 55 (3/4): 154-73.

Bovenkerk, F. 1979. *The Sociology of Return Migration.* Publications of the Research Group for European Migration Problems. The Hague, Netherlands: Martinus Nijhoff.

Brewer, M.B. 1991. "The social self: On being the same and different at the same time." *Personality & Social Psychology Bulletin*. 17(5): 475–482.

Brown, P., A. Green, and H. Lauder. 2001. *High Skills: Globalization, Competitiveness, and Skill Formation.* Oxford, UK: Oxford University Press.

Burt, R.S. 2005. *Brokerage and Closure: An Introduction to Social Capital.* Oxford, UK: Oxford University Press.

Burt, R.S. 1992. *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University Press.

Burt, R.S. 1997. "The Contingent Value of Social Capital." *Administrative Science Quarterly.* 42 (2): 339-365.

Buskens, V., and A. van de Rijt. 2008. "Dynamics of Networks if Everyone Strives for Structural Holes." *The American Journal of Sociology*. 114 (2). 371-407.

Campbell, E.K. 2003. "Attitudes of Botswana Citizens toward Immigrants: Signs of Xenophobia?" *International Migration*. 41(4): 2003.

Chaparro, F., H. Jaramillo, and V. Quintero. 2006. "Promise and Frustration of Diaspora

Networks: Lessons from the Network of Colombian Researchers Abroad." In: Kuznetsov, Y. (Ed.). *Diaspora Networks and the International Migration of Skills: How Countries Can Draw on Their Talent Abroad*. Washington, D.C.: The World Bank. 187-98.

Chen, Y. 2007. "The limits of brain-circulation: Chinese returnees and technological development in Beijing." Center on China's Transnational Relations, Hong Kong University of Science and Technology. *Working Paper No. 15*.

Choudhury, P. 2010. "Knowledge Creation in Multinationals and Return Migration of Inventors: Evidence from Micro Data." *Academy of Management Annual Conference, Best Paper Proceedings*.

Choudry, A., J. Hanley, S. Jordan, E. Shragge, and M. Stiegman. 2009. *Fight Back: Workplace Justice for Immigrants*. Halifax, Canada: Fernwood Publishing.

Cohen, W. M. and P. Bacdayan, P. 1994. "Organizational routines are stored as procedural memory: Evidence from a laboratory study." *Organizational Science*. 5(4).

Cohen, W. M., & Levinthal, D. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly*. 35: 128-152.

Cox, A., M. Marchington, and J. Suter. 2009. "Eployee involvement and participation: developing the concept of institutional embeddedness using WERS2004." *The International Journal of Human Resource Management*. 20(10): 2150-2168.

Dai, O., and X. Liu. 2009. "Returnee entrepreneurs and firm performance in Chinese high-technology industries." *International Business Review*. 18. 373-386.

Darr, E. and T. Kurtzberg. 2000. "An investigation of partner similarity dimensions on knowledge transfer." *Organizational Behavior and Human Decision Processes*. 82(1): 28–44.

Djelic, M. 1998. *Exporting the American Model*. Oxford, UK: Oxford University Press.

Dokko, G. and L. Rosenkopf. 2010. "Social Capital for Hire? Mobility of Technical Professionals and Firm Influence in Wireless Standards Committees." *Organization Science*. 21(3): 677-695.

Dubin, J.A., and D. Rivers. 1990. "Selection Bias in Linear Regression, Logit, and Probit Models." In: *Modern Methods of Data Analysis*. Fox, J. and J.S. Long (Eds.). Newbury Park, CA: Sage Publication. 410–42.

Dumont, J., and G. Spielvogel. 2008. "Return Migration: A New Perspective." *OECD: International Migration Outlook, 2008*. 161-222.

Feld, S.L. 1981. "The Focused Organization of Social Ties." *American Journal of Sociology*. 86 (5). 1015-1035.

Felps, W., T.R. Mitchell, D.R. Hekman, T.W. Lee, B.C. Holtom, and W.S. Harman. 2000. "Turnover Contagion: How Coworkers' Job Embeddedness and Job Search Behaviors Influence Quitting." *Academy of Management Journal*. 52(3): 545-561.

Frenkel, S. 2003. "The Embedded Character of Workplace Relations." *Work and Occupations*. 30: 135-153.

Filatotchev, I., X. Liu, J. Lu, and M. Wright. 2011. "Knowledge spillovers through human mobility across national borders: Evidence from Zhongguancun Science Park in China." *Research Policy*. 40 (3): 453-462.

Furuya, M., M.J. Stevens, A. Bird, G. Oddou, and M.E. Mendenhall. 2009. "Managing the learning and transfer of global management competence: Antecedents and outcomes of Japanese repatriation effectiveness." *Journal of International Business Studies*. 40(2): 200–215.

