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Does Employing Skilled Immigrants Enhance Competitive Performance? Evidence from European Football Clubs

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Abstract. We investigate the effect of employing skilled immigrants on the competitive performance of organizations by studying European football (soccer) clubs in Germany, Italy, France, England, and Spain from 1990 to 2020. Microdata from this setting offers unusual transparency about players' birthplaces and their contributions to organizational performance. Further, country-level rules govern how many immigrant players clubs can deploy. Using changes to these rules as the basis for instrumental variables, we find that the number of immigrant players in the club's starting lineup has a positive local average treatment effect on the club's performance. We show that this occurs for two related reasons. First, immigrants exhibit higher individual talent. Second, immigrants play a coordinating role that enables the organization to broaden the variety of on-field strategies and actions it uses to outperform rivals. The latter mechanism is novel to the literature.

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Keywords: immigration • organizational studies • effectiveness performance • personnel

1. Introduction

This paper examines whether and how organizations that employ more skilled immigrants outperform their rivals. A rapidly growing literature shows that immigrants have meaningful effects on important organizational outcomes, such as employment structure (Kerr et al. 2015), investment choices (Hernandez 2014, Burchardi et al. 2019, Glennon 2023), and innovation (Foley and Kerr 2013, Choudhury and Kim 2019, Beerli et al. 2021). But we still lack systematic evidence of whether and how hiring skilled immigrants improves an organization's competitive performance. For example, a recent study concludes that "our knowledge on how immigration policies affect firms' success … is limited" (Beerli et al. 2021, p. 977). Understanding this fundamental question is urgent for both managers and scholars. The cost and effort required to employ skilled immigrants are increasing in many parts of the world because of rising complex and controversial immigration regulations (Wiener-Bronner 2018), labor shortages (Raux 2023), and heightened competition for talent (Kerr et al. 2016). Managers, thus, need to understand the competitive payoffs of investing in skilled immigrants.

But whether and how immigrants affect performance is not obvious from a scholarly perspective. Different literatures convey various plausible answers. From a human capital perspective, immigrants might help firms outperform rivals if they bring valuable and unique talent (Mithas and Lucas 2010, Choudhury and Kim 2019). However, immigrants may also struggle to assimilate because of discrimination or challenges with adaptation and acquisition of host country–specific skills (Oreopoulos 2011, Remennick 2013, Gomez-Gonzalez et al. 2021). Theories of group and organizational dynamics are also ambivalent (Milliken and Martins 1996). Combinations of individuals with varied backgrounds may outperform

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more homogenous groups if they can harness diverse ideas and skills (Fleming et al. 2007, Hundschell et al. 2022). However, such diversity might also induce conflicts and coordination frictions that could be detrimental to organizations (Hülsheger et al. 2009). Consequently, knowing whether the contribution of immigrants is positive or negative is not enough. We must also understand why. And that requires insight on how hiring skilled immigrants changes the collective functioning of an organization—the way tasks are performed and coordinated—to explain any observed changes in performance. Given the absence of clear ex ante theoretical guidance, we adopt an abductive approach to explore these possibilities. We inform our inquiry with broad insights from related work and then rely on empirical tests to elucidate mechanisms that might explain the relationship between hiring skilled immigrants and competitive performance.

We begin our inquiry by providing novel causal evidence that employing a greater number of immigrants allows organizations to outperform their rivals. We then advance two mechanisms to explain why. The first mechanism is talent. Building on the idea that immigrants are drawn from the right tail of a large talent distribution because of the frictions involved in moving across borders (e.g., Borjas 1987), we show that immigrants do better than natives on a wide variety of individual performance metrics. But individual talent per se will not result in better collective outcomes unless it is deployed in a manner that positively influences organizational performance. This insight leads us to the second, more novel, mechanism: strategic variety. Building on the idea that immigrants bring a broad range of different ideas, experiences, and know-how (Moser et al. 2014, Choudhury and Kim 2019, Doran and Yoon 2020, Moser and San 2020), we show that organizations that employ more immigrants subsequently deploy a wider variety of strategic actions. This helps organizations develop a larger repertoire of options to adapt to their rivals and outperform them. Moreover, based on the literature that outlines the various roles employees can perform in an organization (Fernandez and Gould 1994, Mell et al. 2020), we investigate if immigrants are more likely to assume a coordinating role. Our results show that immigrants are more likely than native workers to coordinate the complex actions contributing to increased strategic variety.

We explore these issues in an empirical context well suited to causal inference, namely, football (soccer) clubs from the top five European leagues (England, Italy, Spain, France, and Germany) that played each other in pan-European competitions from 1990 to 2020. The setting has several desirable features. First, this economically significant industry bears similarities with other sectors that feature human capital–intensive production and head-to-head competition, such as sales, litigation, and research and development. Second, the granularity of the data allows us to explore underlying mechanisms in ways that are impossible with other data sources. Third, these football clubs employ players originating from various parts of the world (see Online Appendix Figure A.1). Fourth, many sources of firm heterogeneity—which can often create challenges with measuring causality—are implicitly controlled for (e.g., rosters are the same size, and all clubs play by the same rules). Finally, and most importantly for causal inference, each league has different rules regarding immigrant player employment, and these rules change over time for complex reasons unrelated to club performance (see Online Appendix III). When two clubs from different countries meet in interleague competition, these differences in rules create exogenous variation in the ability of these clubs to employ immigrant players.

We base our instrumental variables (IV) approach in our analyses on the changes to these rules. We find that the ability to field more immigrant players has a positive local average treatment effect (LATE) on the competitive performance of the club. Each additional immigrant in the starting lineup enhances the probability of winning a match and increases the margin of victory (i.e., goal difference) by roughly 30% relative to the sample mean. Congruent with the talent mechanism, we find that immigrants outperform natives across a series of individual measures such as scoring, pass accuracy, and dribbling accuracy even when accounting for club × season × position fixed effects. We draw on three different measures of strategic variety to validate the role of immigrants in broadening the strategic repertoire of the organization. Being able to field more immigrant players has a positive effect on all three measures of variety, and further, these measures are positively associated with club performance. In reduced-form regressions that rely on granular player-to-player passing data, we also find that immigrants are more likely to coordinate the deployment of complex strategies by being more involved in longer passing sequences and being the middle player in triangular passing networks (e.g., Fernandez and Gould 1994).

Our study makes important contributions to the literatures on immigration, employee mobility, competition, and organizational design. We assemble detailed multinational data—including hand-collected, national-level rule changes—that allow us to measure a local average treatment effect of immigrant employees on organizational performance. These data allow us to provide one of the first tests of the causal relationship between skilled immigrant employees and organizational performance (see also Beerli et al. 2021, Doran et al. 2022, Brinatti et al. 2023). We document two related channels by which immigrants improve organization performance: increased talent and increased strategic

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variety. The fact that talent matters to organizations is not surprising from a human capital perspective. But prior work stops short of explaining how that talent is deployed to benefit collective outcomes. The strategic variety channel is conceptually novel in that regard. We are unaware of prior work that links the talent of immigrant employees to organization-level performance through this mechanism. It is also an important mechanism because it suggests that foreign-born employees benefit organizations by enhancing the range of strategic options that enable flexibility and adaptability in competitive environments. By playing the coordinating role that enables greater strategic variety, immigrant workers appear to play a crucial role in the way organizations distribute and integrate novel actions to enhance performance.

2. Background

Immigration is a topic of vital interest to many stakeholders around the world, including organizational scholars and managers. Yet classic studies of immigration typically abstract away from organizations (Kerr et al. 2015, Beerli et al. 2021). Immigration studies often focus on macroeconomic issues, including how immigrants shape labor markets, productivity, growth, and innovation at the national or subnational level (see Peri 2016 for a recent review). We note in the introduction how a growing literature has begun to show that immigrants are critical to various organizational outcomes, including innovation, employment structure, investment, and entrepreneurship. Virtually all research linking migration to economic effects, whether at the macro or firm level, implicitly or explicitly assumes that an organization benefits by employing immigrant workers. But the understanding of the connection between immigrant employees and firm performance is still underdeveloped. Empirical evidence is sparse, and considerations of organizational mechanisms that might link immigrant employees to superior firm performance are limited.[1]

Understanding those mechanisms is essential for the literature to deliver on its promise to offer relevant insights for organizational scholars and managers. Showing that skilled immigrants positively or negatively affect organizational performance is valuable but not enough. The human capital tradition, which has historically dominated research on immigrants in labor markets (e.g., Borjas 1987, Kerr 2018), suggests that immigrants are positively selected and bring different knowledge and talent, but it does not explain how that talent is deployed inside the organization to produce particular performance outcomes. Something must happen to collective functioning within the firm for the causal explanation to be complete. We see a valuable opportunity for organizational theories to address that gap. Concepts from the organizational design literature can help by providing insights into how organizations distribute, coordinate, and integrate tasks (Puranam 2018). Ideas from other traditions, including knowledge management (Grant 1996) and diffusion (Bahar et al. 2020), innovation (Fleming 2001), group dynamics (Hundschell et al. 2022), and social networks (Fernandez and Gould 1994), also provide useful notions of how individuals within organizations work together to discover, disseminate, and apply novel ideas. We build on concepts from these literatures to develop the idea of strategic variety as a novel organizational mechanism to explain the relationship between hiring immigrants and organizational competitive performance.

In this paper, we do not develop formal hypotheses in the traditional deductive approach as none of the research traditions mentioned earlier has been applied to study immigrant employees. Given the lack of clear theoretical guidance, we adopt an abductive, data-driven approach. First, we focus on the main relationship between hiring immigrant workers and organizational performance, aiming to establish a causal relationship, be it positive or negative. Next, we draw on previous literature to explore potential mechanisms underlying the relationship identified in the first step of our inquiry.

