

# Do mid-week European matches influence European teams' performance in their domestic league? A 20-year study

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## Headline

The topic of congested fixtures in elite football is constantly front of mind (6), with managers repeatedly complaining about it. Higher rates of injuries are sometimes reported when teams have to play with only 2 or 3 days of recovery (1-4), and the need for player rotations to maintain their health is often a challenge to maintain teams' competitiveness - which can result in poorer competitive performance on the pitch. Teams playing in European competitions such as the Champions League (CL) or the Europa League (EL) are therefore the most exposed teams to congested fixtures (i.e., need to add at least 6 matches to the calendar in between league matches for a team only playing the first stage). However, given the depth of their squad and the quality of their players, whether those teams actually suffer from the congestion at the level of their domestic leagues remains to be examined in detail. In fact, it could be hypothesised that in contrast to common beliefs, and especially over the past years where the top clubs are becoming even better, European teams manage to maintain their level of competitiveness in their league and that congested fixtures are not obligatorily associated with poorer results. Also, how match location may influence this performance dynamic is also to be examined; playing two away matches congested is obviously a much greater challenge than 2 home matches or non-congested matches.

## Aim

The aim of this study was to examine CL and EL teams' performance (% of wins and possible points gained per match) in their domestic league and assess whether the congestion imposed by the European competitions (i.e., mid-week matches) affects their results. A second aim was to look at the effect of match locations on the above performance dynamics when European League teams played in congested fixtures. The present results may help European clubs to understand which match(es) may require advanced recovery protocols/enhanced travel logistics to maintain their chance of winning during congested periods. Second, our findings may also help non-European clubs to make their programming wishes ahead of the season in order to maximise their chance of winning against European teams.

## Methods

We extracted the fixtures data of the teams competing in the top 7 European leagues i.e. Spain, England, Germany, Holland, Italy, France and Portugal. This includes 20 seasons from 2001/02 to 2020/21. The fixtures from all in-season com-

petitions were considered i.e. leagues and domestic, European and international cups. This data was scraped from Transfermarkt. Across the 20 seasons, this represents 43 competitions, 269 teams and more than 61,000 fixtures.

Teams classified as CL and EL teams participated in European competitions during the season of interest and kept their status during the whole season (whether they qualified or not for the final stages).

For the purpose of the present study, we first analyzed European teams' results vs. their domestic league opponents as a whole (excluding the other CL teams when looking at CL teams' results, and excluding EL teams when looking at EL teams' performance), irrespective of fixtures. Note that in this context, CL teams are included in the non-EL teams. Then, we focused on extreme levels of congestion, i.e., when European teams played with only 2 days of recovery. This happens when a CL team plays on Wednesday in the CL and then again in their domestic league on Saturday, or an EL team plays on Thursday and then again on Sunday. This analysis was repeated for every season between 2001/2002 and 2020/2021. We then presented trends per season and for the 2 decades (2001/02 - 2010/11 and 2011/12 - 2020/21).

Finally, to examine the effect of match locations on the above performance dynamics when teams played in congested fixtures, we considered the 4 following scenarios:

- European match at home, followed by a league match at home within the next 3 days (home/home).
- European match at home, followed by a league match away within the next 3 days (home/away).
- European match away, followed by a league match at home within the next 3 days (away/home).
- European match away, followed by a league match away within the next 3 days (away/away).

## Statistical Analysis

Statistical significance was examined using the Chi-square test of independence. We provide p-values but their interpretation with respect to thresholds is left to the reader's discretion. To provide some practical meaning to the observed differences, we calculated the expected points won by teams per game in relation to their % of wins, draws and losses. For instance, let's assume that there are 70% of wins, 20% of draws and 10% of losses in a given cohort, the expected points per game (EPG) are :

$$EPG = 0.7 * 3 + 0.2 * 1 + 0.1 * 0 = 2.3 \text{ points per game.}$$

**Results**

The results of the overall analysis (irrespective of fixture schedules) showed that the absolute % of domestic league wins was clearly greater for CL than EL teams ( $p < 0.001$ , Table 1), with on average 2.0 and 2.1 points per match (or >70-80 points over a season in a 20-team league where 2 teams play the CL) gained for CL teams during the 2001/11 and 2011/22 decades, and 1.6 and 1.7 (or >60-65 points over a season in a 20-team league where 2 teams play the EL) for EL teams.

