

Manager migration, learning-by-hiring, and cultural distance in international soccer

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Abstract

Research Summary: We investigate the international transfer of managerial know-how by analyzing manager migration patterns in the setting of international soccer. We characterize a country's managerial know-how by estimating a stochastic frontier model, which relates the country's soccer performance to socioeconomic and climatic conditions. We find evidence of learning-by-hiring in that hiring a migrant manager hailing from a high know-how country is beneficial to the destination country's performance. Larger cultural distance between the migrant manager and destination country reduces the effectiveness of learning-by-hiring, but this effect is moderated by the migrant manager's prior international experience. The transfer of managerial know-how contributes to the overall convergence of low-performing versus high-performing soccer countries.

Managerial Summary: In this study, we ask whether firms in developing countries, which often suffer from having low-quality management practices, can improve their performance by hiring managers from developed countries, who may implement better management practices. We investigate this in the context of national soccer team competition, because this allows us to track the performance of migrant managers very precisely over time. We find that hiring a migrant manager from a developed

soccer country improves the performance of the developing host country. This performance improvement is smaller when the migrant's country of origin is culturally very different from the host, but migrant managers with extensive international experience are able to overcome this negative effect of cultural distance.

KEYWORDS

cultural distance, international experience, international transfer of human capital, migration, soccer

1 | INTRODUCTION

The effect of migration on economic performance is subject to an intense academic and public debate. Since the work of Ottaviano and Peri (2006), a central question in this debate has been whether the diversity caused by immigrant workers helps or hampers worker productivity. On the one hand, studies find a positive and significant effect, as diverse immigrants bring new and complementary knowledge that raises productivity. On the other hand, there is a potential negative effect in that internal fragmentation increases coordination costs. In sum, however, the positive effect appears to outweigh the negative effect of migration on worker productivity (Kemeny & Cooke, 2018).

This study aims to identify and estimate how both effects moderate the impact of a migrant worker on organizational performance. For a clear identification of the positive channel, we need to estimate the knowledge that a migrant worker brings. We do this in the context of superstars, as star performers are highly productive and easy to identify. Star performers—for example, a Nobel Prize winner at a university, a top player on a sports team, or an inventor generating many patents at an innovative firm—can exert a large impact on an organization. Their mobility in the labor market has therefore been the subject of many academic studies, which stress that the performance of superstars depends heavily on the environment in which they work and not just on their own skill level (Groysberg, Lee, & Nanda, 2008).

Over the past decade, a consensus has emerged in the empirical literature that individual top managers, such as chief executive officers (CEOs) and chief financial officers, share the characteristics of star performers and have a significant influence on firm performance (Bertrand & Schoar, 2003). A famous quote from management guru Peter Drucker in this respect says that, “the productivity of work is not the responsibility of the worker, but of the manager” (Drucker, 1980, p. 15). Substantial empirical evidence has shown that there are indeed significant performance differences across seemingly identical enterprises, and at least part of these differences can be explained by differences in management practices (Syverson, 2011).

Differences in the quality of management practices that result in productivity differences are not only observed across firms but also across countries (Bloom, Genakos, Sadun, & Van Reenen, 2012). Country-specific heterogeneity in managerial quality is an important factor in explaining persistent productivity differences across nations. Better management practices are found in countries with stronger product market competition, weaker primogeniture traditions, and higher levels of education (Bloom & van Reenen, 2007). Crucially, it appears that tacit industry knowledge, which is

instrumental to management practices, is transferable across firms and countries (Bloom, Sadun, & Van Reenen, 2016; Mostafa & Klepper, 2018; Giorcelli, 2019).

Given the apparent heterogeneity in knowledge transfer, we examine how cultural differences between the sender and receiver of knowledge may hinder the transfer of managerial knowledge. Cultural distance, defined as the culture-based factors that impede the flow of information between the firm and its partners (Kogut & Singh, 1988; Benito and Gripsrud), is also likely to limit effective knowledge transfer within organizations, as it raises the barriers for understanding other members of the organization (Simonin, 1999). Knowledge transfer is increasingly difficult when cultures become more distant, because on top of norms and values, also the way in which communication takes place differs across cultures (Y. Y. Kim, 1988). Related literature (Dikova & Rao Sahib, 2013) has argued that international managerial experience can make executives better able to cope with these cultural differences. Hence, it may moderate the relationship between cultural distance and the transfer of knowledge.

Our theoretical framework builds upon the knowledge-based view of the firm, which considers knowledge to be the most critical strategic resource leading to an organization's sustainable competitive advantage (Grant, 1996; Kogut & Zander, 1992). Knowledge that can sustain competitive advantage over time must be valuable, rare, and inimitable (Barney, 1991). Consequently, this type of knowledge can only be transferred between organizations with some difficulty (Knott, 2003; Peteraf, 1993). Within each firm, some knowledge is specific to the firm as it relates to unique routines and procedures. As such, it is distinct from general human capital, which can more easily be transferred between firms (Becker, 1962). Moreover, specific knowledge is often tacit and cannot be codified. When managerial know-how constitutes specific knowledge that deals with the ability to perform a task or action, it clearly qualifies as tacit knowledge with the potential to deliver competitive advantage.

We exploit a unique dataset of employment records for national team soccer managers coupled with detailed performance data of the national soccer teams they manage. We directly evaluate the impact of migrants on organizational performance and address an important research gap by identifying specific channels for this impact. The use of soccer data allows us to estimate whether knowledge is transferred from nation to nation and how this transfer affects team performance. Our analysis adds to past work, which has addressed changes in soccer success through the moves of players from developing to developed countries (Berlinschi, Schokkaert, & Swinnen, 2013; Milanovic, 2005), the existence of local spill-overs (Yamamura, 2009), and the hiring of managers with multicultural backgrounds in more internationally diverse settings (M. Szymanski, Fitzsimmons, & Danis, 2019).

We propose two central reasons for the importance of this managerial context. First, although transfer of players' skills is done mostly through learning and training, the knowledge of managers is more tacit. Second, even if players have learned some tactics in superior leagues, the manager is responsible for the strategy and organization of the national team, and these strategies require coordination across various players to be implemented successfully. Furthermore, as most national team soccer managers are superstars, their international employment record is publicly known and can be used for the identification of possible hurdles in the international transfer of managerial know-how.

Our methodology establishes how much managers, with an estimated level of nationally obtained managerial know-how, improve the performance of their destination country. In addition, our framework shows that the cultural distance between a migrant manager and his destination country decreases the effectiveness of that manager, but this effect can be mitigated by the accumulated international experience of the migrant manager.

2 | THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

As management skills are largely tacit knowledge, we expect the international transfer of such knowledge to be complicated. Tacit knowledge often transfers through socialization, for example, through a traditional apprenticeship, where apprentices learn the tacit knowledge needed in their craft through hands-on experience, rather than from written manuals or textbooks (Nonaka & Takeuchi, 1995). Alternatively, the hiring of a migrant manager can be a means for such an international knowledge transfer. Similarly, although education supports learning these managerial skills for managers originating from managerially advanced countries, managers may also develop their ability to transfer this knowledge by accruing working experience abroad.

