Know-your-own-League context: insights for player preparation and recruitment - Part 2: Results and goals scored

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Association football | Team performance | Home and away

Headline

To recap Part 1 (9), there is no single phenomenon that involves all the societal institutions together—social, cultural, economic and political—like football. Over 250 million people participate worldwide. Despite there being a large proportion of foreign players in each league, and despite being the same sport across all countries and leagues, there is a common belief that it may be played differently in each country. These differences may be explained by strong cultural heritages and possible visions of game style and approach. The only data available to date, however, are anecdotal reports about differences between leagues in typical team formations, line-up stability, results (per home and away match), number of goals scored (per match at home or away), and rotations at home and away.

In an increasingly international game, clubs that wish to recruit foreign players for their own squads (team formations they may use to play with/against) or develop/prepare players that may be transferred/sold to a particular league need to understand how football is played in each league specifically.

The first part (9) of this series of short papers focused on team formations over the past 15 years in the top seven European Leagues. Part 2 examines between-league differences in results and goals scored, with reference to match location over the past two decades.

Aim

The aim of this study is to examine the between-league differences in results and goals scored, with reference to match location over a period of 21 league seasons (2001/02 to 2021/22).

Methods

Data extraction

Paragraph Data extraction to be replaced by the below text We extracted the fixtures data of the teams competing in the top seven European leagues i.e., England, France, Germany, Holland, Italy, Portugal and Spain. This includes 21 seasons from 2001/02 to 2021/22. Only league fixtures were considered for this part. This data was scraped from Transfermarkt. Across the 21 seasons, this represents 7 competitions, 269 teams and more than 50,000 fixtures.

Data Analysis

For the proportions of away win/draw/home wins and the number of goals scored per match we looked at two aspects:

- the difference between leagues overall considering all seasons - the box plot shows the distribution of season means where the mean was calculated across the entire league.
- the difference between seasons for each league - the box plot shows the distribution of team means within each league.

Box plots display the median, with the size of the box (Interquartile range, IQR) spanning from Q1 (25th percentile) to Q3 (75th percentile). The outside bars are the lower and upper whiskers: the lower whisker is the smallest value in the dataset that is no smaller than Q1 - 1.5 x IQR and the upper whisker is the largest value that is no greater than Q3 + 1.5 x IQR. Values outside of both whiskers are considered outliers and are not shown here.

To reveal the overall trends of away wins/draws/home wins over time, we fitted a least-squares approximation with 95% confidence intervals for the estimate. Our choice of this approximation was to get a sense of the main tendency over the entire period of time, on top of capturing seasonal differences (see Figure 2).

Results

The average proportion of away wins/draws/home wins across the past two decades and the evolution of that proportion over the years are shown in Figure 1. There weren't any clear differences between leagues in terms of average home wins/draws/away wins across the past two decades (45%/25%/30%, Figure 1), except a tendency for having slightly more draws in the Ligue 1 and Serie A.

Individual league changes in away wins/draws/home wins are shown in Figure 2 (actual data points) and Figure 3 (linear trends). There were small trends within all leagues for decreased home wins over time (from 50% in 2001/2002 to 40-45% in 2020/2021, Figure 3), while the proportion of draws tended to remain stable - with no clear between-leagues differences in these trends (Figure 3).

The average number of goals scored across the past two decades is shown in Figure 4. There weren't any large differences between leagues in terms of the average number of goals scored over the past two decades (2.5 to 3 goals/ match); there is, however, a slight tendency for fewer goals to be scored in the Ligue 1 and Liga Portugal. The evolution of goals scored over the years is shown in Figure 5 (home teams) and Figure 6 (away teams). The number of goals scored per team tended to be stable over the years within each league and slightly superior for home vs. away teams (1.5 vs. 1 goal, Figure 5 and Figure 6).