3. Data and Research Design

3.1. Institutional Context and Research Design

An ideal experiment to evaluate the relationship between employing immigrants and competitive performance would randomly assign some organizations to hire immigrants and then compare those organizations' outcomes to a control group. Additionally, if we aim to understand the mechanisms driving those outcome differences, it would be necessary to directly measure the quality of the individual immigrants hired, the composition of all individuals involved in executing the organization's tasks, and the characteristics of different organizations that may create variance in performance outcomes when hiring immigrants.

Whereas the ideal experiment is impossible, we have identified a setting that offers many desirable features: professional football (soccer) in Europe. This economically important industry[2] heavily relies on talent for success. Because of its broad appeal, football attracts talent from virtually every country, utilizing a broad and flexible global labor pool.[3] Whereas every country has a professional league, five European leagues are widely recognized as competing in the global labor market for the world's best players: the English Premier League, the Spanish Liga, the Italian Serie A, the German Bundesliga, and the French Ligue 1. Online Appendix Figure A.1 shows that, over the past

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30 years, immigrant players from 134 unique countries have played in these five leagues. Our study focuses on clubs from these prestigious domestic leagues that compete against each other in two pan-European tournaments: the Champions League and Europa League.

European football, with its emphasis on human capital and global scope, has an additional desirable feature to our study: the governing bodies (i.e., football associations) of each of the five country leagues have implemented significant—and different—changes over time to the rules concerning (1) the number of foreign players clubs can sign and field and (2) the countries whose players are considered foreign. For instance, the Spanish Football Association permitted a maximum of three foreign players in 1990 and then increased the limit to four between 1991 and 1995, then to six during 1996–1999, then down to five in 2000, down to four between 2001 and 2003, down to three in 2004, after which it jumped to five in 2005 and has remained at that number since. The definition of "foreign" (i.e., who contributes toward the cap on foreign players) also evolved over time. Until 1996, any player born outside of Spain or any of the European Union (EU) countries was considered foreign. However, the 1996 Bosman rule (see Online Appendix I) equated any player with a European Union passport to a domestic player. Since 2004, the pool of countries considered nonforeign has expanded (e.g., Russia added in 2005, Cotonou agreement countries added in 2008, changes to EU membership in various years). Every league underwent similar changes over time but with different caps and definitions of foreign status at different periods. These modifications are documented in Tables 1 and 2, and a detailed account of the data-collection process for recording them is in Online Appendix II. Importantly for our identification strategy, the politically contested process that led to these rule changes was distinct in each country and is plausibly unrelated to factors explaining clubs' performance outcomes. We document the rule-changing process in Online Appendix III and provide evidence that the changes do not correlate with shifts in the performance of clubs in Section 4.1.5.

Our empirical strategy leverages a critical aspect of European football: clubs compete against each other in international tournaments. As all clubs from the same country adhere to the same rules regarding foreign players, there is no variation in the rules to which clubs are subject for domestic tournament matches. However, international tournaments, such as the Champions League and the lower tier Europa League, pit the best six to eight clubs from each country against each other. Because clubs from different countries are subject to different rules regarding immigrant players at any given point in time, we can use the international games as a setting to deploy an instrumental variable strategy, which we describe in Section 4.1.2. We use the variation caused by these changes across countries and over time as inputs to instrumental variables. This enables us to identify the impact of employing more immigrants on organizational performance.[4]

3.2. Football Data and Key Variables

We collected longitudinal data for every match, player, and club from the five aforementioned leagues that participated in the two major European international competitions (i.e., Champions League and Europa League) spanning the seasons from 1990–1991 to 2019–2020. The primary data sources are Transfermarkt and WhoScored.

Transfermarkt, a leading website that covers football matches worldwide, provides detailed individual web pages for each match, club, and player. Its data have been extensively used in previous research (e.g., Scelles et al. 2016, Gauriot and Page 2019). For each of the 58,090 matches (domestic and international) played by the clubs in our sample, we gathered all major events that occurred during the match (e.g., goals) and the list of players involved in the match (starting lineup and substitutions).[5] For each of the 28,199 players on the club rosters, we collected data on their country of birth and details of their professional career. A player born in any country other than the country in which he plays is classified as an immigrant regardless of the player's citizenship or league rules at the time.[6] Our explanatory variable of interest, the *number of immigrant players*, counts the number of immigrant players in the club's starting lineup for the match.

Our primary measure of organizational performance is the *goal difference* at the end of each match, calculated as the difference between the number of goals scored by the focal club and the number of goals scored by the opponent. This measure is a common performance indicator used in empirical research in this context (Hall et al. 2002, Karlis and Ntzoufras 2009). We also use a secondary measure in our models: the *win* indicator, coded as one if the focal club won the game and zero otherwise.

WhoScored, another leading website, offers detailed play-by-play data—such as every ball touch, pass, and position for every player during a match—for each club, player, and match. These data are available starting in the 2009–2010 season, so we only have such fine-grained detail for about a third of the matches in our sample. We use these play-by-play data for testing mechanisms, which we describe later.

Tables 3 and 4 provide descriptive statistics for the main variables of interest (refer to Online Appendix IV for descriptive statistics at the player–match level).

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Table 1. Maximum Number of Immigrant Players Allowed

	England		Spain		Italy		Germany		France	
	Premier League[b]		La Liga		Series A[c]		Bundesliga[d]		Ligue 1	
Season	Roster	Field	Roster	Field	Roster	Field	Roster	Field	Roster	Field
1990	3[a]	3[a]	3	3	5	3	2	2	3	3
1991	3[a]	3[a]	4	3	5	3	2	2	3	3
1992	3[a]	3[a]	4	3	5	3	3	3	3	3
1993	3[a]	3[a]	4	3	5	3	3	3	3	3
1994	3[a]	3[a]	4	3	5	3	3	3	3	3
1995	3[a]	3[a]	4	3	5	3	3	3	3	3
1996	25	11	6	4	5	3	3	3	5	3
1997	25	11	6	4	5	3	3	3	5	3
1998	25	11	6	4	5	3	3	3	5	3
1999	25	11	6	4	5	3	3	3	5	3
2000	25	11	5	3	5	3	3	3	5	3
2001	25	11	4	3	25	11	3	3	5	5
2002	25	11	4	3	3	3	3	3	5	5
2003	25	11	4	3	3	3	3	3	5	5
2004	25	11	3	3	3	3	5	5	5	5
2005	25	11	5	3	3	3	4	4	5	5
2006	25	11	5	3	3	3	25	11	5	5
2007	25	11	5	3	3	3	25	11	5	5
2008	25	11	5	3	3	3	25	11	5	5
2009	25	11	5	3	3	3	25	11	5	5
2010	25	11	5	3	3	3	25	11	5	5
2011	25	11	5	3	3	3	25	11	5	5
2012	25	11	5	3	3	3	25	11	5	5
2013	25	11	5	3	3	3	25	11	5	5
2014	25	11	5	3	3	3	25	11	5	5
2015	25	11	5	3	3	3	25	11	5	5
2016	25	11	5	3	3	3	25	11	5	5
2017	25	11	5	3	3	3	25	11	5	5
2018	25	11	5	3	3	3	25	11	5	5
2019	25	11	5	3	3	3	25	11	5	5

Note. Please refer to Online Appendix II for further details.

[a]Clubs were also allowed to employ two "assimilated players," defined as those who played for five consecutive years in the country or started playing in the country at the youth level.

[b]There were changes in visa rules for the United Kingdom as a whole during this time that significantly affected the ability of clubs to sign immigrant players, but these were separate from Premier League rules regarding how many foreign players a club could have. The Premier League also implemented the home-grown player criteria at the beginning of the 2010–2011 season (see Online Appendix II).

[c]In the post-2001 period, Italy tended to restrict the signing of "new" players that are non-EU born.

[d]Since the 2006–2007 season, there has been a "local player" limit. Though the Bundesliga requires clubs to register a certain number of homegrown players, there is no upper limit on the number of players a German club can register each season.

4. Results

4.1. Employing More Immigrants Has a Positive Effect on Organizational Performance

4.1.1. Ordinary Least Squares (OLS) Reduced-Form Results. We begin with a naïve OLS model that estimates the correlation between immigrant employees and organizational competitive performance:

$$Y_{gj} = \alpha_{sl} + \beta_1 immigrant_{gj} + \epsilon_{gj}, \tag{1}$$

where Y_{gj} is the outcome of game g played by club j (goal difference or win) and $immigrant_{gj}$ is the number of immigrant players in the starting lineup in game g played by club j. The model includes season (s) by league (l) fixed effects in some variants,[7] and club (j) fixed effects in other variants. The results appear in Table 5, in which columns (2) and (4) are estimated with club fixed effects and the outcome variable is goal difference in columns (1) and (2) and the propensity to win in columns (3) and (4). All specifications show the same result: hiring more immigrant players is strongly positively associated with a better goal differential and a higher probability of winning. Specifically, each additional immigrant player is associated with a 0.03–0.06 increase in the goal differential and a 0.7%–1.2% increase in the win probability. These are meaningful relationships in a sport in which the modal outcome is a tie (zero goal differential) and the typical win involves a one-goal difference.