Organizational knowledge can be created within the organization through training of, and learning by, employees, or can be acquired externally (Dixon, 1992; Huber, 1991). In most cases, firm-specific knowledge can best be enhanced by learning and training, whereas sector-specific knowledge generally needs to be obtained from other sources. If sector-specific knowledge is explicit, such knowledge can be acquired through the transfer of intellectual property rights, but if it is tacit, such knowledge will typically be transferred through hiring. From a broader perspective, international business studies have identified four channels to transfer knowledge across countries: (a) through international acquisitions (e.g., Bresman, Birkinshaw, & Nobel, 1999), (b) through transfers within the boundaries of multinational enterprises (e.g., Burstein & Monge-Naranjo, 2009), (c) through knowledge spill-overs from labor mobility across countries (Oettl & Agrawal, 2008; Alvarez, Forrest, Sanz, & Tena, 2011; Berlinschi et al., 2013; Mostafa & Klepper, 2018), and (d) through international learning-by-hiring, the focus of our study.

When knowledge is hidden within a firm, Dosi, Freeman, Richard, and Soete (1988) suggest that hiring people away from a rival firm is an alternative way of transferring knowledge that is otherwise immobile. Song, Almeida, and Wu (2003) empirically test how firms can employ learning-by-hiring to access and build on external knowledge. They study non-U.S. engineers who moved to U.S. firms and investigate the conditions under which mobility best facilitates interfirm knowledge transfer. Their results point to the importance of path dependence in hiring, as firms that are stuck in their routines face greater difficulty in integrating external knowledge. They also show that engineers whose expertise is different from the firm's existing knowledge base, and who are employed in noncore technological areas of the new firm, are more likely to transfer knowledge. Furthermore, scholars have found that tacit and complex specific knowledge, such as technological and marketing knowledge, once successfully transferred, enables multinational firms and their subsidiaries to achieve superior performance (Delios & Beamish, 2001; Fang, Wade, Delios, & Beamish, 2007; Pisano, 1994). Nevertheless, Groyberg et al. (2008) find negative stock market reactions for firms hiring star performers, possibly as a result of a winner's curse where firms make excessive offers for successful hires.

Next, we discuss whether management practices qualify as tacit knowledge that can increase productivity and performance. There is ample evidence of improvements to productivity through improvements in managerial practices. For example, Bloom and van Reenen (2007) surveyed firms in five developed economies and found that firms employing better management practices are more productive. Moreover, Bloom, Eifert, Mahajan, McKenzie, and Roberts (2013) find evidence that implementing better management practices in a randomized experiment at Indian textile firms significantly improves firm productivity. Building on these insights, Bloom et al. (2016) argue that management can be perceived as a technology, which can be transferred between firms and countries.

Mion, Opromolla, and Sforza (2016) provide a first piece of empirical evidence from Portuguese firms, which supports this point-of-view. Specifically, they show that firms that hire managers from competitors with successful export performance to a particular destination country tend to improve their subsequent export performance to that particular country. Similarly, Giorcelli (2019) finds that management training provided to Italian managers as part of the U.S. Marshall Plan significantly improved subsequent firm performance of the Italian firms, which sent managers to the United States.

Although these studies point to the contribution of management to performance in specific settings and industries, it may be inappropriate to apply management practices uniformly across nations, or even industries. In addressing this question, Khanna (2014) stresses the importance of context, claiming that, “[t]rying to apply management practices uniformly across geographies is a fool’s errand, much as we’d like to think otherwise.” Examining cross-country differences, Crossland and Hambrick (2011) emphasize the role of formal and informal institutions in determining managerial discretion across nations. More managerial discretion is associated with CEOs having a higher degree of influence over performance. High discretion countries—characterized by strong scores on Hofstede’s measures of individualism, cultural looseness, and uncertainty tolerance coupled with strong scores on formal measures of institutions, such as ownership dispersion and employer flexibility—are especially well suited for dynamic industries in which risky and fast decision making is important. Although these studies provide convincing evidence that management is (a) a type of organizational knowledge that matters, (b) institutionally bounded, and (c) transferrable within geographic boundaries, the question as to what extent tacit managerial skills can be transferred across vastly different cultural environments remains largely unaddressed.

Recent literature has also explored the effects of human capital practices and a workforce’s international experience on firm performance (K. Y. Kim, Pathak, & Werner, 2015; Morris, Snell, & Björkman, 2016). Le and Kroll (2017) construct three measures of a CEO’s international experience and show their impact on firm performance. These measures include the length of time a CEO has worked abroad prior to his appointment at the firm, the number of countries in which a CEO has worked before his appointment, and the cultural distance between the CEO’s former and current place of work. This measure of cultural distance is based on Hofstede’s (2001) four cultural dimension scores: uncertainty avoidance, individualism, masculinity, and power distance. Drawing upon social and cognitive learning theories, they hypothesize and find a positive effect of all three CEO experience-related variables on firm performance. We build on their insights by exploring a fourth dimension of international experience: the amount of managerial know-how a manager may bring from abroad. We further extend the analysis of cultural distance by exploring the role of cultural differences between a manager’s country of origin and his working environment.

In this study, we are interested in how the transfer of managerial know-how through international hiring leads to a change in organizational performance. As stated, previous studies have examined executives’ international experience as a determinant of firm performance. Instead, our focus is on the transfer of tacit knowledge, which an executive generates while working abroad. Groysberg et al. (2008) show that star performers cannot generally transfer their complete individual skills as they move to another firm, because their performance is contingent on firm-specific skills and capabilities. In their study of security analysts’ performance, star analysts showed an immediate and persistent decline in performance after moving firms, unless they moved to firms with better firm-specific skills and capabilities. Hiring firms, however, increased their overall productivity. Huckman and Pisano (2006) found a similar performance decline among surgeons performing exactly the same operation in an unfamiliar versus familiar hospital. Likewise, managerial skills can be perceived as

noncodifiable knowledge that is not only embodied in a single person but also at the organizational level. Hence, although executive level performance may decline when moving to an organization with fewer capabilities at the organizational level, the productivity at the organizational level may still increase due to learning-by-hiring. Our hypothesis thus expects firm-level outcomes to improve, even when this does not necessarily happen for the performance of the individual manager himself.

Hypothesis (H1). *Organizational performance is positively associated with the difference in the level of managerial know-how between a migrant manager's country of origin and the host country.*

The transfer of managerial know-how may also be affected by the cultural distance between the sender and receiver. Cultural distance has been shown to influence firm performance, especially in the context of international mergers and acquisitions. The sign of the effect, however, is ambiguous and many explanations for this contrasting result have been put forward (see, for example, Datta and Puia [1995] for a negative and Morosini, Shane, and Singh [1998] for a positive effect). Dikova and Rao Sahib (2013) emphasize the importance of international experience as a moderating factor explaining the differences in sign. In particular, acquiring firms with more international experience are better able to cope with cultural differences between the acquiring and the target firm than acquiring firms that lack such experience. For the more experienced firms, cultural distance even has a positive effect on performance, as there are more opportunities to learn.