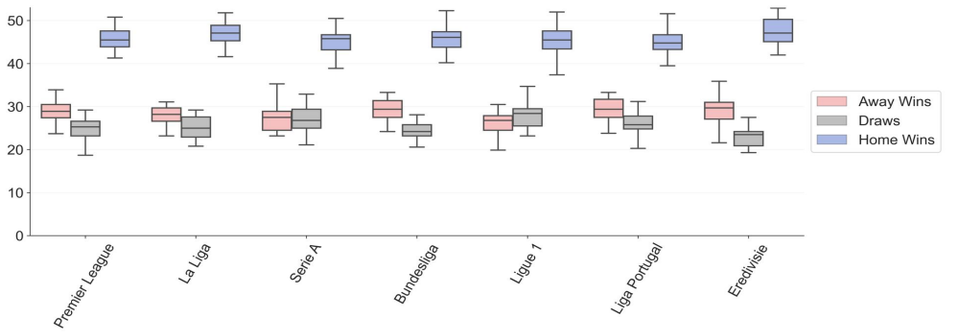

Fig. 1. Average proportion of away wins/draws/home wins in the seven leagues over the past two decades.

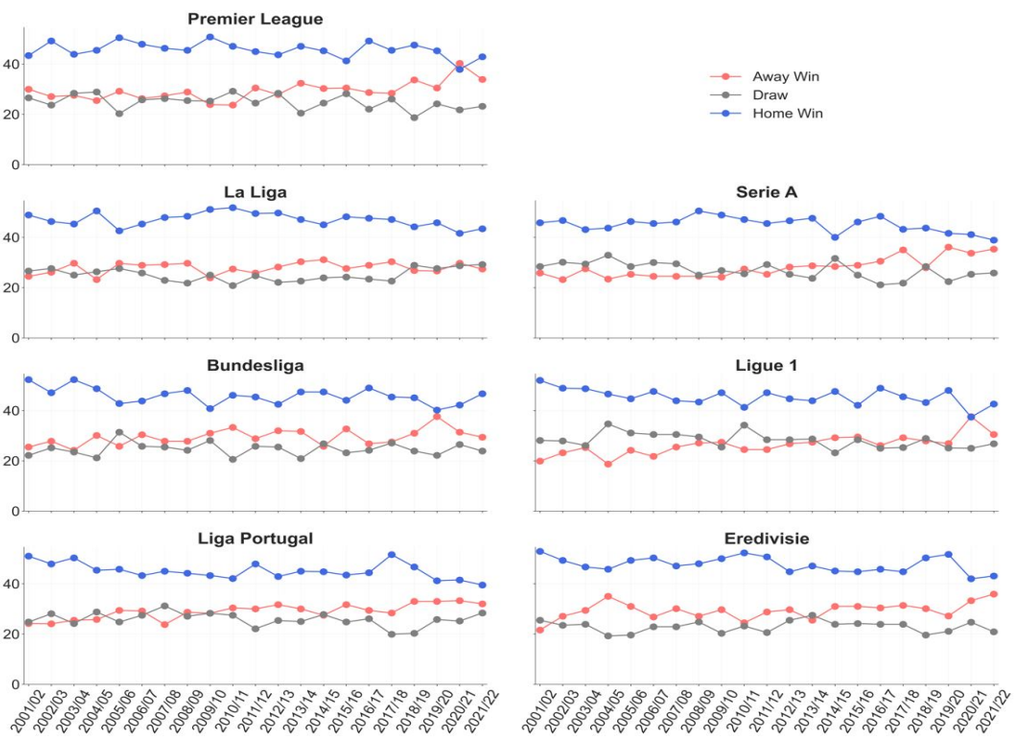

Fig. 2. Evolution of the proportion of away wins/draws/home wins in all seven leagues across the past two decades.