Against their non-CL counterparts, CL teams tended to win the large majority of their matches, with a clear improvement over the years (58.5% and 64.8% for the 1st and 2nd decades, respectively Table 1,  $p < 0.001$ ). EL had a greater % of wins than draws or losses against non-EL teams, and this performance increased as well over the 2 decades (44.1% and 49.2% for the 1st and 2nd decades, respectively Table 1,  $p < 0.001$ ).

When looking at year-by-year trends, there was a progressive increase in both European League teams' performance

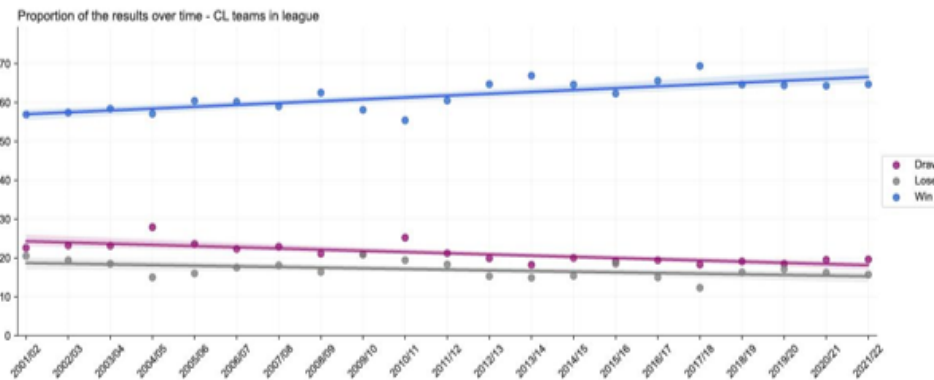
throughout the 2 decades (+0.5% win/year for both CL and EL, Figures 1 and 2).

When looking at congested matches only (i.e., a domestic league match played within 2 days of recovery following a mid-week European match), there was a similar trend for a progressive increase in wins over the years (i.e., +0.5% and +0.3% win/year for CL and EL, respectively, Figure 3 and 4).

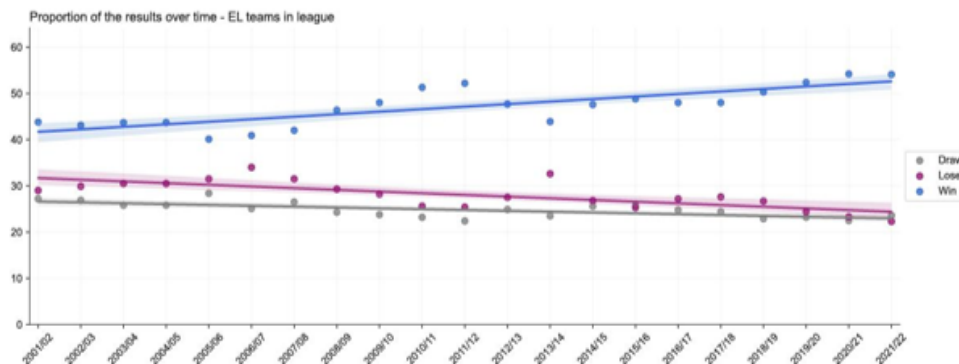
The trends of the points per domestic league match gained by CL (approx. +0.15 points/match per year) and EL (approx. +0.1 points/match per year) teams over the past 2 decades when playing following a mid-week European match or not within 2 days are shown in Figure 5. When looking at all teams pooled together, irrespective of playing standard and fixtures during the 2 consecutive decades, the effect of match location was pretty straightforward ( $p < 0.001$ ), with almost 2x more chances to win a home match than to either draw or lose (Table 2).

**Table 1. Percentage of domestic league wins/draws/losses for Champions League (CL) teams against non-CL teams over the past 2 decades, irrespective of fixtures and match location. Note that the non-CL pool of teams includes EL teams, and that of non-EL includes CL teams.**