In a more similar context to ours, Le and Kroll (2017) find a positive association between the international experience of a new CEO and firm performance, arguing that exposure to high levels of cultural distance activates learning and makes a CEO more creative. Culturally distant environments provide stimuli, which are incongruent with the CEO's existing knowledge base and result in greater general cognitive competencies. More generally, international experience adds to the knowledge of an executive and to the amount of knowledge that can be transferred in later positions (Black, Mendenhall, & Oddou, 1991). However, when conditioning upon managerial experience and opportunities for learning and transfer of knowledge, cultural distance complicates the transfer of such knowledge. In particular, cultural differences can lead to communication problems that hinder the transfer of key concepts (Reus & Lamont, 2009). Having experience in (similar) international environments reduces these communication barriers and strengthens the manager's ability to adapt to a new foreign assignment (Shaffer, Harrison, & Gilley, 1999). We therefore propose the following hypotheses:

Hypothesis (H2a). *There is a negative effect of the cultural distance between a migrant manager's country of origin and the host country on the amount of managerial know-how that the migrant manager can transfer, and hence, on organizational performance.*

Hypothesis (H2b). *The negative effect of cultural distance on organizational performance is positively moderated by the accumulated previous international experience of the migrant manager.*

Recent work has shown that performance in competitive international soccer is characterized by unconditional convergence (Krause & Szymanski, 2019). In particular, weaker countries have gradually caught up with more advanced soccer countries, which may indicate that lower ranked soccer nations receive a larger boost in performance from importing soccer know-how than slightly more advanced nations. Moreover, countries performing below their long-run average performance may

find it easier to increase their performance back to this long-term average level. Given this work, we also test for conditional (beta) convergence in soccer performance (Barro & Sala-i-Martin, 1998). We expect this convergence to occur partly through the transfer of managerial know-how from more advanced to less advanced countries. More specifically, team performance at the start of a migrant manager's tenure may be negatively related to the difference in managerial know-how between a migrant manager's origin and host country. This likely influences the relationship between the latter variable and the change in organizational performance. Our final hypothesis therefore proposes that recent team performance at the start of a migrant manager's tenure has a negative mediating effect on the relationship between the transfer of managerial know-how and organizational performance.

Hypothesis (H3). *Relatively higher team performance at the start of a migrant manager's tenure will be negatively associated with the change in organizational performance during that manager's tenure.*

3 | EMPIRICAL SETTING

We empirically test our hypotheses using a unique dataset on manager migration patterns in international men's soccer, which is called football outside the United States. This means we focus on games and tournaments played between national associations, rather than club teams. The most popular and prestigious competition at this level is the World Cup, which is held every 4 years and sees the world's best 32 countries compete. The universe of international soccer is, however, far larger. At this point, 211 national associations are registered with Fédération Internationale de Football Association (FIFA), the large majority of which represent independent nations and territories.¹ These associations play approximately 1,000 games among themselves each year. A typical game attracts substantial attention with thousands of fans visiting the stadium and many more watching it live on television (TV). In many countries, national team games are among the most watched national TV broadcasts of all time, showing how the performance of the team can be a source of national pride (or dismay) and even contributes to nation-building (Depetris-Chauvin, Durante, & Campante, 2018). In our dataset, we track the historical performance of each national association going back to 1980, or to the foundation of the association if it was formed after 1980, and continuing up to the end of 2015.

Our analysis of managerial know-how focuses on the role of the national team's manager, who is sometimes also referred to as the coach. The manager is held responsible for the performance of the team on the field of play. In this capacity, he performs a wide array of typical managerial functions, such as personnel selection and motivation, formulating and communicating (operational) strategy in games, refining worker skills through targeted practice and training, and communicating with outside stakeholders of the team, most notably through the press. The latter function, in particular, ensures that the manager is an extremely visible figure, which enables straightforward data collection on personal and career characteristics through open data sources. Apart from managing the players directly, the manager also hires and manages a support staff, which executes more specialized functions, such as communication, fitness, or skill development by position. The manager's role and responsibilities are therefore largely comparable to those of management in other industries. We highlight the similarities between international soccer and other highly (specialized) labor-intensive sectors with respect to human resource management, a key component of managerial know-how as conceptualized by Bloom et al. (2016). As managerial know-how crucially involves tacit industry knowledge, managerial know-how in this setting corresponds with soccer know-how. In line with the arguments

by Bloom et al. (2016), we find that performance varies widely across countries and therefore we assume that this (soccer) know-how is country specific.

As argued by Wolfe, Uy, Danis, Saxton, and Usher (2015), sports is a rich testing ground for international business research. In this case, examining the transfer of managerial know-how in the setting of international soccer has four distinct advantages. First, capital, in the form of tangible assets such as training grounds, jerseys, and balls, is a comparatively low-cost input in the production of international soccer, and international technology differences with respect to capital are relatively small. Hence, it is unlikely that migrant managers transfer a significant amount of purely technical knowledge, for example, on how to construct machines or production lines. It is equally unlikely that managers generate positive spillovers because of their prior network abroad, as may be the case for export performance (as in Mion et al., 2016). This leaves management practices as the primary component of know-how, which may be transferred. We therefore obtain a clean testing ground for the transfer of managerial know-how, largely unaffected by confounding factors. Second, the public attention devoted to international soccer allows us to construct a uniquely detailed dataset of input use, relative performance, managerial careers, and manager personal characteristics. Performance is frequently observed, providing us with a large number of observations. Moreover, the measurement of performance is a matter of official record and not a subjective feature, which may depend on the objectives of owners and other stakeholders. Third, both managerial turnover and international mobility are typically high, which ensures plenty of variation in the identity and origins of managers observed for each national team. This aids us in identifying the effect of managerial mobility on performance. Additionally, the variation in relative performance of national associations is considerable both in the cross section and over time for a given team. Finally, international soccer is a more appropriate testing ground than club soccer because the national association is restricted to fielding native players. As such, there is no scope to improve team performance by attracting better players through higher payrolls, which is the standard practice in club soccer. For our purposes, this implies that the arrival of a new manager cannot be accompanied by a hike in player investment, and hence, any positive effect on performance is more cleanly attributable to the manager, as opposed to being confounded by the arrival of better generic human capital in the form of players.

4 | EMPIRICAL METHODS AND DATA GENERATION

4.1 | Estimating soccer know-how through stochastic frontier estimation

We assess a national team's performance through its Elo rating. The Elo rating is constructed as a weighted average of past game results, where weights are defined by the strength of the opponent team, the margin of victory, and the importance of the game (Hvattum & Arntzen, 2010). We provide a detailed explanation of the Elo rating calculation in Appendix. A higher Elo score is associated with better past performance. According to Peeters (2018), it is also a better predictor of future performance in (international) soccer than the commonly used FIFA ranking (Allan & Moffat, 2014; Yamamura, 2009). In Table 1, we list the top 20 teams in terms of average Elo rating over our data period. This overview contains all leading nations in international soccer. The map in the top panel of Figure 1 further shows that the highest Elo ratings are concentrated in Latin America and Western Europe, the two regions where soccer has traditionally enjoyed the largest following. The lowest Elo ratings can be found among African and Asian countries.

Given the zero-sum nature of international soccer competition, countries can only improve their Elo rating through the decline of others. This contributes to an environment with continuous

TABLE 1 Top 20 national associations in terms of average Elo scores over 1980–2015

Rank	Association	Average Elo score	Average know-how estimate	Average know-how estimate (population only)
1	Brazil	2,001	0.957	0.925
2	Germany	1,964	0.921	0.937
3	Netherlands	1,937	0.953	0.966
4	Spain	1,932	0.920	0.944
5	Argentina	1,921	0.902	0.948
6	France	1,917	0.906	0.931
7	Italy	1,915	0.916	0.934
8	England	1,914	0.914	0.940
9	Croatia	1,835	0.979	0.971
10	Czech Republic	1,833	0.954	0.958
11	Portugal	1,828	0.950	0.954
12	Denmark	1,810	0.931	0.963
13	Mexico	1,809	0.875	0.877
14	Sweden	1,807	0.927	0.954
15	Uruguay	1,803	0.954	0.970
16	Serbia	1,791	0.960	0.945
17	Russia	1,790	0.896	0.854
18	Romania	1,785	0.956	0.926
19	Colombia	1,765	0.909	0.894
20	Belgium	1,758	0.875	0.937

Note: This table shows the average Elo rating and technology estimates for the top 20 associations in terms of Elo rating over 1980–2015. We exclude currently defunct associations, most notably the Union of Soviet Socialist Republics, Czechoslovakia, and Yugoslavia.

competitive pressure, where it is only feasible to sustain a top Elo rating by employing state-of-the-art management practices. As such, the Elo rating itself can be thought of as a crude way to measure how far countries are from the knowledge frontier in terms of soccer management. However, there is an enormous discrepancy among FIFA's more than 200 member associations in terms of wealth, population, and climate, which are all antecedents of soccer performance. In particular, richer countries with larger populations and a more moderate climate tend to perform better in international soccer, *ceteris paribus* (Gasquez & Royuela, 2016).