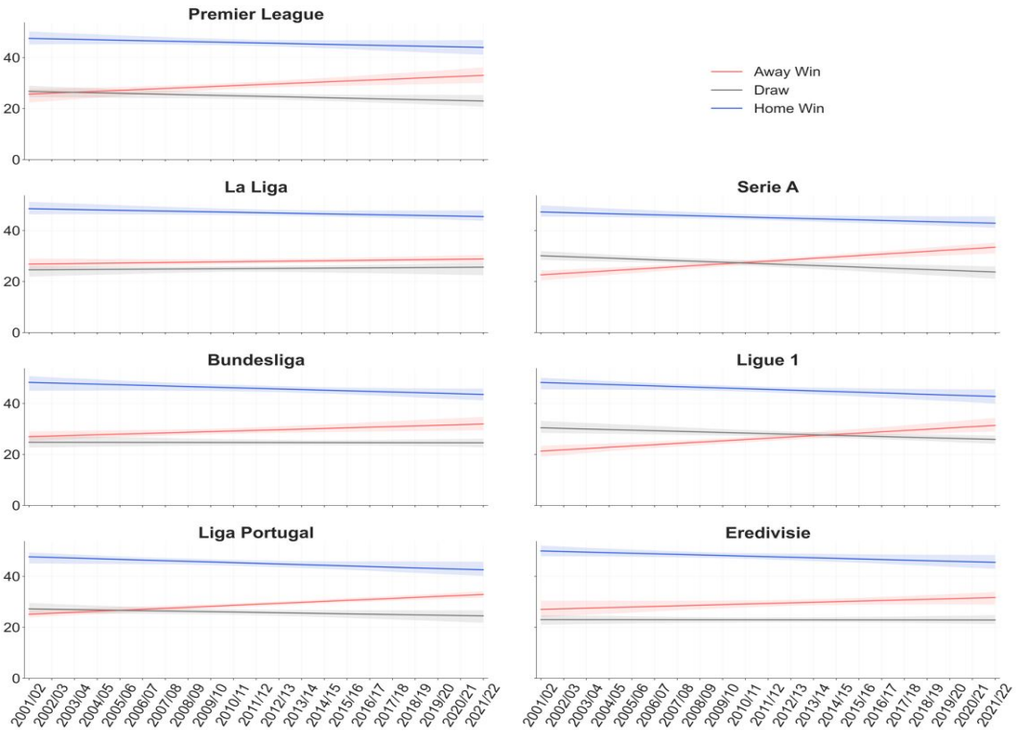

Fig. 3. Linear trends in the evolution of the proportion of away wins/draws/home wins in all seven leagues across the past two decades.

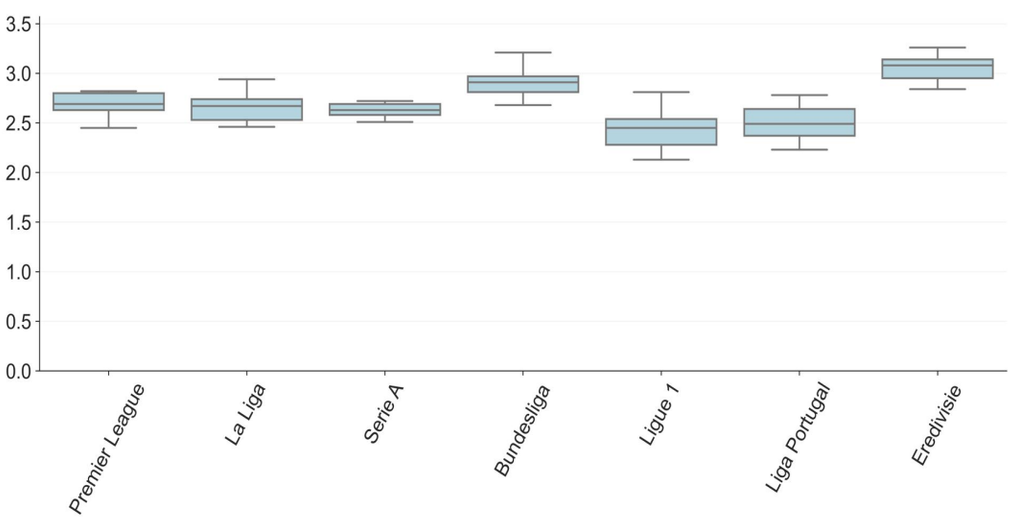

Fig. 4. Average number of goals scored in the seven leagues over the past two decades.