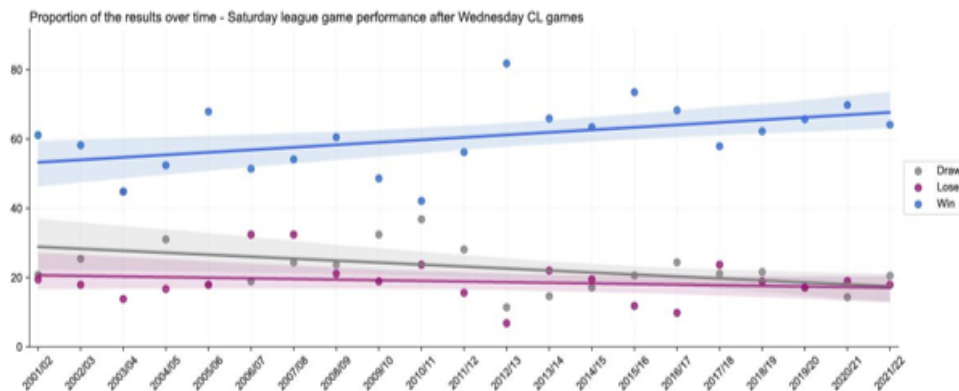
Champions League Teams overall in League against non Champions League teams				
Period	2001/02 - 2010/11		2011/12 - 2020/21	
Wins	58.5%	3789	64.8%	4223
Draws	23.3%	1509	19.3%	1261
Losses	18.1%	1174	15.9%	1038
Points/match	1.99	6472	2.14	6522
Europa League Teams overall in League against non Europa League teams				
Wins	44.1%	3764	49.2%	3547
Draws	25.7%	2197	24.1%	1737
Losses	30.1%	2572	26.7%	1929
Points/match	1.58	8533	1.72	7213



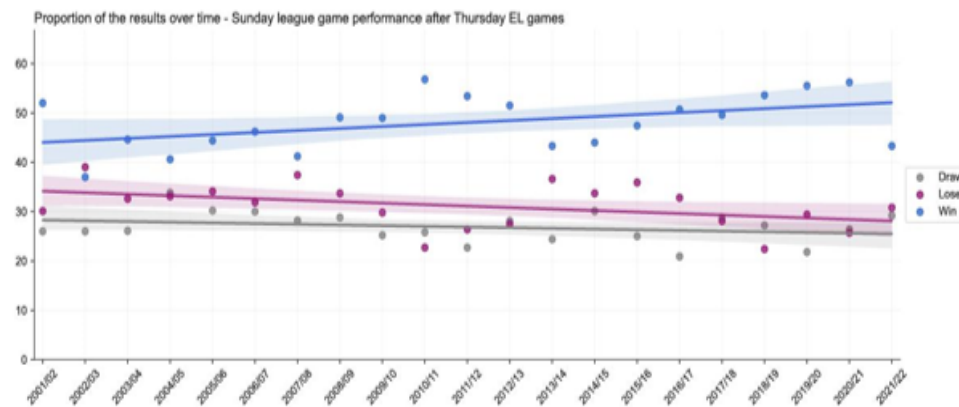
**Fig. 1. Percentage of domestic league wins/draws/losses for Champions League (CL) teams against non-CL teams over the past 2 decades.**



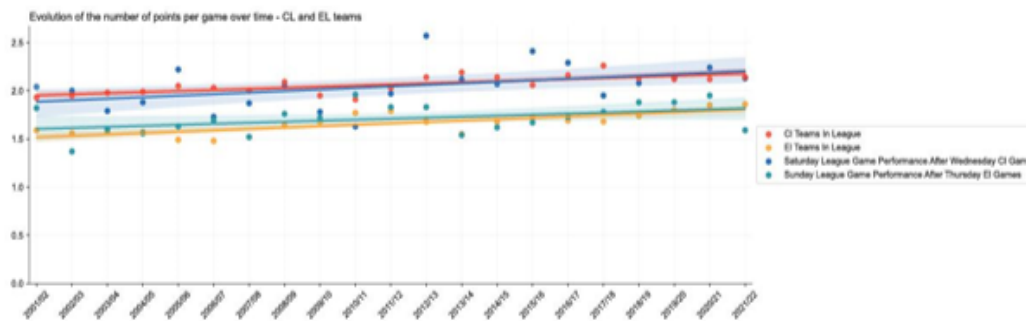
**Fig. 2.** Percentage of domestic league wins/draws/losses for Europa League (EL) teams against non-EL teams over the past 2 decades.



**Fig. 3.** Percentage of domestic league wins/draws/losses for Champions League (CL) teams when playing non-CL teams following a European mid-week match within 2 days over the past 2 decades.



**Fig. 4.** Percentage of domestic league wins/draws/losses for Europa League (EL) teams when playing non-EL teams following a European mid-week match within 2 days over the past 2 decades.



**Fig. 5.** Points per domestic league match gained by Champions League (CL) and Europa League (EL) teams when playing following or not a mid-week European match within 2 days over the past 2 decades.

**Table 2.** Percentage of home wins/draws/away wins for all teams pooled, irrespective of fixtures during the 2 decades analyzed.