To more clearly isolate the effect of soccer know-how from these potentially confounding factors, we extract estimates of soccer know-how from a stochastic frontier model of the following form:

$$\text{Elo}_{it} = \beta_x X_{it} + \delta_t + u_{it} + \varepsilon_{it}. \quad (1)$$

In Equation (1) the dependent variable is the logarithm of the Elo rating of country i at the end of year t (*Elo rating at year end*). The vector X_{it} contains a set of demographic, socioeconomic, and climatologic variables. We further include year fixed effects, represented by δ_t . The parameter ε_{it} represents a conventional, normally distributed error term. Finally, the term u_{it} , with $u_{it} < 0$, is a half-

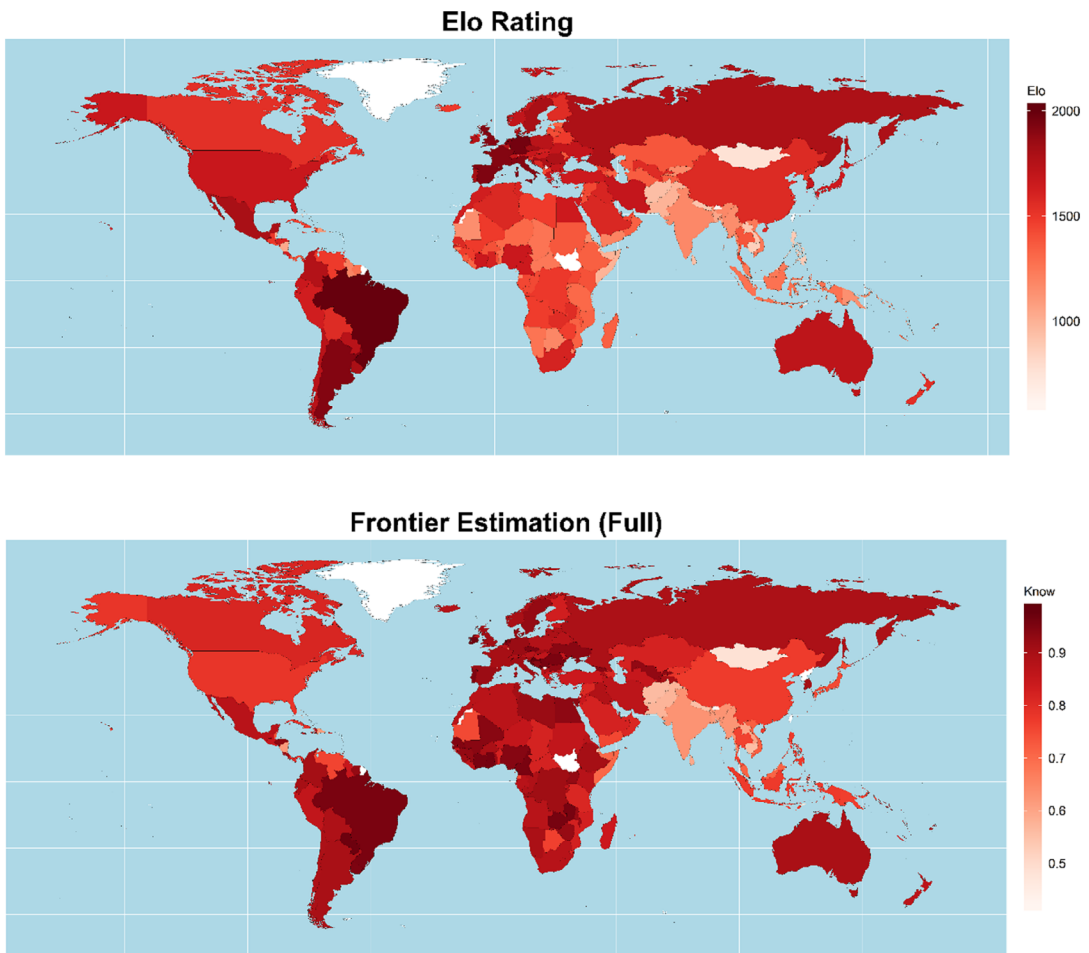


FIGURE 1 World map of country Elo rating and stochastic frontier estimates full model. In the upper panel, we map the average Elo rating of each country in the dataset over the sample period. In the lower panel, we map the average know-how estimate for each country in the sample period. UK mapping colors refer to the figures for England only

normally distributed parameter, which expresses the distance between country i and the knowledge frontier at time t (Greene, 2012). Following standard practice in the literature, we transform u_{it} to an estimate of the country's technical efficiency by taking $\hat{t}_{it} = E[\exp(-\hat{u}_{it}|\varepsilon_{it})]$. This measure is scaled on the interval $[0, 1]$ with higher values indicating that a country is closer to the know-how frontier. We interpret this construct as an estimate of a country's soccer know-how. Specifically, an estimate closer to one (the knowledge frontier) indicates that a given country has performed relatively well given its endowment in terms of demographics, wealth, and climate. We assume that performance not explained by these covariates is produced through levels of know-how present in the country. Unlike a fixed effects model, the stochastic frontier allows a country's know-how to evolve over time. This evolution follows directly from the data and does not require us to assume a rule of motion or deterministic process for the technology parameter. We use maximum likelihood to estimate Equation (1) and cluster standard errors for each national association.² For robustness, we also extract know-how estimates from similar models using ordinary least squares and quantile regressions.

Estimates from these robustness checks are very similar to our frontier estimation, with correlations in know-how estimates as high as 0.96.

In Panel A of Table 2, we provide detailed definitions for the variables which enter the specification of the frontier model in Equation (1). The vector of explanatory variables contains (a) the logarithm of the country's or territory's population (*Population*), (b) the logarithm of gross domestic product (GDP) per capita in current U.S. Dollars (*GDP per capita*), (c) the logarithm of population density (*Pop. density*), (d) the percentage urban population (*% Urban pop.*), and (e) the average temperature, which enters the model as the absolute difference from 14°C, the value considered ideal for outdoor sport performance (*Temp. dif. 14°C*; Gasquez & Royuela, 2016). We finally include indicator variables denoting a country's past colonizer.

Table 3 holds summary statistics for the corresponding variables. The data run from 1980 to 2015 and contain all 224 national associations, which were members of FIFA during this period. A cursory view of the summary statistics for the input variables underscores just how heterogeneous the member associations are, highlighting the importance of our stochastic frontier model. For example, the largest recorded population is China at 1.37 billion people, versus an average population of 33.8 million, and the smallest associations representing just a few thousand people. Similarly, *GDP per capita* of the richest country is more than 2,400 times greater than the poorest country in our sample.

We do not include any measures directly related to a country's soccer tradition (e.g., past national team results or historic FIFA membership) or direct measures of soccer skills (e.g., average quality of the players). Although these variables may increase the explanatory power of the regression model (M. Szymanski et al., 2019), they are arguably alternative proxies for the soccer know-how we aim to measure through the efficiency parameter. Including them would therefore interfere with the aim of our analysis.