Gaw, K.F. 2000. "Reverse culture shock in students returning from overseas." *International Journal of Intercultural Relations* 24: 83-104.

Granovetter, M. 1985. "Economic Action and Social Structure: The Problem of Embeddedness." *The American Journal of Sociology*. 91(3): 481-510.

Groysberg, B. and L. Lee. 2009. "Hiring Stars and Their Colleagues: Exploration and Exploitation in Professional Service Firms". *Organization Science*. 20 (4): 740-758.

Guillen, M.F. 1994. *Models of Management: Work, Authority, and Organization in a Comparative Perspective.* Chicago, IL: University of Chicago Press.

Guler, I.I. and M. Guillen. 2010. "Social Networks and Foreign Expansion." *Academy of Management Journal.* 53, 390 - 410.

Hamel, G. 1991. "Competition for competence and interpartner learning within international strategic alliances." *Strategic Management Journal.* 12(S1): 83-103.

Hansen, M.T. 1999. "The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge across Organization Subunits." *Administrative Science Quarterly*. 44 (1): 82-111.

Hedberg, B. 1991. *How Organizations Learn and Unlearn.* New York: Oxford University Press.

Harada, M. 2012. "Generalized Sensitivity Analysis." *Working Paper*.

Heckman, J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica*. 47 (1). 153-61.

Hirshon, J.M., T.R. Eng, K.A. Brunkow, and N. Hartzell. 1997. "Psychological and readjustment problems associated with emergency evacuation of Peace Corps Volunteers." *Journal of Travel Medicine.* 4(3): 128–131

Hjerm, M. 2001. "Education, xenophobia, and nationalism: A comparative analysis." *Journal of Ethnic and Migration Studies*. 27 (1). 37-60.

Hjerm, M. 1998. "National identities, national pride and xenophobia: a comparison of four western countries." *Acta Sociologica*. 41(24): 335-47.

Imbens, G. W. 2003. "Sensitivity to the Exogeneity Assumption." *American Economic Review*. 93 (2): 126-132.

Iskander, N., and N. Lowe. 2011. "The Transformers: Immigration and Tacit Knowledge Development." *NYU Wagner Research Paper No. 2011-01*.

Ingram, P., and P. Roberts. 2000. "Friendships among competitors in the Sydney hotel industry." *American Journal of Sociology*. 106. 387-423.

Inkpen, A.C., and E.W.K. Tsang. 2005. "Social Capital, Networks, and Knowledge Transfer." *Academy of Management Review*. 30(1): 146-165.

Jaffe, A.B, M. Trajtenberg, and R. Henderson. 1993. "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations." *The Quarterly Journal of Economics*. 108(3): 577-98.

Joardar, A., T. Kostova, and E.C. Ravlin. 2007. "An experimental study of the acceptance of a foreign newcomer into a workgroup." *Journal of International Management*. 13(4): 513-537.

Jonkers, K, and R. Tussen. 2008. "Chinese researchers returning home: Impacts of international mobility on research collaboration and scientific productivity." *Scientometrics*. 77 (2). 309-333.

Rink, F., A. A.Kane, N. Ellemers, and G.S. Van der Vegt. 2013. "Team receptivity to newcomers: Five decades of evidence and future research themes." *The Academy of Management Annals* 7(1): 245-291.

Kane, A.A. 2009. " Unlocking Knowledge Transfer Potential: Knowledge Demonstrability and Superordinate Social Identity." *Organization Science*. 21(3): 643-660.

Kane, A.A., Linda Argote, and John M. Levine. 2005. "Knowledge transfer between groups via

personnel rotation: Effect of social identity and knowledge quality." *Oragnizational Behavior and Human Decision Processes*. 96. 56-71.

Kedia, B.L., and R.S. Bhagat, 1988. "Cultural constraints on transfer of technology across nations: Implications for research in international and comparative management." *Academy of Management Review*. 13(4). 459-571.

Kenney, M., D. Breznitz, and M. Murphree. 2012. "Coming back home after the sun rises: Returnee entrepreneurs and the growth of high tech industries." *Research Policy*. 42(2): 391-407.

Kerr, W.R. and W.F. Lincoln. 2010. "The Supply Side of Innovation: H‑1B Visa Reforms and U.S. Ethnic Invention." *Journal of Labor Economics*. 28(3): 473‑508.

Kirkman, B.L., K.B. Lowe, and C.B. Gibson. 2006. "A quarter century of culture's consequences: a review of empirical research incorporating Hofstede's cultural value framework." *Journal of International Business Studies*. 37(1). 285–320.

Kogut, B., and J.M. Macpherson. 2011. "The mobility of economists and the diffusion of policy ideas: The influence of economics on national practices." *Research Policy*. 40(10): 1307-1320.