4.1.2. Instrumental Variable Strategy. However, these results might be driven by omitted variables, such as

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Table 2. Countries/Regions Not Considered Foreign by League

Season	England Premier League	Spain La Liga	Italy Serie A	Germany Bundesliga	France Ligue 1
1990	None	None	None	None	None
1991	None	None	None	None	None
1992	None	None	None	None	None
1993	None	None	None	None	None
1994	None	None	None	None	None
1995	None	None	None	None	None
1996	EU	EU	EU	UEFA	EU
1997	EU	EU	EU	UEFA	EU
1998	EU	EU	EU	UEFA	EU
1999	EU	EU	EU	UEFA	EU
2000	EU	EU	EU	UEFA	EU
2001	EU	EU	EU	UEFA	EU
2002	EU	EU	EU	UEFA	EU
2003	EU	EU	EU	UEFA	EU + Cotonou
2004	EU	EU	EU	UEFA	EU + Cotonou
2005	EU	EU + Russia	EU	UEFA	EU + Cotonou
2006	EU	EU + Russia	EU	UEFA	EU + Cotonou
2007	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2008	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2009	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2010	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2011	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2012	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2013	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2014	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2015	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2016	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2017	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2018	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou
2019	EU	EU + Russia + Cotonou	EU	UEFA	EU + Cotonou

Notes. There were EU enlargements in 2004, 2007, and 2013 that changed the number of countries considered to be nonforeign for all leagues. "Cotonou" refers to countries party to the Cotonou agreement between 78 African, Caribbean, and Pacific states and 15 EU member states. Please see Online Appendix II for more detail.

Table 3. Descriptive Statistics at the Club–Match Level

Variable	(1) International tournament matches
Goal difference	0.51
	(1.86)
Win	0.48
	(0.50)
Number of immigrant players	5.46
	(2.34)
N	7,777
Strategic richness index	1.35
	(2.12)
Density	0.59
	(0.08)
Integration	0.52
	(0.07)
N	2,740

Notes. Mean coefficients; standard deviations in parentheses. International tournament matches are composed of Europa League and Champions League matches from season 1990–1991 to 2019–2020. There are fewer observations for strategic richness, density, and integration because these measures rely on passing data only available starting in 2009–2010.

culture or capabilities or resources, which affect both the choice to employ immigrants and club performance. To address these concerns, we use a two-stage least squares (2SLS) strategy that exploits the previously described country-level changes in the rules governing (1) the number of foreign-born players allowed on a club and (2) the countries from which the players are considered as foreign.

We construct our instrument in four steps, using a gravity model.[8] First, we estimate the following gravity equation on a yearly panel data set composed of all pairwise combinations of the five destination countries (Spain, Italy, France, England, Germany) and 193 origin countries from which immigrant players can originate (30 years between 1990 and 2020):

$$z_{odt} = \alpha_{od} + \alpha_t + \delta_1 dom_pol_{odt} + \delta_2 maxfield_{dt} + \delta_3 UKvisa1_{dt} + \delta_4 UKvisa2_{dt} + \delta_5 pop_{dt} + \delta_6 pop_{ot} + \delta_7 GDPpercap_{ot} + \delta_8 GDPpercap_{dt} + v_{odt}, \quad (2)$$

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Table 4. Correlations Among Key Variables (Club–Match Level)

Variable	1	2	3	4	5	6
1 Goal difference	1.000					
2 Win	0.792***	1.000				
3 Number of immigrant players	0.064***	0.065***	1.000			
4 Strategic richness index	0.269***	0.199***	0.126***	1.000		
5 Density	0.141***	0.091***	0.090***	0.677***	1.000	
6 Integration	0.148***	0.099***	0.102***	0.773***	0.533***	1.000

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

where z_{odt} is the average number of immigrant players from origin country o playing in destination country d's football clubs in a year t and the independent variables include an indicator for whether domestic league policies consider players from country o as foreign in destination country d in year t (dom_pol_{odt}), the maximum immigrant players that can be fielded per destination country d's regulations in year t ($maxfield_{dt}$), two dummy variables for immigration law changes in the United Kingdom separate from league-specific changes ($UKvisa_{dt}$), population for each country, gross domestic product (GDP) per capita for each country, and country-dyad (α_{od}) and year (α_t) fixed effects.[9] These regression results, with strong F-statistics and wide robustness to the construction of the dependent variable, are shown in Table 6.

Second, we obtain predicted values from the regression estimation, $\hat{z}_{odt}$. Third, we sum these predicted values across all origin countries to come up with an expected number of immigrant players for each league country–year:

$$Z_{dt} = \sum_{o} \hat{z}_{odt},$$

where Z_{dt} then becomes our instrument. Figure 1 shows that this instrument, the expected number of immigrant players, performs quite well in predicting the actual number of immigrants by country–year.

Finally, we use Z_{dt} as the instrument in a 2SLS estimation. The first stage equation is as follows:

$$immigrant_{gj} = \gamma_{lt} + \theta_1 Z_{dt} + e_{gj}, \tag{3}$$

where $immigrant_{gj}$ is the actual number of immigrant players on club j in the starting lineup of game g.

To obtain our local average treatment effect estimates, we use the predicted value of $immigrant_{gj}$ in the second stage equation (represented with ~ above it) as follows:

$$Y_{gj} = \gamma_{lt} + \beta_1 \widetilde{immigrant}_{gj} + \epsilon_{djt}. \tag{4}$$

As before, Y_{gj} is the performance of club j in game g (goal difference or win). The logic is that the number of immigrant players predicted by the gravity equation is a valid instrument because it is externally imposed by rules that differ across years and countries, and these rule changes are driven by a host of factors described in Online Appendix III that are unrelated to the competitiveness of a league's clubs. The identifying variation now comes from the marginal number of immigrant players each club is allowed to deploy in any given year under league rules that differ across countries and over time.[10] The standard errors in all 2SLS specifications are clustered at the country-by-season level because that is the level of variation of

Table 5. Baseline (Naïve) OLS Results

Variable	(1) Goal difference	(2) Goal difference	(3) Pr(win)	(4) Pr(win)
Number of immigrant players	0.0575***	0.0304**	0.0119***	0.00792**
	(0.0105)	(0.0135)	(0.00277)	(0.00354)
Constant	0.196***	0.344***	0.417***	0.439***
	(0.0625)	(0.0759)	(0.0165)	(0.0200)
Observations	7,777	7,777	7,777	7,777
R^2	0.011	0.047	0.008	0.036
Season × league fixed effects	Yes	Yes	Yes	Yes
Focal club fixed effects		Yes		Yes

Notes. The level of analysis is the club–match. Sample period = 1990–1991 to 2019–2020. Models 1–4 include only the international matches (played during Europa and Champions tournaments). For international matches, the League in season × league fixed effects includes Europa and Champions. Number of immigrant players refers to the number of immigrant players in the starting lineup of the match. Standard errors clustered at the country × season level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

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Table 6. Gravity Model Instrument Construction

	DV = Total immigrant players in country/league			DV = Average immigrant players per club		
Variable	(1) 30%	(2) 50%	(3) 70%	(4) 30%	(5) 50%	(6) 70%
Is player from origin country considered an immigrant?	0.411***	0.273**	0.157**	0.0212***	0.0140***	0.00811**
	(0.146)	(0.106)	(0.0651)	(0.00742)	(0.00543)	(0.00334)
Max immigrant players allowed on the field	0.0308**	0.0259**	0.0170**	0.00170**	0.00142**	0.000932***
	(0.0148)	(0.0111)	(0.00687)	(0.000751)	(0.000567)	(0.000356)
UK visa change 1	0.287	0.254*	0.167*	0.0146	0.0129*	0.00849*
	(0.185)	(0.144)	(0.0868)	(0.00926)	(0.00722)	(0.00435)
UK visa change 2	0.172	0.111	0.110	0.00811	0.00516	0.00522
	(0.161)	(0.126)	(0.0804)	(0.00809)	(0.00633)	(0.00406)
Origin country population	7.66 e-09*	5.16 e-09*	2.98 e-09*	3.83 e-10*	2.58 e-10*	1.50 e-10*
	(4.37 e-09)	(2.88 e-09)	(1.57 e-09)	(2.18 e-10)	(1.44 e-10)	(7.81 e-11)
Destination country population	−1.58 e-08	−8.11 e-09	−9.15 e-09	−6.63 e-10	−2.71 e-10	−3.50 e-10
	(3.15 e-08)	(2.23 e-08)	(1.23 e-08)	(1.57 e-09)	(1.12 e-09)	(6.18 e-10)
Origin GDP per capita	2.32 e-06	1.56 e-06	5.36 e-07	1.35 e-07	9.03 e-08	3.22 e-08
	(4.04 e-06)	(3.01 e-06)	(1.75 e-06)	(2.05 e-07)	(1.53 e-07)	(8.82 e-08)
Destination GDP per capita	−7.23 e-05***	−5.21 e-05***	−3.20 e-05***	−3.43 e-06**	−2.48 e-06**	−1.52 e-06**
	(2.63 e-05)	(1.90 e-05)	(1.22 e-05)	(1.33 e-06)	(9.74 e-07)	(6.33 e-07)
Constant	3.609	2.394	1.711*	0.167	0.107	0.0765
	(2.414)	(1.691)	(0.941)	(0.118)	(0.0832)	(0.0467)
Observations	17,150	17,150	17,150	17,150	17,150	17,150
R^2	0.728	0.704	0.649	0.731	0.706	0.650
Country dyad and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes. The level of analysis is a source country–destination country–year. The dependent variable in each model is z_{odt} from Equation (2). Each column shows a slightly different measure of z_{odt} based on the percentage of matches an immigrant player must have been in the starting lineup to be counted toward a club's limit on immigrant players. The columns also vary across another dimension: in columns (1)–(3), we predict the total number of immigrant players in the country, whereas in columns (4)–(6), we predict the average number of immigrant players per club. Standard errors clustered at the country dyad level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

the instrument. The results are robust to clustering by club or club-by-season levels.