In Table 4, we present the regression results of the stochastic frontier model. In line with previous research, we find that countries with larger populations are more likely to achieve a high Elo rating. Furthermore, richer nations with a relatively more urban population and moderate climate also perform better. The effect of population density is not significant. In Table 1, we report the know-how estimates for the full specification (Column 2) and for a model with only population (Column 3). Controlling for inputs, Croatia appears to be the most advanced country with respect to soccer know-how. This is no surprise, as Croatia, a relatively small nation regularly manages to reach the final rounds of big international tournaments. Clearly, controlling for factors beyond population works against the (rich) Western European countries. In the bottom panel of Figure 1, we give a more complete overview of the know-how estimates by showing a graphic depiction of the world map of national know-how levels. This again supports the idea that soccer know-how is highly concentrated in Europe and South America. When compared with the top panel, the bottom panel shows that controlling for inputs is relatively favorable for African as compared with Asian associations, because Africa tends to achieve the same level of soccer performance with comparatively lower endowments.

4.2 | Performance of migrant managers in their destination country

To test our hypotheses, we specify a panel fixed effects model of team performance over the tenure of a manager. We formulate the model as follows:

$$\begin{aligned} \Delta \overline{\text{Elo}}_{mit} = & \beta_{\text{know}} \Delta \hat{t}_{mit} + \beta_{\text{cul}} \Delta \text{cult}_{mi} + \beta_{\text{exp}} \text{exp}_{mt} + \beta_{\text{exp} \times \text{cul}} \text{exp}_{mt} \times \Delta \text{cult}_{mi} + \beta_z Z_{mt} + \beta_{\text{conv}} \text{Elo}_{-mi} \\ & + \gamma_i + \delta_t + \varepsilon_{mit}. \end{aligned} \quad (2)$$

TABLE 2 Variable definitions for estimation samples

Variable name	Variable description	Sources
<i>Panel A: Yearly panel dataset for technology estimation model (1)</i>		
Elo rating at year end	Calculated Elo rating for association i after final game of calendar year t .	Based on eloratings.net and laenderspiel.cmuck.de
Population*	Total population in number of people. Enters in logarithm scale. Code: SP.POP.TOTL.	World Bank (code refers to World Bank variable name)
Gross domestic product per cap.	Gross domestic product in current U.S. dollar. Enters in logarithm scale. Code: NY.GDP.PCAP.CD.	
Population density*	People per square kilometer of land area. Enters in logarithm scale. Code: EN.POP.DNST.	
% Urban population	Urban population as % of total population. Code: SP.URB.TOTL.IN.ZS.	
Temperature difference 14°C	Average temperature in degrees Celsius. Enters as absolute difference from 14°C. Code: TAS.	
Colonizer	Identifier of former colonizer country.	Hand collected
<i>Panel B: Game-level panel for performance estimation model (2)</i>		
Elo rating difference per game	Difference between the Elo rating of association i led by manager m after the game against association j at time t and the Elo rating at the start of the tenure of manager m with team i . We divide this figure by the number of games in manager m 's tenure up until the game against team j .	Based on eloratings.net and laenderspiel.cmuck.de
Elo rating start tenure	Elo rating of association i led by manager m at the start of the tenure of manager m with team i .	
Manager know-how difference	Soccer know-how of the country of origin of manager m measured over 5 years leading up to the start of manager m 's tenure minus the know-how level of association i as the value over 1995–1999. We calculate all measure from the full model in Equation (1), standardized by subtracting the minimum know-how over all countries in the year 2000 and dividing by the standard deviation.	Frontier regression
Cultural distance	The average of the quadratic difference between association i and the nationality of manager m scaled by the variance across four variables: uncertainty avoidance, masculinity, power distance, and individualism.	hofstede-insights.com
International experience	Number of years manager m was manager of associations other than his own prior to joining association i .	national-football-teams.com footballdatabase.
Played professional	Indicator equals 1 if manager m was a professional football player before manager career, 0 otherwise.	eutransfermarkt.com uk.soccerway.com wikipedia.com
Played international	Indicator equals 1 if manager m was selected for his own national team before manager career, 0 otherwise.	
Migrant	Indicator equals 1 if manager m has different nationality than current association i , 0 otherwise.	

Note: Starred variables have been split out in England, Northern Ireland, Scotland, and Wales based on UK statistics office data.

TABLE 3 Summary statistics for technology estimation sample at association-year level

Variables	Observations	Mean	SD	Minimum	Maximum	Correlation coefficient				
						Elo	Population	GDP/cap.	Population density % urban	
<i>Dependent variable</i>										
Elo rating at year end	6,101	1,422.7	296.7	496	2,152					
<i>Macro variables</i>										
Population	5,784	33.8 m	126 m	9,590	1,370 m	0.02				
GDP per capita	5,427	9,995.4	15,853.6	64.8	157,736	0.31	-0.05			
Population density	5,784	261.53	1,239.5	1.49	21,595	-0.06	0.16	0.12		
% Urban population	5,770	55.0%	24.4%	4.5%	100.0%	0.49	-0.09	0.58	0.01	
Temperature difference 14°C	5,180	17.96	8.33	-7.14	28.30	-0.38	-0.07	-0.45	-0.02	-0.44
<i>Panel variables</i>										
Year	6,102	1,999.1	10.07	1980	2,015					
Association identifier	6,102	113.91	65.28	1	229					

Note: We exclude colonizer identifier variables, as these summary statistics are not informative.
Abbreviation: GDP, gross domestic product.

TABLE 4 Stochastic frontier regression results

Dependent variable	Elo rating at year end			
	(1)	(2)	(3)	(4)
Population	0.056*	0.056*	0.041*	0.041*
	(0.005)	(0.005)	(0.005)	(0.005)
GDP per capita			0.028*	0.029*
			(0.006)	(0.007)
Population density			-0.001	0.002
			(0.007)	(0.006)
% Population urban			0.002*	0.001†
			(0.000)	(0.000)
Temperature difference 14°C			-0.022†	-0.014
			(0.011)	(0.010)
Constant	6.604*	6.621*	6.570*	6.577*
	(0.076)	(0.076)	(0.104)	(0.109)
SD technical efficiency	0.298	0.297	0.242	0.225
SD residual error	0.056	0.056	0.040	0.038
R^2	.937	.937	.961	.965
Colonizer FE	NO	NO	NO	YES
Year FE	NO	YES	YES	YES
Observations	5,783	5,783	4,897	4,897

Note: Table shows results of know-how regression for stochastic frontier regression model. We report the SD of the (half-normal) technical efficiency estimates and (normal) residual errors. The R^2 measure is calculated as $1 - \frac{\text{Var}(\text{residual error})}{\text{Var}(\text{Dep. Var.})}$. SE are clustered at the association level and given in parentheses. Significance is denoted as * for .01 level and † for .05 level.

Abbreviations: FE, fixed effects; GDP, gross domestic product.

Here, the dependent variable $\Delta \bar{\text{Elo}}_{mit}$ is the difference between the Elo rating of association i at time t and the rating at the start of the tenure of the current manager m , divided by the number of games played under manager m . In other words, the variable estimates the game-level average change in Elo over a given manager's tenure at a given association. For Hypothesis H1, our main interest lies in examining $\Delta \hat{t}_{mit}$, which measures the difference in managerial know-how of manager m 's country of origin and the host country i . Specifically, a positive and significant coefficient on the difference in know-how would lead us to support Hypothesis H1, indicating that importing a manager from a country with more know-how relative to the host country results in improved performance. We assess Hypotheses H2a and H2b by including manager m 's international experience in years prior to joining association i (exp_{mt}), the cultural distance between manager m 's country of origin and association i (Δcult_{mi}), and their interaction ($\text{exp}_{mt} \times \Delta \text{cult}_{mi}$). Hypothesis H3, referring to conditional convergence of soccer performance, is tested using the starting value of the host country at the start of manager m 's tenure (Elo_{-mi}) and comparing this model to those without the starting Elo rating. Specifically, we hypothesize that importing know-how by hiring a migrant manager is a mechanism by which convergence of soccer performance can take place. After all, countries may be

more willing to source know-how from abroad when their recent performance has been weak. Hence, we expect a negative correlation between recent team performance and importing know-how by hiring a migrant manager. In that case, a negative and statistically significant effect of recent performance in combination with a weaker effect of know-how transfers on organizational performance would point to a mediating effect.