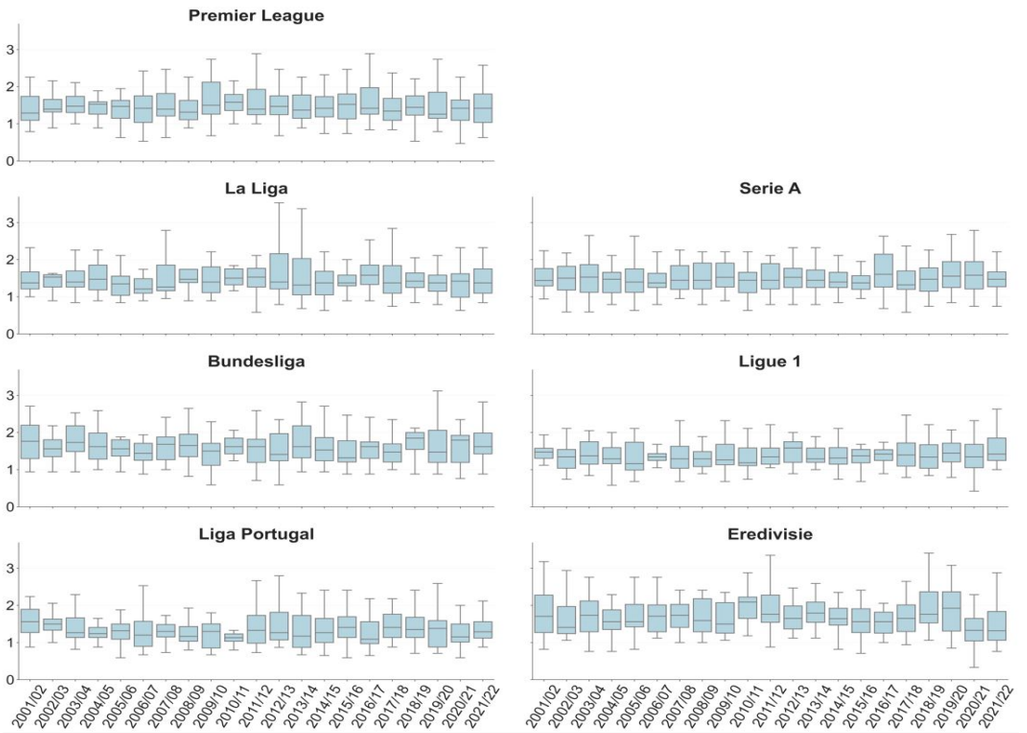

Fig. 5. Evolution of the average number of goals scored by the home team in the seven leagues over the past two decades.

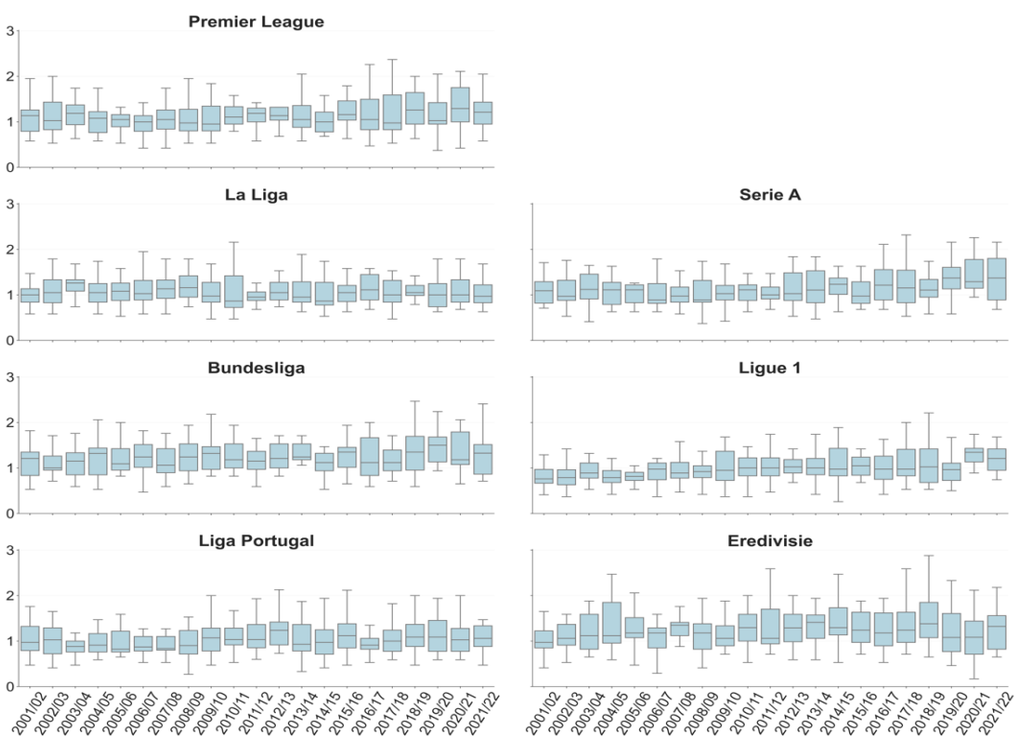

Fig. 6. Evolution of the average number of goals scored by the away team in the seven leagues over the past two decades.

Results and Discussion

This study is the first to our knowledge to examine between-league differences in results and goals scored, with reference to match location over a period of 20 league seasons (2001/02 to 2021/22).