4.1.3. Instrumental Variable Regression Results. Table 7 reports the results of the second stage estimation. Columns (1)–(4) report the results when the dependent variable is the goal difference, whereas columns (5)–(8) report the results when the dependent variable is the win indicator. The various columns differ in how the instrument was constructed as explained in the table notes, but the results remain qualitatively similar across specifications. Critically, the first stage F-statistic for the excluded instrument is well above 10 in all specifications, indicating that the instrument is not weak.

Consistent with the reduced-form OLS results, the local average treatment effect of hiring additional immigrant players on goal differential and win probability is positive and statistically significant. The estimates suggest that hiring an additional immigrant player improves a club's performance in any given international match by between 0.12 and 0.22 goals and increases the probability of winning that match by between 2% and 5%.

4.1.4. Interpretation of Instrumental Variable Regression Results. We emphasize two potential issues with our IV analysis. First, the IV regressions recover an estimate of the LATE (Imbens and Angrist 1994). The LATE is the effect of employing an additional immigrant on club performance for only a subsample of clubs: those that respond to the liberalization of restrictions by hiring additional immigrant employees (i.e., "compliers"). It is possible that these clubs might be different from "noncompliers," resulting in a LATE that is larger than the average treatment effect (ATE) because "complier" clubs that want to hire more immigrants—but cannot without rule liberalization—are likely to get the biggest returns from hiring immigrants.

To evaluate the "complier"[11] clubs, we draw on a long literature discussing IV result interpretation in the potential outcomes framework (Angrist et al. 1996). First, using the changes in the rules documented in Table 1, we identify the seasons in which the football association of each country liberalized the foreign player rules.[12] Second, we identify the clubs that responded by deploying more immigrant players in the years when the football association liberalized the foreign player rules. Third, we compare the performance of these clubs

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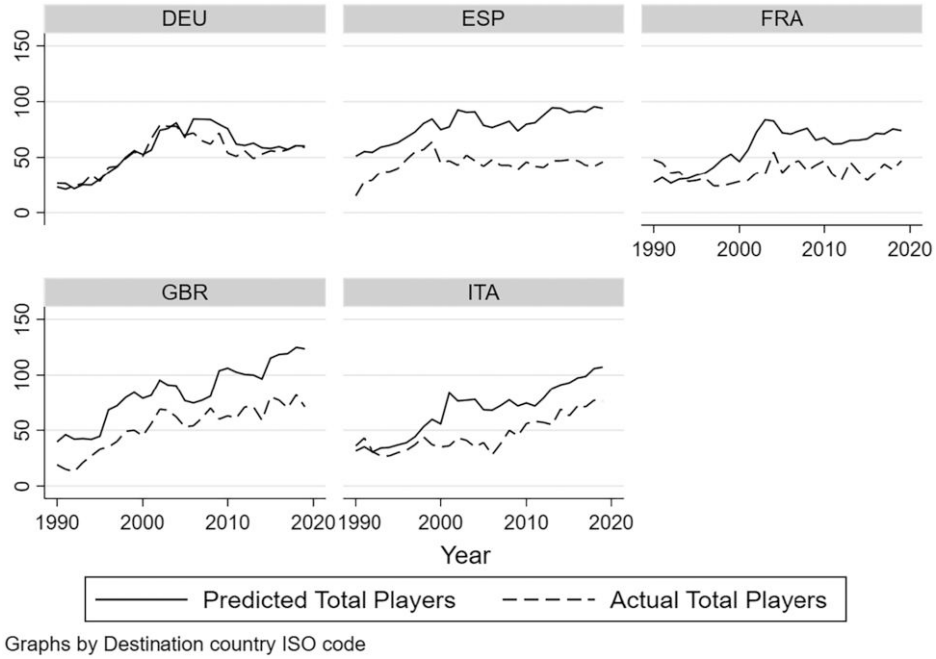
Figure 1. Correlation Between the Instrumental Variable and Actual Immigrant Players



Note. The graph shows the predicted number of immigrant players and the actual number of immigrant players for each season by league.

in the season prior to the liberalization. Panel A of Table 8 shows that the clubs that respond as expected when the rules are liberalized (i.e., by deploying more immigrant players) are not statistically different along a range of performance measures from the clubs that do not respond as expected. These results indicate that complier club–years do not look observationally different from the noncomplier club–years, suggesting that our LATE estimate may not differ substantially from the ATE of the sample and improving the external validity of our results.

The second potential issue with our research design has to do with the spillover effects that might violate the stable unit treatment value assumption that is required for correct LATE estimates. Liberalization of the foreign player rules in one country may influence clubs from other countries by increasing global competition for immigrant players. To examine the extent of this problem, we analyzed whether clubs from a league that did not liberalize its immigrant rules employed fewer immigrant players when another league liberalized its rules. First, we identified the seasons in which at least one football association did not liberalize its immigrant player rules but in which at least one other football association did liberalize its rules. Second, we calculated the year-over-year difference in the number of immigrant players for clubs that did not liberalize their rules. If spillovers are present, we expect a negative coefficient.

Table 7. Second Stage Results (2SLS Models)

	DV = Goal difference				DV = Pr(win)			
Variable	(1) Average 50%	(2) Total 50%	(3) Average 70%	(4) Total 70%	(5) Average 50%	(6) Total 50%	(7) Average 70%	(8) Total 70%
Number of immigrant players	0.124***	0.171***	0.168***	0.219***	0.0231**	0.0353***	0.0347***	0.0479***
	(0.0437)	(0.0531)	(0.0475)	(0.0594)	(0.0106)	(0.0124)	(0.0112)	(0.0139)
Observations	7,777	7,777	7,777	7,777	7,777	7,777	7,777	7,777
Season × league fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F	107.5	84.12	99.29	73.04	107.5	84.12	99.29	73.04

Notes. The level of analysis is the club–match. The sample consists of all international matches from 1990–1991 to 2019–2020 in the Europa and Champions Leagues. The column headings describe the decision rules used to construct the dependent variable in the first stage regression (see footnote to Table 6). Number of immigrant players refers to the number of immigrant players in the starting lineup of the match. Standard errors clustered at the country × season level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

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Table 8. Examining Spillover Effects and the Stable Unit Treatment Value Assumption

Panel A: Prior season characteristics of clubs based on their response to rule liberalization

	Club deploys more immigrant players after liberalization?			
Variable	No	Yes	Difference	*p*-value
Qualifies to playoffs in UEFA tournament	0.7	0.7	−0.04	0.786
Final position in domestic competition	3.2	3.6	0.39	0.548
Goal difference in domestic competition	23.1	22.5	−0.61	0.870
Total points in domestic competition	65.6	62.7	−2.91	0.311
Had a foreign manager	0.3	0.2	−0.03	0.818

Panel B: Do clubs from countries that did not liberalize immigration caps deploy fewer immigrant players?

	Mean	95% confidence interval	*p*-value	Observations
Difference in the number of immigrant players	0.015	(−0.167; 0.197)	0.870	127

Notes. Panel A: Clubs in the analysis are those that participate in a UEFA tournament in a season when the club's domestic football association liberalized the immigrant player cap. The variables in each row describe the characteristics of the clubs during the previous season. *Qualifies to Playoffs in UEFA Tournament* is equal to one when the club advances from the group stage to the playoffs or knockout stage and equals to zero otherwise. *Final Position in Domestic Competition* is the rank at the end of the domestic league season. *Goal Difference in Domestic Competition* is the accumulated goal difference at the end of the domestic league season. *Total Points in Domestic Competition* is the total number of points a club earns during the domestic league competition. *Had a Foreign Manager* is equal to one when the club had a foreign-born manager during the previous season and equals to zero otherwise. Percentage of club × season that react as expected: 61.2%. Number of observations: 49 club–seasons. Panel B: Clubs in the analysis are those that participate in a UEFA tournament in a season when the club's domestic football association did not liberalize the immigrant player cap but one or more of the other four leagues did liberalize the cap. The main variable shown is the difference between the average number of immigrant players deployed by the firm during the current and the previous season.

However, panel B of Table 8 shows that the coefficient is positive and not statistically different from zero ($p = 0.870$). Thus, the market for immigrant workers may be deep enough or involve sufficient frictions that these increases in demand-side competition do not have large spillover effects.

4.1.5. Robustness of Instrumental Variable Results. We include an additional set of robustness tests of our 2SLS estimation in Table 9. In columns (2) and (3) of Table 9, we measure *immigrant players* using actual playing time during any given game rather than presence in the starting lineup. In column (4), we test the sensitivity of

Table 9. Robustness Checks of 2SLS Model

Variable	(1) Baseline	(2) Players defined by having played 70% of the match	(3) Players defined by having played 50% of the match	(4) Excluding Brazil	(5) Lee et al. (2022) Adjusted standard error
Number of immigrant players	0.168***	0.207***	0.129***	0.188***	0.168***
	(0.0475)	(0.0541)	(0.0455)	(0.0508)	(0.0475)
Observations	7,777	7,777	7,777	7,777	7,777
Season × league fixed effects	Yes	Yes	Yes	Yes	Yes
First stage *F*	99.29	86.06	103.3	86.67	99.29
Lee et al. (2022) – Adjusted standard error					0.0474
Lee et al. (2022) – Adjusted 95% confidence interval lower bound					0.0750
Lee et al. (2022) – Adjusted 95% confidence interval upper bound					0.261

Notes. The level of analysis is the club–match. The sample consists of all international matches from 1990–1991 to 2019–2020 in the Europa and Champions Leagues. The dependent variable is goal difference in all columns. In columns (1), (4), and (5), we use the instrument constructed using the average number of immigrant players that participated in the starting lineup for at least 70% of the matches. Number of immigrant players refers to the number of immigrant players in the starting lineup of the match. In column (5), we report the adjusted standard error for the coefficient of the main variable, number of immigrant players. We also report the lower bound and upper bound of the 95% confidence interval. We followed the procedure proposed by Lee et al. (2022). Standard errors clustered at the country × season level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