The Elo rating explicitly weighs a game by the importance of the competition or tournament in which it is played and the strength of the opposing team (Hvattum & Arntzen, 2010). As such, we do not need to distinguish between different tournaments and opponents in our regression model. To eliminate time invariant team effects and common time factors, we add team and year fixed effects, represented by the indicator variables γ_i and δ_t . The inclusion of these fixed effects implies that we identify the effect of managerial know-how transfers only exploiting within team performance variation after controlling for time shocks common to all teams. Through the vector Z_{mt} , we include measures for the quality of manager m 's prior playing career. This allows us to isolate our findings from the expert leadership effects documented by Goodall, Kahn, and Oswald (2011) and Goodall and Pogrebna (2015). The last term, ε_{mit} , denotes a game-level error term.

Panel B of Table 1 provides detailed definitions of the variables we include in our estimation of Equation (2). We derive the know-how difference between the migrant manager and host country (*Manager know-how difference*) from the fully specified frontier model of Equation (1). We standardize the know-how measures by subtracting the lowest knowledge level in the data at the start of our sample and dividing by the standard deviation. In our baseline results, we fix the know-how level of the manager's country of origin to the level measured over the 5 years leading up to the start of the mobility sample in the year 2000. For the destination country, we look at the average over the 5 years up to the year in which the manager starts his tenure. We refer to the Supporting Information Appendix for additional results using alternative measures of know-how.

The variables we use to operationalize Hypothesis H2a and H2b are *cultural distance* and *international experience*. For cultural distance, we follow the approach of Kogut and Singh (1988), which was also used by Benito and Gripsrud (1992) to study firm location choice. We thus calculate the average variance weighted distance across the four cultural dimensions defined by Hofstede (2001) between migrant manager m 's country of origin and the host association i . As shown by Beugelsdijk, Maseland, and Van Hoorn (2015), the relative cultural distance between country pairs is stable over multiple decades, and hence we assume it is constant over our sample period.³ We measure international experience as the total number of years the manager has been active outside his country of origin prior to joining team i . To allow for nonlinear effects of native managers, we further add a dummy variable to signal whether manager m is a migrant (*Migrant*) with respect to association i .⁴ We finally characterize a manager's playing career through two indicator variables, which measure, respectively, whether a manager (a) played at the professional level (*Played professional*) and (b) played for his own national team (*Played international*).

Our dataset for this analysis contains all international soccer games in the period 2000 through 2015. As shown in Table 5, the data contain 29,520 observations at the game level. As each game represents two observations, one from each team's perspective, this implies we use 14,760 independent games. The average manager has around 1.5 years of international experience. The manager to host country know-how difference is positive on average, meaning that countries on average (but not necessarily) hire a manager from a stronger country. In the average game, the cultural distance between manager and host country stands at 0.93. To illustrate, this figure corresponds to the cultural

TABLE 5 Summary statistics for estimation sample at game level

Variables	Observations	Mean	SD	Minimum	Maximum	Correlation coefficient					
						Elo difference	Know-how distance	Int. experience	Play professional	Play international	Migrant
<i>Dependent variable</i>											
Elo rating difference per game	29,520	0.754	6.192	-63	59						
<i>Manager characteristics</i>											
Manager know-how difference	24,014	0.277	0.797	-1.96	5.30	0.05					
<i>Manager know-how input</i>											
Cultural distance	28,574	0.933	1.451	0	8.94	-0.01	0.36				
International experience	29,520	1.684	3.429	0	31	0.01	0.15	0.33			
Played professional	29,520	0.709	0.454	0	1	0.03	-0.02	0.01	0.08		
Played international	29,520	0.410	0.492	0	1	0.03	-0.14	-0.19	-0.13	0.44	
Migrant	28,839	0.481	0.500	0	1	0.03	0.41	0.69	0.44	0.05	-0.21
<i>Team/game characteristics</i>											
Elo rating at start tenure	29,520	1.472	277	475	2,113	-0.07	-0.49	-0.23	-0.02	0.30	0.20
Association indicator	29,520	116.5	65.89	1	236						-0.24
Year	29,520	2,007	4,575	2,000	2,015						

distance between Portugal and its former manager Felipe Scolari, a Brazil native. The largest cultural distance in the dataset (8.94) is found between Swedish manager Sven-Göran Eriksson and his former team Mexico. On the other side of the spectrum, the cultural distance equals 0 for 52% of games, where the coach is native to the country he manages. Almost all managers have been professional players, as about 60% have played for a national team themselves.

5 | EMPIRICAL RESULTS

To assess Hypothesis H1, we examine the results of the panel model specified in Equation (2), depicted in Table 6. We start from a model including only control variables, and then add the variables of interest step-by-step. In Column 1, we find that hiring a migrant manager in itself has an insignificant impact on performance. This result is similar to M. Szymanski et al. (2019), although they find an insignificant negative instead of a positive coefficient. According to the results in Column 2, however, migrant managers from countries with a higher know-how advantage over the destination country have a more positive impact on national team performance. This positive and significant moderating effect is robust to (a) the inclusion of the other variables of interest in Columns 3 and 4, (b) switching to (raw) Elo as an alternative measure of know-how (see Supporting Information Appendix Table A2), and (c) controlling for the know-how level of the previous manager (see Supporting Information Appendix Table A3). Hence, these results lead us to support Hypothesis H1.

To assess Hypothesis H2a, we examine the separate effect of cultural distance and international experience in Column 3 of Table 6. Our results show a significantly negative coefficient for the *cultural distance* variable. Hence, we find that larger cultural distance between the migrant manager's home country and the host country hampers organizational performance. This effect is robust across almost all alternative specifications we test, including those reported in Supporting Information Appendix Table A2 (where we use difference in raw Elo instead of differences in estimated know-how from the stochastic frontier model) and Table A3 (where we control for characteristics of the predecessor of the manager). We interpret this result as empirical support for Hypothesis H2a. Our estimate for *international experience*, however, is insignificant in the specification of Column 3. In other words, having more international experience in itself has no significant effect on performance.