Kogut, B. and H. Singh. 1988. "The Effect of National Culture on the Choice of Entry Mode." *Journal of International Business Studies*. 19(3): 411-432.

Kostova, T. 1999. "Transnational Transfer of Strategic Organizational Practices: A Contextual Perspective." *The Academy of Management Review*. 24(2): 308-324.

Kostova, T. and K. Roth. 2002. "Adoption of Organizational Practice By Subsidiaries of Multinational Corporations: Institutional and Relational Effects." *The Academy of Management Journal*. 45(1): 215-233.

Kuznetsov, Y. and C. Sabel. 2006. "International Migration of Talent, Diaspora Networks, and Development: Overview of Main Issues." In: Kuznetsov, Y. (Ed.). *Diaspora Networks and the International Migration of Skills: How Countries Can Draw on Their Talent Abroad*. Washington, D.C.: The World Bank. 3-20.

Lazarova, M., & Tarique, I. 2005. "Knowledge transfer upon repatriation." *Journal of World Business*. 40 (4): 361–373.

Levin, D.Z., and R. Cross. 2004. "The Strength of Weak Ties You Can Trust: The Mediating Role of Trust in Effective Knowledge Transfer." *Management Science*. 50 (11): 1477-90.

Luthans, F., D.B. Welsh, and S.A. Rosenkrantz. 1993. "What do Russian managers really do? An observational study with comparisons to U.S. managers." *Journal of International Business Studies*. 24(4): 741-61.

Ma, R., Y. Huang, and O. Shenkar. 2011. "Social networks and opportunity recognition: A cultural comparison between Taiwan and the United States." *Strategic Management Journal*. 32 (11): 1183-1205.

Marx, Matt, Deborah Strumsky, and Lee Fleming. 2009.   "Mobility, Skills, and the Michigan Non-Compete Experiment." *Management Science*. 55(6): 875-889.

McEvily, B., and A. Zaheer. 1999. "Bridging Ties: a source of firm heterogeneity in competitive capabilities." *Strategic Management Journal*. 20 (12). 1133-1156.

Millar, C., and C.J. Choi. 2009. "Reverse knowledge and technology transfer: imbalances caused by cognitive barriers in asymmetric relationships." *International Journal of Technology Management*. 48 (3). 389-402.

Nelson, R.R. and S.G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Harvard University Press.

Newman, K. and S. D. Nollen. 1996. "Culture and Congruence: The Fit between Management Practices and National Culture." *Journal of International Business Studies*. 27 (4): 753-779.

Oddou, G., J. Osland, and R. Blakeney. 2009. "Repatriating Knowledge: Variables Influencing the 'Transfer' Process." *Journal of International Business Studies*. 40: 181-199.

Obukhova, E. 2011. "Experience vs. Legitimacy: Returnees and Political Ties in China." *SSRN Working Paper*.

Phillips, K.W., Liljenquist, K.A., & Neale, M.A. 2009. "Is the pain worth the gain? The advantages and liabilities of agreeing with socially distinct newcomers." *Personality and Social Psychology Bulletin*. 35: 336–350.

Podolny, J. 2001. "Networks as the Pipes and Prisms of the Market." *American Journal of Sociology*. 107(1): 33-60.

Podsakoff, P.M., S.B. MacKenzie, and J. Lee. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies." *Journal of Applied Psychology*. 88(5): 879-903.

Podsakoff, P.M., S.B. MacKenzie, R. Moorman, and R. Fetter. 1990. "The impact of transformational leader beahviors on employee trust, satisfaction, and organizational citizenship behaviors." *Leadership Quarterly*. 1: 107-142.

Powell, W.W., Koput, K.W., & Smith-Doerr, L. 1996. "Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology." *Administrative Science Quarterly*. 41(1): 116-145.

Powell, W.W. and P. DiMaggio. 1991. *The Institutionalism in Organizational Analysis*. Chicago, IL: University of Chicago Press. 1-40.

Rassen, J.A., Schneeweiss, S., Glynn, R.J., Mittleman, M.A., and Brookhart M.A. 2009. "Instrumental Variable Analysis for Estimation of Treatment Effects With Dichotomous Outcomes." *American Journal of Epidemiology*. 1 69(3): 273-284

Reagans, R.E., and E.W. Zuckerman. 2008. "Why knowledge does not equal power: the network redundancy trade-off." *Industrial and Corporate Change*. 17 (5). 903-944.

Reagans, Ray, and Bill McEvily. 2003. "Network Structure and Knowledge Transfer: The Effects of Cohesion and Range." *Administrative Science Quarterly*. 48(20: 240-267.

Rohrlich, B.I., and J.N. Martin. 1991. "Host country and reentry adjustment of student sojourners." *International Journal of Intercultural Relations*. 15(2): 163–182.