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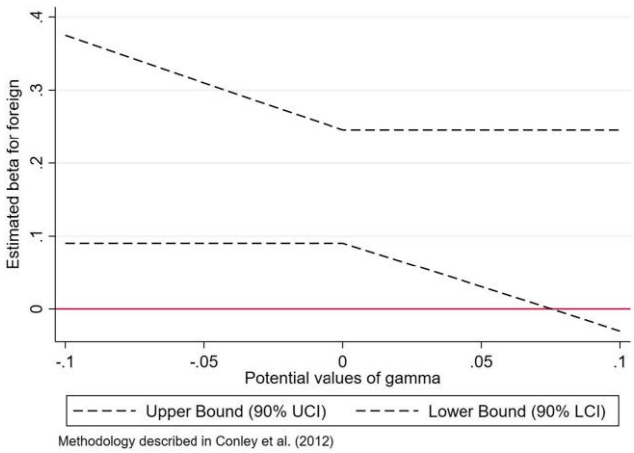
Figure 2. (Color online) Sensitivity of 2SLS Results to Violations of Exclusion Restriction



Notes. This figure replicates the estimation of Table 7 using the "union of confidence intervals" method of Conley et al. (2012). The graph corresponds to Model 3 of Table 7. The parameter γ represents the effect of the instrument in the second stage.

the specification to the exclusion of Brazil, the most common country of origin for foreign players (10% of immigrant players in our sample). Third, in column (5), we adjust t-ratio inference based on the first stage F-statistic following Lee et al. (2022) to ensure that our instrument is sufficiently strong.

Next, we test the robustness of our results to a relaxation of the exclusion restriction, using methods introduced by Conley et al. (2012). To use their notation, γ is the correlation between our instrument and club performance that does not flow through the number of immigrant players, and $\gamma = 0$ under perfect exogeneity. We use the union of confidence intervals approach described by Conley et al. (2012) to help us understand how large γ, the violation of the exclusion restriction, would need to be to overturn the 2SLS results in Table 7.[13] Figure 2 shows confidence regions of β (the second stage estimate of the impact of more immigrant players on club performance) for different values of γ. The second stage estimate of the impact of immigrant players on competitive performance is bounded away from zero as long as γ is less than 0.08. To put the 0.08 quantity in context, it is 62% of the reduced-form regression coefficient of Z (i.e., our instrumental variable) on Y (i.e., goal difference, our second stage outcome variable).[14] We, thus, see that the positive LATE of immigrant players on competitive performance is robust even for substantial departures from exogeneity.

Finally, one might be concerned that the rule changes are not actually exogenous; omitted variables might drive club competitiveness and policy liberalization. In Table 10, we conduct a placebo test in which we test the effects of changing the cap on the number of immigrant players in time t on club–match outcomes in *prior* years. The results show that the performance of clubs in international competitions in earlier years is not statistically associated with the cap set by the football associations. This result is consistent with our description of the politically contested process through which football associations change the rules regarding immigrant players (see Online Appendix III).

5. Mechanisms

Now that we have found evidence of a positive local average treatment effect of hiring more immigrants on organizational performance, we turn to exploring plausible mechanisms that could explain this relationship.

Table 10. Placebo Test

Variable	(1) Goal difference	(2) Goal difference	(3) Goal difference	(4) Goal difference	(5) Goal difference
Immigrant player cap (t + 1)	0.00445				
	(0.00664)				
Immigrant player cap (t + 2)		0.00116			
		(0.00668)			
Immigrant player cap (t + 3)			−0.00111		
			(0.00665)		
Immigrant player cap (t + 4)				−0.00252	
				(0.00680)	
Immigrant player cap (t + 5)					−0.00195
					(0.00683)
Constant	0.485***	0.504***	0.514***	0.523***	0.517***
	(0.0459)	(0.0470)	(0.0477)	(0.0488)	(0.0496)
Observations	7,497	7,197	6,898	6,621	6,326
R^2	0.008	0.008	0.009	0.009	0.009
Season × league fixed effects	Yes	Yes	Yes	Yes	Yes

Notes. The level of analysis is the club–match. The sample consists of all international matches from 1990–1991 to 2019–2020 in the Europa and Champions Leagues. The dependent variable is goal difference in all columns. Standard errors clustered at the country × season level.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

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We first consider individual talent as a possible explanation and then turn to strategic variety as a novel organizational mechanism that helps explain how individual talent is utilized to positively modify the functioning of the collective organization.

5.1. Mechanism 1: Are Immigrants More Talented Than Natives?

Immigrants might contribute to organizational performance because they are unusually talented compared with domestic employees. Any immigrant able to overcome frictions such as search costs and discrimination to achieve employment with a top European club might be especially able or motivated. A testable implication of this mechanism is that immigrants should display higher levels of individual performance than natives. This argument has been put forth previously by Borjas et al. (1992) with roots in Roy's (1951) classic study of the distribution of earnings.

5.1.1. Measuring Player Talent. We obtained data on four indicators of talent: whether a player is chosen as one of the starters for a game (*Player in Starting Lineup*),[15] the success rate when attempting to dribble (*Dribble Success*, successful dribbles/attempted dribbles), the passing success rate (*Pass Success*, successful passes/total passes), and whether the player scores one or more goals during a match (*Scores*). These indicators tend to favor players involved in offensive play, and we include position fixed effects in all specifications to account for that.

Additionally, we include other measures that should not be associated with individual talent or quality as a placebo test, including how many *Touches* the player has, whether he receives *Any Yellow* card, and whether he is *Expelled* or *Substituted* from the match. We use data from Transfermarkt to calculate the *Player in Starting Lineup*, *Scores*, *Any Yellow*, *Expelled*, and *Substituted* variables. We use WhoScored to calculate the *Dribble Success*, *Pass Success*, and *Touches* variables.

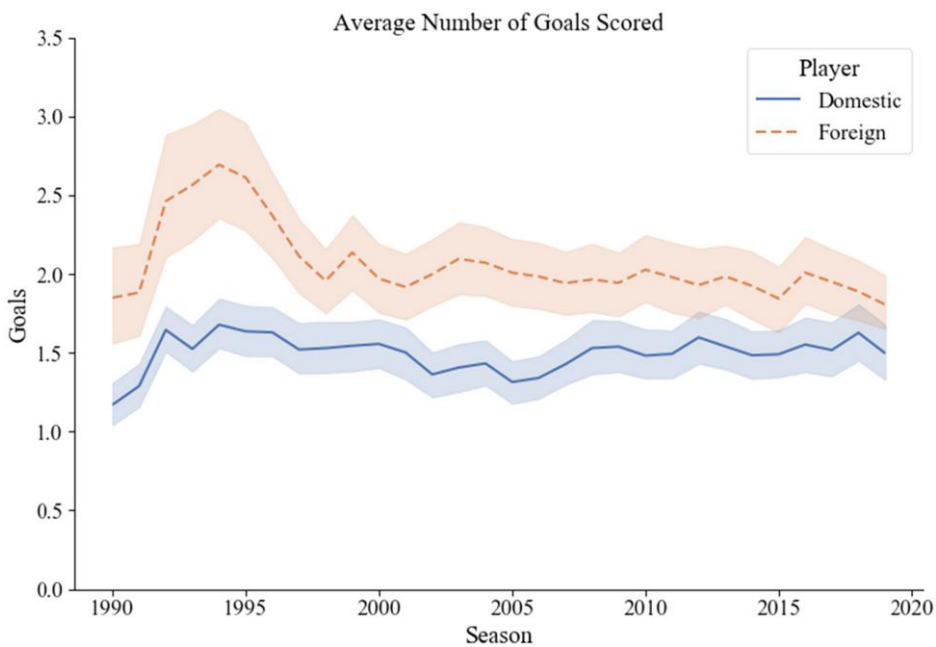
5.1.2. Individual Talent Results. Figure 3 shows a graphic representation of raw goals scored by domestic and immigrant players over time. We see that (1) immigrant players have a much higher goal average than domestic players and (2) the gap has closed over time, consistent with a reduction in immigration frictions stemming from the liberalization of foreign player rules over time. The 1996 Bosman ruling was the biggest liberalization and is visible in the data.

Regression results confirm the intuition from the raw data presented in Figure 3. Using all the variables mentioned before, we run models of this general form:

$$talent_{ig} = \alpha_{jsp} + \beta_1 immigrant_i + \beta_3 age_{is} + \beta_4 age_{is}^2 + \epsilon_{ig}. \tag{5}$$

Note that, unlike in previous specifications, the regressions are at the individual–match level rather than at

Figure 3. (Color online) Average Number of Goals Scored by Foreign vs. Domestic Players



Notes. The graph shows the average number of goals scored by foreign versus domestic players. The data includes all domestic league matches. This graph is generated using raw data without controls or fixed effects. The error bars are bootstrapped 95% confidence intervals.