We investigate Hypothesis H2b by including the interaction between *international experience* and *cultural distance* in the regression model in Column 4 of Table 6. As the moderating term is positive and significant, it is clear that the effects of international experience and cultural distance on organizational performance are intertwined. To allow for a clearer interpretation, we provide a graphic representation of the combined effect of both variables in Figure 2. The top panel depicts the marginal effect of cultural distance (with 95% confidence interval) over the relevant range of international experience. It is clear that cultural distance has significant negative consequences for managers without any international experience. As a manager accumulates more international experience, cultural distance has progressively less impact on organizational performance. For managers with more than 3 years of *international experience*, the effect of cultural distance is no longer significantly negative. The lower panel shows the average effect of an additional year of international experience for a representative range of values for cultural distance. For managers who have to bridge a large cultural distance, an additional year of international experience has a significantly positive impact on organizational performance. As cultural distance diminishes, the importance of international experience also decreases. For managers in countries with very similar cultures (*cultural distance* below 2),

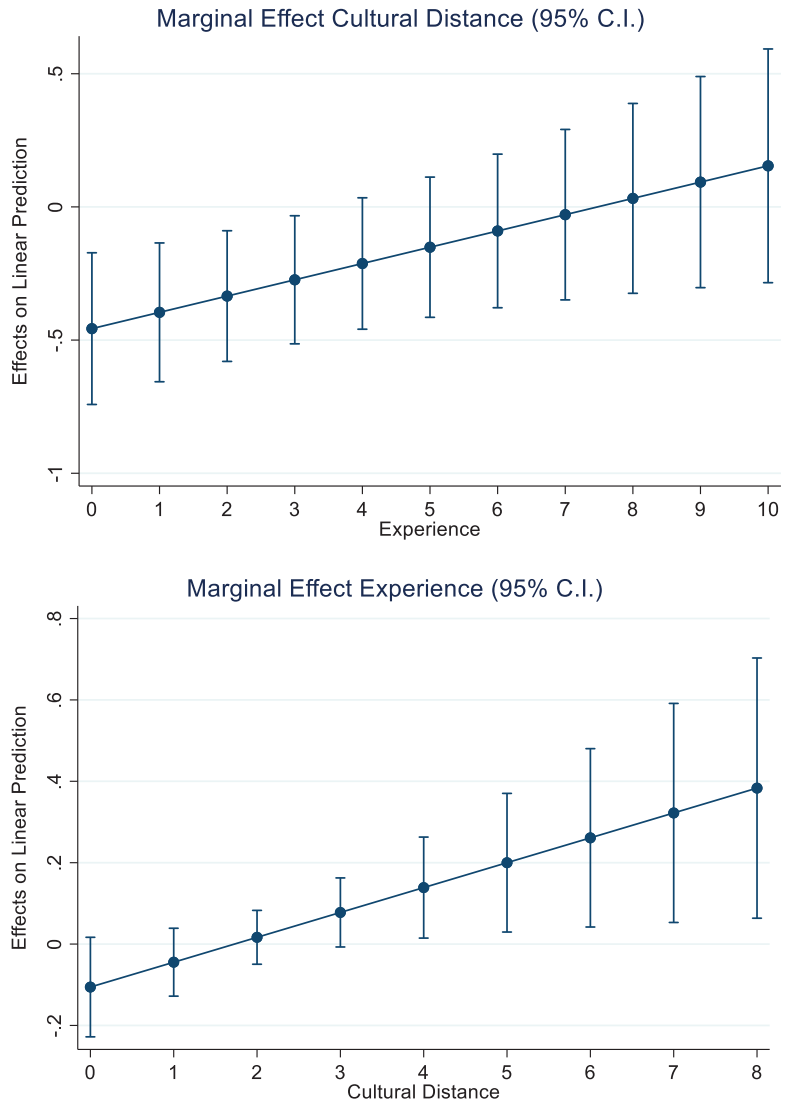
TABLE 6 Results panel regression Hypotheses H1, H2a, H2b, and H3

<i>Dependent variable</i>	Difference in Elo rating since start manager tenure				
	(1)	(2)	(3)	(4)	(5)
Manager know-how difference (H1)		1.178*	1.167*	1.172*	-0.014
		(0.245)	(0.240)	(0.238)	(0.236)
International experience			0.008	-0.106‡	-0.105‡
			(0.0340)	(0.0624)	(0.0587)
Cultural distance (H2a)			-0.294†	-0.457*	-0.254‡
			(0.122)	(0.145)	(0.130)
International experience × cultural distance (H2b)				0.061†	0.044‡
				(0.0265)	(0.0244)
<i>Further controls</i>					
Migrant	0.102	-0.604	-0.017	0.232	0.701
	(0.343)	(0.392)	(0.498)	(0.511)	(0.474)
Played professional	0.557	0.450	0.457	0.426	0.531
	(0.391)	(0.375)	(0.367)	(0.369)	(0.340)
Played international	0.262	0.313	0.287	0.290	0.065
	(0.307)	(0.303)	(0.299)	(0.298)	(0.253)
Elo start tenure (H3)					-0.027*
					(0.002)
Constant	-0.101	-0.106	-0.107	-0.101	41.84*
	(0.454)	(0.452)	(0.449)	(0.449)	(3.496)
Observations	24,024	24,024	24,024	24,024	24,024
Within R^2	.003	.012	.014	.016	.076
Teams	169	169	169	169	169
Team FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Note: The table shows panel regression results for the performance of an association over a manager's tenure as a function of the difference in know-how between the association and the country of origin of the current manager. Know-how of the manager's source country is calculated as the standardized 5-year rolling average leading up to the start of the sample period in 2000. For the destination country, know-how refers to the average over 5 years leading up to the start of the manager's tenure. In Columns 3–5, we add measures of the manager's international experience and the cultural distance between the manager's country of origin and the current association. These regressions further control for the manager's prior playing experience, whether he is a migrant and whether there was home advantage present in the game. In Column 5, we furthermore test explicitly for convergence by including the Elo level at the start of employment. All models include year and team fixed effects. *SE* are clustered at team level and given in parentheses. R^2 numbers refer to within team R-squared. Significance is denoted as * for .01 level, † for .05 level, and ‡ for .1 level. Abbreviations: FE, Fixed Effects.

the impact of international experience even becomes slightly negative. In other words, we find that international experience only has an effect on performance through its moderating effect on the detrimental impact of cultural distance. We interpret this as a refinement of the findings of Le and Kroll (2017) that international experience is positively related to organizational performance. Overall, our results lend clear empirical support for Hypothesis H2b.

FIGURE 2 Marginal effect of international experience and cultural distance. In the upper panel, we show the average marginal effect of cultural distance as a function of international experience measured in years. In the bottom panel, we plot the average marginal effect of international experience as a function of cultural distance between the manager's nationality and host country. The whiskers depict 95% confidence intervals, taking the relevant interaction effects into account



To address Hypothesis H3, we finally include the host country's Elo rating at the start of the manager's tenure as an explicit control for conditional convergence. Table 5 shows that the correlation between the manager know-how difference and Elo rating at the start of his tenure is -0.49 , and significant indeed. When this variable is included in Column 5, the estimated effect of the migrant manager country's know-how is no longer statistically significant. Combined with the significance of the initial Elo rating, this implies that the initial performance level is a mediator for the relationship between manager know-how difference and organizational performance. So, countries with relatively low performance catch up when hiring a migrant manager from a high know-how source country. In this context, our results complement the analysis of Krause and Szymanski (2019), who find convergence in international soccer performances across countries. The transfer of managerial know-how we explicitly model here is one of the potential mechanisms they propose to explain this convergence. Our results support that the import of know-how through a migrant manager is a channel through which countries converge. We therefore have evidence to support Hypothesis H3.

Finally, we briefly focus on the other control variables in Table 6. It appears that those managers who were better players (played professionally and for their respective national team) tend to perform better, although these control variables are not statistically significant in our models. As such, our results do not explicitly support the expert leader hypothesis as found by Goodall et al. (2011) and Goodall and Pogrebna (2015).

6 | DISCUSSION, MANAGERIAL IMPLICATIONS, AND LIMITATIONS

Given the rising international mobility of high-skilled professionals, such as university professors, artists, athletes, and top managers, the scope for productivity gains from migration seems destined to grow over the coming years. Today, few top organizations rely on home-grown talent to fill their managerial positions and often need to turn to external sources. Recognizing this, government policy in developed countries often tends to encourage high-skilled migration (e.g., the EU's Marie Curie grant program for promising researchers). This may be changing, however, as most Western countries have recently witnessed the rise of political forces which strongly oppose migration (e.g., Donald Trump in the United States, Lega in Italy, and Rassemblement National, the former Front National, in France). Likewise, developing countries often create barriers to entry for foreign firms and workers to access local markets and resources (Burstein & Monge-Naranjo, 2009).