Rosenbaum, P. R. and D. B. Rubin. 1983. "Assessing Sensitivity to an Unobserved Binary Covariate in an Observational Study with Binary Outcome." *Journal of the Royal Statistical Society. Series B*. 45(2): 212-218.

Ryall, M.D. and O. Sorenson. 2007. "Brokers and competitive advantage." *Management Science*. 53: 566-583.

Sartori, A.E. 2003. "An Estimator for Some Binary-Outcome Selection Models without Exclusion Restrictions." *Political Analysis*. 11 (2). 111-138.

Saxenian, A. 2006. *The New Argonauts*. Cambridge, MA: Harvard University Press.

Saxenian, A. 2002. "Brain Circulation: How High-Skill Immigration Makes Everyone Better Off." *The Brookings Review*. 20 (1): 28-31.

Shin, G. 2006. *Ethnic Nationalism in Korea: Genealogy, Politics, and Legacy*. Stanford, CA: Stanford University Press.

Singh, J. 2005. "Collaborative Networks as Determinants of Knowledge Diffusion Patterns." *Management Science*. 51 (5): 756-770.

Song, J., P. Almeida, and G. Wu. 2003. "Learning-by-Hiring: When Is Mobility More Likely to Facilitate Interfirm Knowledge Transfer?" *Management Science*. 49 (4): 351-365.

Soylu, A. 2007. "Foreigners and Workplace Stress." *Journal of Individual Employment Rights*. 12(4):313-327.

Stinchcombe, A. L. 1965. "Social Structure and Organizations". In March, J. G. (Ed.). *Handbook of Organizations*. Chicago, IL: Rand McNally & Co. 142–193.

Szulanski, G. 1996. "Exploring internal stickiness: Impediments to the transfer of best practice within the firm." *Strategic Management Journal*. 17: 27–43.

Szulanski, G. 2000. "The process of knowledge transfer: A diachronic analysis of stickiness." *Organizational Behavior and Human Decision Processes*. 82(3).

Tajfel, H., and J.C. Turner. 1979. "An integrative theory of group conflict." In: W.G. Austin, S. Worchel (Eds.). *The social psychology of intergroup relations*. Monterey, CA: Brooks/Cole. 33-47.

Tsai, W. 2001. "Knowledge transfer in intra-organizational networks: Effects of network position and absorptive capacity on business unit innovation and performance." *Academy of Management Journal*. 44. 996-1004.

Tsai, W. and S. Ghoshal. 1998. "Social Capital and Value Creation: The Role of Interfirm Networks." *The Academy of Management Journal*. 41(4): 464-476.

Tung, R.L. and M. Lazarova. 2006. "Brain Drain versus Brain Gain: An Exploratory Study of Ex-host Country Nationals in Central and East Europe." *The International Journal of Human Resource Management*. 17(11): 1853-72.

Tushman, M. 1977. "Special boundary roles in the innovation process." *Administrative Science Quarterly*. 22: 587-605.

Uzzi, B. 1996. "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect." *American Sociological Review*. 61(4): 674-698.

Uzzi, B. and R. Lancaster. 2003. "The role of relationships in interfirm knowledge transfer and learning: The case of corporate debt markets." *Management Science*. 49. 383-399.

van Emmerik, H. and K. Sanders. 2004. "Social Embeddedness and job performance of tenured and non-tenured professionals." *Human Resource Management Journal*. 14(1).

Vasudeva, G., A. Zaheer, and E. Hernandez. 2013. "The Embeddedness of Networks: Institutions, Structural Holes, and Innovativeness in the Fuel Cell Industry." *Organization Science*. 24(3): 645-663.

Vedres, Balazs and D. Stark. 2010. "Structural Folds: Generative Disruption in Overlapping Groups." *American Journal of Sociology*. 115 (4). 1150-90.

Wezel, F.C., G. Cattani, and J.M. Pennings. 2006. "Competitive Implications of Interfirm Mobliity." *Organization Science*. 17(6): 691-709.

Winter, S.G. 1995. "Small and medium-size enterprises in economic development : possiblities for research and policy." *The World Bank: Policy Research Working Paper Series 1508*.

World Values Survey. 2013. "Introduction to the World Values Survey." http://www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_46 (last accessed October 1, 2013).

Zelner, B.A. 2009. "Using simulation to interpret results from logit, probit, and other non-linear models." *Strategic Management Journal*. 30: 1335-1348.

Zucker, L.G., M.R. Darby, and M.B. Brewer. 1999. "Intellectual Capital and the Birth of U.S. Biotechnology Enterprises." *American Economic Review*. 88 (1): 290-306.

Zweig, D., Fung, C.S., and Han, D. 2001. "Redefining the Brain Drain: China's 'Diaspora Option.'" *Science Technology & Society*. 13 (1): 1-33.