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Table 11. Are Immigrant Players More Talented Than Natives? OLS Results

Variable	(1) Player in starting lineup	(2) Dribble success	(3) Pass success	(4) Scores	(5) Any yellow	(6) Expelled	(7) Substituted	(8) Touches
Immigrant Player	0.0403***	0.0295***	0.00648**	0.0100***	−0.00497	0.000336	0.00641	0.562
	(0.00719)	(0.00967)	(0.00250)	(0.00366)	(0.00392)	(0.000769)	(0.00504)	(0.729)
Age	0.209***	−0.00136	−0.00494	0.0255***	0.0213***	0.00150*	0.0109*	4.197***
	(0.00756)	(0.0112)	(0.00318)	(0.00339)	(0.00388)	(0.000769)	(0.00605)	(0.751)
Age^2	−0.00355***	6.25 e-05	8.49 e-05	−0.000447***	−0.000368***	−2.75 e-05*	−0.000187*	−0.0696***
	(0.000145)	(0.000208)	(5.97 e-05)	(6.23 e-05)	(7.04 e-05)	(1.41 e-05)	(0.000110)	(0.0136)
Constant	−2.584***	0.536***	0.868***	−0.261***	−0.175***	−0.0141	0.0350	−10.94
	(0.0965)	(0.148)	(0.0416)	(0.0452)	(0.0528)	(0.0102)	(0.0809)	(10.02)
Observations	200,953	18,849	35,294	101,288	101,288	101,288	101,288	35,426
R^2	0.095	0.103	0.268	0.109	0.051	0.038	0.090	0.261
Position × club × season fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes. The level of analysis is the player–match in Models 1–8. The sample of matches consists of all international matches from 1990–1991 to 2019–2020 in the Europa and Champions Leagues. The indicator *Immigrant Player* = 1 if the player was born abroad. The sample sizes differ across models because we use different subsets of the data. In Model 1, we predict whether the player starts the match in the starting lineup. Thus, we created a data set with all the club's matches for each player. *Player in Starting Lineup* is a dummy indicating whether the player is in the starting lineup. In Models 2 and 3, we create two measures of talent that require data from WhoScored. *Dribble Success* is the percentage of dribbles that are successful (successful dribbles/attempted dribbles), conditional on attempting at least one dribble. *Pass Success* is the percentage of passes that are successful (successful passes/total passes), conditional on attempting at least one pass. In Models 4–7, we use data from Transfermarkt. Thus, we can include all the international matches of our sample. *Scores* is a dummy indicating whether the player scored one or more goals. *Any Yellow* is a dummy indicating whether the player received a yellow card. *Expelled* is a dummy indicating whether the player is expelled from the match (two yellows or a straight red card). *Substituted* is a dummy indicating whether the player was substituted after playing during part of the match. In Model 8, we also use data from WhoScored. Thus, the sample size is smaller than the analyses in which the data comes from Transfermarkt. *Touches* is the actual number of times the player touched the ball during the match. Standard errors clustered at the club level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

the club–match level, and they are meant to be suggestive descriptive analyses; we cannot use our instrument in these specifications. In the equation, $talent_{ig}$ represents one of the various measures described above of individual player quality for player i in match g. As before, the key variable of interest is the indicator *immigrant*, coded as one if the player was born in a foreign country and zero otherwise. We control for the player's age in all models because it is a critical determinant of individual performance in the sport and might be correlated with immigrant status. We also include stringent club (j) by season (s) by position (p) fixed effects.[16] Table 11 reports the results. As with all our specifications, the sample is limited to international tournament matches.

We find that immigrant players, compared with domestic players, are 4.0% more likely to be named in the starting lineup (column (1)), exhibit a 3% higher dribble success rate (column (2)), exhibit 0.7% higher passing success (column (3)), and are 1% more likely to score one or more goals during a match (column (4)). All these effects are significant at $p < 0.01$. Notably, immigrant players do not differ from domestic players in the likelihood of receiving a yellow card (column (5)), being expelled from the match (column (6)), being substituted (column (7)), or the number of times they touch the ball (column (8)), which serve as a placebo test. Immigrant players are, thus, more effective when they have possession, not because they touch the ball more often, and they are not simply more likely to be involved in any football event more generally. Altogether, the results strongly support the notion that immigrant players contribute to collective performance because they are more talented.

5.2. Mechanism 2: Do Immigrants Enhance the Organization's Strategic Variety?

As we note, individual talent is important but will not produce superior organizational performance unless some additional factor changes the way the collective deploys that talent to beat a rival. In that spirit, we consider one novel organizational mechanism: immigrants might enable their clubs to adopt a richer set of potential strategic actions. When organizations have a wider variety of competitive actions at their disposal, they have more options for outmaneuvering their rivals and are less predictable, which may lead to higher competitive performance (Dooley et al. 1996, Larrañeta et al. 2014).

Strategic actions take different forms in different settings. In football, sequences of passes between teammates, both preplanned and emergent, are a critical indicator of how the talent of individuals combines to defeat a rival. Teams that can deploy a wider variety of passing sequences, involving more of its players, are better able to respond to their opponents' defensive

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strategies and better able to keep their opponents off balance.[17] In a more typical corporate setting, similar types of strategic actions might include the scope and sequencing of investments in different business functions, such as advertising, research and development, and operations (e.g., Crossland et al. 2014). In a setting such as litigation, strategic variety might include the nature and sequencing of arguments and counterarguments made by teams of attorneys. Or, in a setting such as sales, strategic variety could comprise the various trust-building, pricing, and product demonstration tactics to win a customer account.

Immigrants are likely to enhance the number of strategic actions available to their organizations. They bring novel ideas and routines because they have been exposed to different experiences, training, problems, and solutions (Foley and Kerr 2013, Moser et al. 2014, Choudhury and Kim 2019, Bahar et al. 2020). These novel ideas and routines should expand the set of possible actions that the organization can take when confronting competitors. This creates a greater number of combinatorial possibilities by which to respond to a given competitive situation, making it more likely that the collective will find creative and unexpected solutions to challenges posed by competitors (Fleming 2001). Additionally, immigrants might help their organizations deploy the wider variety of actions that their presence creates. Social psychologists emphasize how immigrants' diverse, multicultural experiences provide them with the ability to play an integrative role in the organization: recognizing, coordinating, and bringing together the viewpoints and ideas of their coworkers (Benet-Martínez et al. 2006, Tadmor and Tetlock 2006, Maddux et al. 2014). An immigrant employee may, thus, help the organization act upon a wider variety of ideas and actions from their coworkers whether immigrants or natives.

Our arguments suggest that immigrant workers create a wider variety of options in the "fundamental issues in organizational design": the number of tasks the firm can perform, how those tasks are allocated across individuals, and how they are coordinated for harmonious action (Puranam 2018, p. 3). If so, organizations that employ more immigrants can outperform others because they can draw from a broader repertoire of strategic options and more effectively deploy any given option.

5.2.1. Measuring Strategic Variety. We use three different measures, each of which draws on detailed passing data. One measure comes from the empirical football literature, and the other two are motivated by the networks literature. We calculate these measures at the club–match level. Then, we use these variables as outcomes in our 2SLS design; that is, we reestimate Equation (4) with these measures as dependent variables. Finally, we test whether these measures are positively related to club performance in reduced-form OLS models. Online Appendix V provides details on the computation of the three measures described in this section.

The first measure, known as the strategic richness index in the empirical football literature, captures the variety of routines used by a club on the field. It does this by measuring the number of distinct subteams of all possible sizes (i.e., 2–11 players) that arise from the club's passing network (Barraquer and Tovar 2023). The idea behind this measure is that a club capable of coordinating a larger number of diverse player subsets is better equipped to address a wider array of tactical and strategic challenges posed by its competitors. César Luis Menotti, a renowned Argentine soccer coach, was the first to talk about how he wanted his club to have many "teams-within-teams" (*pequeñas sociedades* or "small societies") to maximize their adaptive capacity in response to rivals (Barraquer and Tovar 2023, p. 3).

The second measure of strategic variety is the density of the club's passing network. Network density is the ratio of observed connections (edges) to the number of possible connections for a given network. In our context, each club has 11 starting players, and the network is directed, implying that there are $(11 \times [11 - 1])$ or 110 potential connections in a club's network. Our network density measure equals the number of connections between the starting 11 players in a specific match divided by 110. Denser networks indicate greater connectivity, signifying a variety and complexity of exchange channels because resources can move between any two nodes at any given time depending on the situation. The denser the network, the more challenging it is to predict the path through which passes will travel between two randomly selected nodes separated by two or more degrees in the network.

Finally, we calculate the integration of the club's passing network in the game. Integration is the opposite of modularity; that is, no distinct clusters can be identified. An integrated network represents strategic variety as players continuously pass to a wide array of teammates rather than consistently circulating the ball among a small group of the same teammates. It is important to note that density and integration capture different concepts. Density reflects overall connectivity among nodes, whereas integration reflects the degree to which the network can be divided into distinct communities (Tatarynowicz et al. 2016). We calculate the integration of a club's passing network using the community detection procedure described by Rosvall et al. (2014), implemented with their infomap algorithm.

The latter two measures aim to demonstrate the extent to which immigrants help their organizations deploy a broader range of actions, whereas the first measure

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Table 12. Do Immigrant Players Increase Their Clubs' Variety of Actions on the Field? Second Stage Results

Variable	(1) Strategic richness index	(2) Density	(3) Integration (1-modularity)
Number of immigrant players	0.304**	0.0118***	0.00949***
	(0.127)	(0.00428)	(0.00354)
Observations	2,698	2,698	2,698
Season × league fixed effects	Yes	Yes	Yes
First stage F	50.93	50.93	50.93

Notes. The level of analysis is the club–match. The sample consists of all international matches from 2009–2010 to 2019–2020 in the Europa and Champions Leagues. The column headings denote which measure of strategic variety is used as the outcome variable in the 2SLS regression. The first stage is the same as Table 7. Specifically, we use the instrument constructed using the average number of immigrant players that participated in the starting lineup for at least 70% of the matches. Number of immigrant players refers to the number of immigrant players in the starting lineup of the match. Standard errors clustered at the country × season level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

represents the degree to which immigrants introduce novel ideas and routines to their organizations.