Given the clear positive performance effects we uncover for managers originating from countries with advanced managerial know-how, policies to attract workers from more advanced countries constitute a promising strategy for poorer countries seeking to catch up to their richer counterparts. This international mobility not only leads to the transfer of tacit knowledge but also allows workers to build international experience, which in turn enables them to better cope with cultural differences that may hinder the transfer of skills to future employers.

Our results shed light on recent literature on the knowledge-based view in international business by examining to what extent and how superstar workers can transfer knowledge to new employers, what a potential obstacle to this transfer is, and how this obstacle can be overcome. As the amount of tacit knowledge that a worker carries is normally unknown, studies on the transfer of management know-how have been confined to standard management practices without variation in the amount of knowledge. Our results imply that managers are indeed able to transfer managerial know-how across borders. Human resource policy should especially focus on workers from high performing places, as workers tend to absorb know-how and bring it with them. Moreover, cultural barriers may hinder the transfer of knowledge, but this effect decreases with the worker's international experience.

Inevitably, our research suffers from some limitations. First, we do not observe individual manager know-how, but instead proxy this through the manager's country of origin. Hence, we assume that all managers originating from the same country are exposed to the same knowledge prior to their international experiences. Of course, managers may differ in the effective exposure to high-end know-how they have enjoyed in their home country. However, the high-profile character of the job of a national team coach diminishes the chance of bias resulting from this assumption. After all, the press and public would never accept the appointment of an inexperienced, low-profile migrant coach as national team manager. This greatly diminishes the probability that individuals who are far removed from the highest level of soccer know-how in their country of origin get selected to manage a foreign national team.

Second, the shortcomings of Hofstede's measures of cultural distance are widely acknowledged and alternatives for these measures are proposed (e.g., Shenkar, 2001). It is beyond the scope of our

analysis to contribute to this ongoing debate, but we do suggest additional inquiry into the existence of similar moderating effects using other measures.

Third, the hiring of a foreign coach may be endogenous, as such a hire may take place under special circumstances. By looking at the difference in Elo, instead of the level, we try to control for these circumstances, but we cannot identify the exact reasons why a foreign coach was hired. In the Supporting Information Appendix, we presented a set of robustness checks, which explicitly include measures pertaining to the predecessor of the migrant coach. These support our baseline results.

Finally, as noted in S. Szymanski (2014), the convergence of national soccer team quality—in this case through the import of managerial know-how—may differ from convergence in other industries. Nevertheless, the apparent knowledge transfer taking place in this industry is likely relevant for other industries with similar levels of cross-border interaction and substantial managerial migration and relocation throughout the career span. Moreover, the propensity for cross-border interaction in other industries is likely to continue its growth as economies across the globe become ever more intertwined.

7 | CONCLUSION

Our work tests the transfer of managerial know-how across international borders using the context of international soccer, where manager experience and team (firm) performance are well recorded. Our estimations show that migrant managers from high know-how countries improve the performance of their destination country's team. Although cultural distance between a manager and the destination country hinders the effectiveness of that manager, this effect is mitigated when the manager has high levels of international experience. Finally, we find that this international know-how transfer is a channel contributing to the overall convergence of poor and strong performing countries in national team soccer. Although we set our empirical work within the context of international soccer competition, we propose that migrant managers may similarly transfer tacit managerial know-how in other industries. We therefore call for supporting empirical work based on high-quality data sets in other industries of interest.

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ENDNOTES

¹ One exception is the United Kingdom, which fields separate teams for England, Scotland, Wales, and Northern Ireland.

² We present the results of these alternative estimations in the Supporting Information Appendix Table A1.

³ See Dow, Baack, and Parente (in press) for an updated discussion of the measurement of cultural distance.

⁴ We attempted to collect language skills for each manager, but this turned out impossible to find from reliable sources.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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APPENDIX

PROCEDURE FOR ELO RATING CALCULATION

The Elo rating uses past game outcomes to establish a win expectancy for each team for an upcoming game. The measure is updated after each game based on the outcome, score differential, opponent quality, and level of play. If a team beats a high-quality team, as measured by Elo, they are more highly rewarded, whereas a loss to a lower ranked team results in a larger number of Elo ratings points lost.

We adopt the formulas developed by World Football Elo Ratings (www.eloratings.net), but calculate our own ratings from our sample of games. To increase robustness, we calculate multiple versions of the Elo rating. First, we base our estimates on initialized values in 2000 from the World Football Elo Ratings website and train our data through 2015. We also calculate our own version of Elo rating using historical games starting in 1930. For both versions, we calculate ratings separately with and without friendly matches included. Ratings are largely consistent across calculations, and we use the World Football initialized ratings with friendly matches included for the empirical analysis presented in the main article.

Each country's rating is calculated dynamically across the season as follows:

$$\text{Elo}_{i,t} = \text{Elo}_{i,t-1} + K_{ij}^* (W_{ij} - \text{Pr}[W_{ij} = 1])$$

Here, t indexes the current game, whereas $t - 1$ identifies the state after the previous game. The term W_{ij} represents the result of the game against team j such that,

$$W_{ij} = \begin{cases} 1 & \text{if team } i \text{ wins} \\ 0.5 & \text{for a draw} \\ 0 & \text{if team } i \text{ loses} \end{cases}$$

$\text{Pr}[W_{ij} = 1]$ is the Elo-based expected win probability for team i against team j given by:

$$\text{Pr}[W_{ij} = 1] = \frac{1}{10^{-\text{Elodiff}_{ij}/400} + 1}$$

where,

$$\text{Elodiff}_{ij} = \text{Elo}_{i,t-1} - \text{Elo}_{j,t-1} + 100(I[i = \text{Home}])$$

Home team advantage is entered as a constant Elo difference of 100 added to the actual Elo difference between the competing teams. For games played on neutral ground, no adjustment is made, as the indicator function, $I(\cdot)$, is equal to zero in this case.

Finally, the term K_{ij}^* is a parameter adjusted for the goal difference in each game and weighted by the level of play. Following the World Football Elo classifications, we consider five levels of play: $K = 60$ for World Cup finals, $K = 50$ for continental championship finals and major intercontinental tournaments, $K = 40$ for qualifiers of each of these tournament, $K = 30$ for all other tournaments, and, lastly, $K = 20$ for a friendly match. These weights are then adjusted depending on $|d_{ij}|$, the absolute value of the score difference in the game between teams i and j . A larger number of points is reallocated to the winning team (and taken from the losing team) if the score margin is higher. As such, we calculate the parameter, K_{ij}^* as follows:

$$K_{ij}^* = \begin{cases} K & \text{if } |d_{ij}| \leq 1 \\ 1.5(K) & \text{if } |d_{ij}| = 2 \\ 1.75(K) & \text{if } |d_{ij}| = 3 \\ \left(1.75 + \frac{|d_{ij}| - 3}{8}\right)(K) & \text{if } |d_{ij}| > 3 \end{cases}$$

As some new countries began their international competition after our 2000 start date for Elo rating calculation, we enter the Elo rating chosen by World Football Elo as a starting value in our data. For robustness, we also use a starting value of the average in the dataset, finding few differences overall in our data. Across all calculations, Elo ratings were largely similar in rank. At the individual game level, ratings ranged from a minimum of 461 to a maximum of 2,212, with a maximum difference in Elo of 1,231.