Our results show that there weren't large differences between leagues in terms of average home wins/draws/away wins (45%/25%/30%, Figure 1) and the average number of goals scored over the past two decades (2.5 to 3 goals/match, Figure 3). These findings are in agreement with previous reports (1, 8) and suggest the existence of strong generic trends in the way football is played (and matches won) in Europe, and that local cultures and country-specific style of play (9) may not be strong enough to impact home vs. away win dynamics and the number of goals scored (i.e., 2.5-3 per match). The fact that the number of goals scored per team remained stable over the years within each league (Figure 4) shows also the consistency of the game of football, irrespective of the changes in the way it is actually played (i.e., changes in the preferred system of play and team formations (9), continuous increases in technical and physical demands over the years such as increased number of passes and distance covered at high-speed) (2). Since style, tactics or team formations (9) have ebbed and flowed over the last 20 years with very little difference in terms of the end product (results and goal scored on average), it can be suggested that any advantage gained by changing something for one, or a few teams, has been quickly matched/countered/copied by other teams - which may have reduced instantaneously the possible and transient advantage gained by the innovative teams.

We observed however a tendency for having slightly more draws in the Ligue 1 and Serie A than in the other leagues (27% vs. 23-25%); there were also slightly fewer goals scored in the Ligue 1 and Liga Portugal (<2.5 goals/match vs. >2.5 for all others; even close to 3 for the Bundesliga and Eredivisie). Even if the differences are small (up to 5 goals per match day at the league level), it still represents about 150-200 goals over a full season. This data supports the current belief that the Ligue 1 may be a bit less attractive for spectators than the others (e.g., Premier League and Bundesliga).

When looking at changes over time, the only apparent trend was for home wins which tended to decrease similarly in all leagues (from 50% in 2001/2002 to 40-45% in 2020/2021, Figure 3), while the proportion of draws tended to remain stable in all leagues (25-30%, Figure 3). While more goals are consistently scored at home (Figure 5) vs. away (Figure 6), the trend for a decreased percentage of home wins clearly suggests a decreased home advantage (6), which may be related to the continuous improvement of travel conditions for away teams (3). Another possible explanation for the observed decreased home advantage could be related to a progressive change in the profile of match spectators; the regular increase of ticket prices and increased VIP events around matches may have led to a decreased presence of the more loyal and enthusiastic local supporters, which would result in a more "neutral" and less hostile atmosphere for away teams. Nevertheless, travel fatigue and crowd support were shown to contribute less to home advantage than do the less easily quantifiable benefits of familiarity with conditions when playing at home (5); this can suggest that in modern football, players have become more adaptable to changes in the environment.

The transient increase in home wins during the (COVID) 2020/2021 season in some leagues but not all (i.e., the EPL and Ligue 1, Figure 2), when matches were played behind closed doors, doesn't lend support to the direct effect of cheering and crowd support either. There are however some inconsistencies in the literature on this specific COVID-related topic, where home performance was reported to be reduced without crowd presence (7), but in some leagues only (4).

It is also worth noting that the size of whiskers was substantially bigger for some seasons than others in some leagues (e.g., Figure 5 and Figure 6, 2011/12 and 2012/13 seasons in La Liga). This reflects large between-team differences in the number of goals scored. In the precise case of La Liga, this observation may be related to the large domination of FC Barcelona and Real Madrid: in 2011/12, Real Madrid scored 121 goals - the most by a team in La Liga history - including Cristiano Ronaldo's 46 goals, while FC Barcelona scored 114 goals including Lionel Messi's 50 goals - the most by an individual player in La Liga history.

Overall, except for the decreased home advantage across the years (5% fewer home wins over 20 years), the present results show that football is likely a generic type of game, with local cultures and country-specific style of play unlikely to impact home vs. away win dynamics and the number of goals scored (i.e., 2.5-3 per match overall).

Key findings

- There weren't large differences between leagues in terms of average away wins/draws/home wins and the average number of goals scored over the past two decades.
- The number of goals scored per team tended to be stable over the years within each league and slightly superior for home vs. away teams (1.5 vs. 1 goal, respectively).
- There were small trends within all leagues for decreased home wins over time (from 50% in 2001/2002 to 40-45% in 2020/2021), while the proportion of draws tended to remain stable - with no large between-leagues differences in these trends.

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