5.2.2. Strategic Variety Results. The results for these analyses are in Table 12, which displays results from the second stage of our 2SLS regressions. There are two differences between these models and those displayed in Table 7. First, the outcome variables are the strategic variety measures instead of performance. Second, the number of observations is smaller because of data constraints; for these analyses, we only have data for international matches beginning in the 2009–2010 season. Across the columns in Table 12, we see that more immigrant players cause an increase in all three measures of strategic variety. The estimates suggest that hiring an additional immigrant player improves the club's strategic richness index by 0.30, which is 22% of the sample mean of that variable. Finally, in Table 13, we provide OLS reduced-form evidence that our three measures of strategic variety have precisely estimated and positive correlations with club performance. This pattern of results suggests that immigrant players improve the strategic variety of their clubs, which, in turn, improves club performance.

5.2.2.1. Immigrants as Coordinators That Enable Strategic Variety. In Table 14, we push these results further by moving to the player × match level of analysis (i.e., Equation (5)) and examining whether immigrants are more likely to serve a coordinating role on the pitch. If they bring together their coworkers' views and routines, that would help to explain why their organizations are able to deploy greater strategic variety after hiring them. Though the analyses in Table 14 are descriptive, we believe that it is important to observe the role that immigrant employees may take in their organizations.

Table 13. Strategic Variety Is Correlated with Positive Club Performance: OLS Results

Variable	(1) Goal difference	(2) Goal difference	(3) Goal difference	(4) Pr(win)	(5) Pr(win)	(6) Pr(win)
Strategic richness index	0.218***			0.0399***		
	(0.0218)			(0.00543)		
Density		1.838***			0.219	
		(0.520)			(0.136)	
Integration (1-modularity)			2.460***			0.369**
			(0.541)			(0.143)
Constant	0.214***	−0.570*	−0.773***	0.427***	0.352***	0.289***
	(0.0411)	(0.304)	(0.286)	(0.0107)	(0.0799)	(0.0753)
Observations	2,698	2,698	2,698	2,698	2,698	2,698
R^2	0.119	0.086	0.089	0.087	0.069	0.070
Team fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Season × league fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes. The level of analysis is the club–match. The sample consists of all international matches from 2009–2010 to 2019–2020 in the Europa and Champions Leagues. Standard errors clustered at the country × season level.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.

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Table 14. Passing Patterns of Immigrant Players: OLS Results

Variable	(1) Percentage of passing sequences with A → B→ C sequencing	(2) Percentage of sequences that player is located at the beginning of a passing sequence	(3) Percentage of sequences that player is located in the middle of a passing sequence	(4) Percentage of sequences that player is located in the final part of a passing sequence	(5) Average length of the player's passing sequences
Immigrant player	0.00903*	0.0000419	0.00417*	−0.00422	0.0207**
	(0.00458)	(0.00238)	(0.00241)	(0.00335)	(0.00965)
Age	−0.00225	0.000260	−0.00300	0.00274	−0.0187
	(0.00336)	(0.00258)	(0.00240)	(0.00303)	(0.0125)
Age^2	7.17 e-05	1.71 e-05	7.12 e-05	−8.83 e-05	0.000288
	(6.04 e-05)	(4.75 e-05)	(4.33 e-05)	(5.58 e-05)	(0.000228)
Constant	0.483***	0.273***	0.342***	0.385***	5.278***
	(0.0459)	(0.0345)	(0.0328)	(0.0408)	(0.169)
Observations	35,159	35,108	35,108	35,108	35,158
R^2	0.298	0.446	0.166	0.311	0.334
Position × club × season fixed effects	Yes	Yes	Yes	Yes	Yes

Notes. The level of analysis is the player–match. The sample of matches consists of all international matches from 2009–2010 to 2019–2020 in the Europa and Champions Leagues. The indicator *Immigrant Player* = 1 if the player was born abroad. In column (1), the dependent variable captures the percentage of passing sequences involving the player in which the ball went from player A to player B to player C rather than from player A back to player B. In columns (2)–(4), the dependent variable captures the location of the player in a passing sequence of three or more players. In column (2), the dependent variable is the percentage of passing sequences in which the player is located at the beginning of the sequence. In column (3), the dependent variable is the percentage of passing sequences in which the player is in the middle of the sequence. In column (4), the dependent variable is the percentage of passing sequences in which the player is in the final part of the sequence. In column (5), the dependent variable is the average length of a player's passing sequence measured by the number of distinct players that participate in the player's passing sequences. The mean of the dependent variable for each model is as follows: 0.48 (Model 1), 0.29 (Model 2), 0.32 (Model 3), 0.39 (Model 4), 5.00 (Model 5). Standard errors are clustered at the club level.

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

The first empirical test is motivated by Fernandez and Gould (1994), who describe how social coordinators move resources from one person to another in an A → B → C sequence rather than moving resources back to their sender in an A → B → A sequence. We identified all the sequences in which a player is in the middle of a three-player sequence (A → B → C sequences plus A → B → A sequences). We then counted the number of instances in which the focal player is connecting two distinct players (i.e., A → B → C). We divide this number by the number of times the player participates in a three-player passing sequence during a match. In column (1) of Table 14, we document that, as compared with a domestic player, an immigrant player has a higher percentage of passing sequences with an A → B → C pattern instead of an A → B → A pattern. For the average player–match, about 48% of the passing sequences have an A → B → C pattern. The effect size is 0.9%, which is about 2% of 48%.

The second empirical test is motivated by the social psychology and sports literatures, which argue that immigrants' multicultural experiences allow them to play a coordinating role in organizations (Benet-Martínez et al. 2006, Tadmor and Tetlock 2006, Maddux et al. 2014, Szymanski and Ipek 2020). We identified all the passing sequences of three or more players, and we recorded the position of each player within these passing sequences. We then created a set of three dummy variables that indicate whether the player is in the beginning, middle, or final part of the sequence. For instance, in a sequence of three (nine) players, a player is in the middle if he is in the second (fourth to sixth) position(s) of the sequence. In columns (2)–(4), we document that immigrants are 0.4% more likely than natives to be in the middle of a passing sequence (column (3)), whereas immigrants and natives are equally likely to be in the beginning or final part of a passing sequence (columns (2) and (4)). Finally, in column (5), we document that immigrant players participate in more complex passing sequences or those that connect a larger number of distinct players. Specifically, immigrant players participate in sequences that connect 0.02 more distinct players than native players. In total, these patterns provide descriptive evidence that immigrants play a coordinating function on the pitch, which may help to explain why organizations with more immigrants exhibit higher strategic variety.

6. Discussion

We provide evidence that removing constraints on an organization's ability to employ immigrants improves organizational competitive performance. European football clubs that employ an additional immigrant player

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tend to outscore their opponents in pan-European competitions, which represents the toughest competition by pitting the best clubs from each country against one another. We justify a causal interpretation of this relationship by using an instrumental variable approach common in the trade and migration literatures. Our study joins a growing empirical literature documenting how immigrants benefit organizations.

The main effect documented in this study is important. It demonstrates that more liberal immigration policies lead to more competitive firms—a desirable outcome for managers and many policymakers. Our results align with prior work, which highlights the positive impacts of employing immigrant workers (e.g., Choudhury and Kim 2019, Beerli et al. 2021). The benefits of liberal immigration policies are more pronounced in skill-intensive industries, in which human capital is critical, and in organizations facing limitations adapting to stringent immigration policies. Unlike organizations capable of offshoring activities when hiring immigrant employees becomes challenging (e.g., Glennon 2023), organizations in our study face constraints when dealing with immigration policy. Thus, our results show how immigration restrictions may hit harder at organizations with the least room for adjustment.

Our study further complements prior research because we explore two mechanisms by which immigrant employees might improve the performance of their organizations: superior talent and enhanced strategic variety. Our analyses provide clear support for both mechanisms and explain how they are related. Our talent results are a valuable empirical contribution because the granularity of our analysis allows us to document that immigrants tend to outperform natives doing the same job in the same organization. Our interpretation is not that native-born players are inherently less talented, but that the frictions of making it into a top European club leads immigrant players to be selected from the right tail of a global talent distribution. This interpretation can easily be extended to other settings. Even though prior work emphasizes the unusually high talent level of skilled immigrants, that work stops short of explaining how talent is deployed within the organization to benefit collective performance. This is why, in conjunction with the next mechanism, our paper makes a highly valuable theoretical contribution.

The strategic variety mechanism is both theoretically and empirically novel to the migration and organizations literature. As we note in the introduction, research implies that migrants improve firm performance, but that work struggles to describe the underlying mechanisms. Drawing from ideas in the organizational literature, we propose and find support for the concept of strategic variety. Because of their unique knowledge and experience with different cultures (Benet-Martínez et al. 2006, Tadmor and Tetlock 2006, Maddux et al. 2014), immigrants may contribute to strategic variety by adding new ideas to the organization and by serving as coordinators (Fernandez and Gould 1994) who move resources between different members of the organization.

Our theory and findings regarding strategic variety are noteworthy for several reasons. A handful of scholars focus on the innovation benefits provided by skilled immigrants. Several papers show that immigrants are disproportionately responsible for the quantity and quality of patents and academic publications at both the individual and organizational levels (Hunt and Gauthier-Loiselle 2010, Moser et al. 2014, Doran and Yoon 2020, Moser and San 2020, Bernstein et al. 2022). This work suggests that immigrants contribute to innovation through two mechanisms: bringing novel ideas or skills from their homelands (importing) or combining their prior ideas or skills with those of native inventors (recombination).

Our work is consistent with these ideas but adds important considerations related to organizational design: how organizations disaggregate key tasks and reaggregate them via coordination mechanisms (Puranam 2018). Immigrants not only add new technological ideas to their firms (as suggested by prior work), but they also increase the variety of what the organization can do by adding new routines that help their organizations to outflank rivals. Even further, our theory and findings suggest that immigrants may play a coordinator role and, thus, help to implement new routines. They achieve this by connecting other members of the organization, which, in turn, enhances the complexity of interdependencies among individuals that the organization can manage. Managers, as agents who enforce formal designs within organizations (Clement and Puranam 2017), can leverage the skills of immigrant employees to implement more cohesive and integrated structures.

This has relevant implications for research on group dynamics and social networks in organizations. The key tension of increasing diversity in organizations is that bringing people of different backgrounds to perform a task can enhance creativity of output but also increase conflict (Page 2010). One implication of our results is that, by playing a coordinating role, immigrants can help solve the task-conflict problems that arise in trying to deploy a more creative or novel set of actions. This matters because most research has thought of immigrants as a source of increased variety (e.g., of ideas or skills) but not considered how their varied experiences may also help them solve implementation (e.g., conflict) challenges.

Our theory and results also have relevance for social network research. Much has been made of the idea that brokers play a key role in the process by which novel ideas arise and diffuse within organizations (Burt 1992,

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Hansen 1999). But research has said much less about from where brokers come and what types of skills allow them to understand and integrate diverse ideas productively (Burt 2004). Our findings suggest that immigration creates the experience and integrative capacity necessary for brokers to be effective coordinators within organizations.

6.1. Limitations

Our setting is not uniformly generalizable; it is characterized by small organizations, human capital–intensive competition, and a production process that both is relatively uniform (i.e., the rules of football are the same everywhere) and does not require very high levels of proficiency in the native language or the native culture. Additionally, the international labor market in our setting is active, and individual performance is highly visible. Moreover, strategic variety is important in our setting because it is characterized by head-to-head competition.

Many economically meaningful settings that are the focus of current immigration debates share these characteristics. For example, our results should be relevant to settings in which highly technical expertise, embodied in visible publications, patents, or software, is more important than cultural knowledge (e.g., Clemens 2013). Such features are often the focus of the H1-B program in the United States, for example. By contrast, our results are less likely to apply to situations in which labor markets are not international in scope, in which native language and cultural knowledge are more significant drivers of productivity (e.g., Neeley 2013) and organizations have extensive resources beyond human capital (e.g., Doran et al. 2022), and in which competition is less salient.

One critical difference between professional football and other industries is that firms in our setting do not seek to maximize profits and, in many cases, only break even or operate at a (usually small) loss. Because talent is, essentially, the only production input, players appropriate most of the economic value through their wages and other contractual clauses (e.g., image and likeness rights). Consequently, football clubs do not compete on profitability (Garcia-del-Barrio and Szymanski 2009); they maximize revenues so they can continue to afford the best talent possible. This creates a generalizability issue: the marginal benefit of hiring skilled immigrants may differ in settings in which profit maximization is more important because the best talent may not be cost-effective.

It is important to emphasize that the LATE we estimate may constitute an upper bound on the positive effect of immigrant employees on organizational performance. This is because the LATE represents the effect of hiring immigrants on performance for clubs who wish to hire immigrants but cannot until their leagues' rules are liberalized (i.e., compliers). Clubs that wish to hire immigrants are probably well suited to extracting the most value from them, which is why this estimate should be thought of as an upper bound.

6.2. Future Work

We see multiple important paths for future work. The first involves discovering boundary conditions. Under what circumstances do firms struggle to obtain performance benefits from immigrant workers? Our results suggest two conditions: when the returns to talent are low and when strategic variety is not very important. We hope that future work will build on the two we emphasize by adding others and testing which ones are more or less important for different types of organizations and under different conditions.

In keeping with this idea, another exciting opportunity for future work involves the exploration of organizational policies and capabilities that might help firms to access the competitive benefits of immigrant employees. Assessing manager characteristics is one intriguing possibility. What is the role of managers in harnessing the skills and strategic variety brought by immigrant workers? Does the match between manager and worker nationality matter? What other attributes of managers matter? These questions are critical because managers are ultimately the ones who design the organizational structure, determine the production routines, and establish the culture that governs the interactions among immigrant and native workers.

Additionally, we think it is particularly promising to explore why some organizations are better at exploiting complementarities between immigrant and native workers and why some organizations are better at assimilating immigrant employees into the local culture and the organization quickly and effectively. Complementarity and assimilation are two of the oldest concerns in the immigration literature, but organizations have been largely absent from academic and policy discussions about how they might be achieved.

Next, we see exciting opportunities to further explore the network positions of immigrants inside of organizations. We document that immigrant players are more likely to serve in informal coordinator roles and pass resources between coworkers, but a more formal network-based analysis is outside the scope of this paper. Future work can do more. For instance, do some immigrant employees serve as brokers between groups of immigrant workers and groups of native workers? What pressures and payoffs do immigrant employees encounter when they occupy these kinds of brokerage roles? Are the network positions of immigrant employees crucial to unlocking complementarities between immigrant and native workers? We see many opportunities for networks researchers to contribute to our

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understanding of how immigrant employees affect their organizations.

Finally, we see an opportunity for organizational researchers to study how firms identify and evaluate immigrant workers in global labor markets. For example, an intriguing pattern we noticed in our data are that immigrant footballers tend to play in positions in which individual performance in the form of goals scored is easier to observe (e.g., striker). Thus, it seems possible that organizations—even in this setting with robust international labor market institutions—may have trouble evaluating immigrant workers in the absence of easily observable signals of individual quality. Firms able to overcome this problem should reap significant rewards as labor markets continue to globalize.

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Endnotes

[1] Beerli et al. (2021) document that firms benefited from a Swiss reform that made it easier to hire migrants. And Mitaritonna et al. (2017) find that French firms grow more quickly when their neighborhood contains more immigrants. But these authors do not explore organizational mechanisms that link immigrant employees to firm performance. Doran et al. (2022) exploit the H1-B visa lottery and find a null relationship between winning the lottery and firm innovation.

[2] Deloitte, a consulting firm, estimates a market size for the European football leagues of more than 30 billion dollars (Deloitte 2019). In 2020, the top 20 football clubs generated a combined revenue of 10 billion dollars (Deloitte 2020).

[3] Online Appendix I contains details on how the football labor market works, including the process of hiring and transferring immigrant players, along with some important differences relative to American sports.

[4] Of course, the uniqueness of the setting raises questions about the generalizability of results. We are aware of this issue and note in the discussion how some of our findings may be peculiar to football (or sports) and may not apply to a typical business organization.

[5] Out of these 51,883 domestic and international matches, 6,078 are international matches in which we can implement our instrumental variable strategy.

[6] We use the term "immigrant" even though foreign-born soccer players are not conventionally referred to as immigrants in the industry to be consistent with terminology in the literature.

[7] *Season* × *League* fixed effects includes Europa and Champions League.

[8] For a more comprehensive overview of the gravity model and its application in studying migration, refer to Bertoli and Fernández-Huertas Moraga (2015).

[9] The results are robust to excluding GDP per capita and population from this model.

[10] Recall that we estimate the 2SLS models only for games involving clubs from different countries, each of which is subject to different immigrant player rules. The specification, thus, includes international league × season fixed effects (i.e., either Europa or Champions League) but not club fixed effects as in some variants of the baseline OLS model. This is because the instrument, Z_{dt}, does not vary across clubs from the same home country. It only varies across destination countries (d) and years (t). Including club fixed effects leaves us with almost no variation, making it difficult to identify the local average treatment effect.

[11] "Complier" and "noncomplier" are in quotes because these do not strictly correspond to compliers and noncompliers. We are using a rough proxy given that our instrument and the endogenous variable are not binary, which is required to perform a standard analysis of compliers (e.g., Marbach and Hangartner 2020).

[12] The English Premier League liberalized the immigrant player rules in 1996; La Liga in 1991, 1996, 2005, and 2007; Bundesliga in 1996, 2004, and 2006; Serie A in 1996 and 2001; Ligue 1 in 1996, 2001, and 2003.

[13] Conley et al. (2012) introduce four approaches for inference about β (the second stage estimate of the impact of more immigrant players on club performance) if γ in fact does not equal zero. We utilize the union of confidence intervals approach because it does not require an assumption about the distribution of γ and is the most conservative approach. Furthermore, Frake et al. (2022) note that, in the strategy literature, the union of confidence intervals approach is typically recommended because we rarely know the appropriate distribution of γ. Assigning a prior distribution to γ would produce narrower confidence intervals such that the level of γ overturning our results would have to be even higher. This method simply constructs a set of confidence intervals for all points in the support of γ and then takes the union of those γ-specific confidence regions for β. Results for other approaches, such as the local-to-zero approach (Nanda et al. 2020) suggest that the results are robust to even larger values of γ.

[14] The coefficient of the reduced form regression of Z on Y is 0.137 with a standard error of 0.054. The regression sample includes all 7,777 observations from the main sample used in Table 7, and the estimation includes season × league fixed effects.

[15] Unlike in other sports, football clubs can only make a limited number of substitutions during a game (three at the time of our study) and a player cannot return to the field after being subbed out. Thus, being in the starting lineup is a nontrivial indicator of player quality in this setting.

[16] We distinguish between three positions in our data: defender, midfielder, and striker.

[17] Colloquial discussions of football often focus on the distinct playing philosophies of different countries: the defensive *catenaccio* of Italy, the dribbling-heavy *jogo bonito* of Brazil, or the physical kick and run

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of England. Perhaps the most famous example of immigration and tactical innovation in the industry happened when Johan Cruyff moved from Ajax (Netherlands) to FC Barcelona (Spain) in the 1970s and brought with him the uniquely Dutch total football approach to the game, involving highly intricate passing patterns inspired by field hockey. Cruyff revolutionized Barcelona's style first as a player and then as a coach.

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