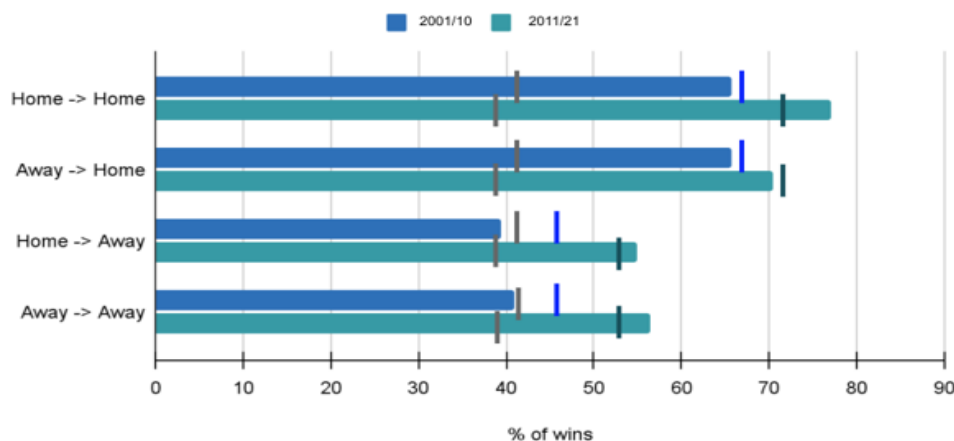
Period	HOME/ AWAY WINS AND DRAWS			
	2001/02 - 2010/11		2011/12 - 2020/21	
Home Wins	47.2%	12705	45.5%	12268
Draws	26.1%	7001	24.6%	6634
Away Wins	26.7%	7166	29.9%	8074
Points/match	1.68	26872	1.61	26976

**Table 3.** European teams' performance when playing against non-CL or non-EL teams following a mid-week European game within only 2 days, or not (i.e., either the previous game was not a European game, or they had >3 rest days) as a function of the different combination of match location. Note that the non-CL pool of teams includes EL teams, and that of non-EL includes CL teams.

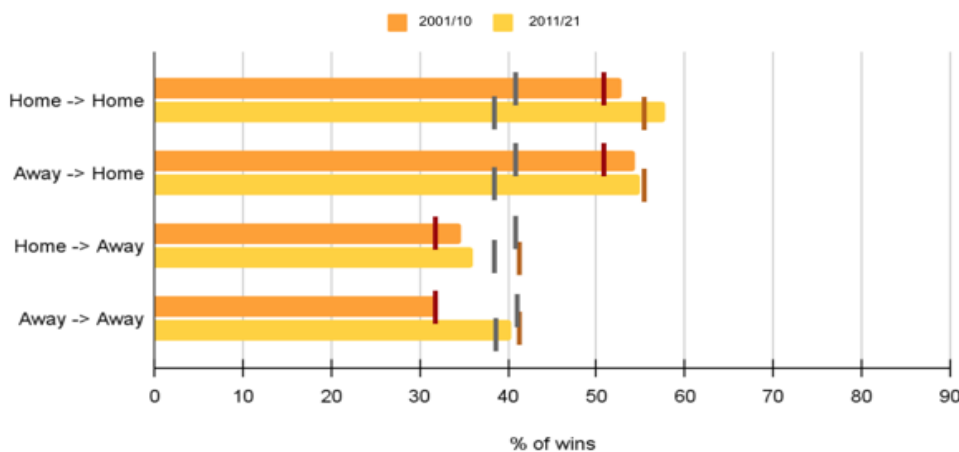
Competition	Decade	Result	No mid-week European Match		Mid-week European Match			
			Home	Away	Home -> Home	Away -> Home	Home -> Away	Away -> Away
Champions League	2001/10	Wins	67	46	65.8	65.7	39.5	41
		Draws	20.3	25.6	22.2	23.2	29.8	29
		Losses	12.7	28.4	12	11.1	30.7	30
	2011/20	Wins	70.2	52.6	77.1	70.4	54.9	56.5
		Draws	16.9	24.2	18.6	12	25.3	17.4
		Losses	13	23.2	4.2	17.6	19.8	26.1
Europa League	2001/10	Wins	51.2	32.2	52.8	54.3	34.6	32
		Draws	24.8	25.9	27.5	25.4	25.7	26.4
		Losses	24	41.9	19.7	20.3	39.7	41.6
	2011/20	Wins	56.2	41.3	57.8	54.9	36	40.4
		Draws	22.9	23.9	20.7	25.3	28.2	22.4
		Losses	20.8	34.7	21.4	19.8	35.8	37.2

**Table 4.** Percentage of home wins for non-European teams while not playing congested during the 2 consecutive decades.

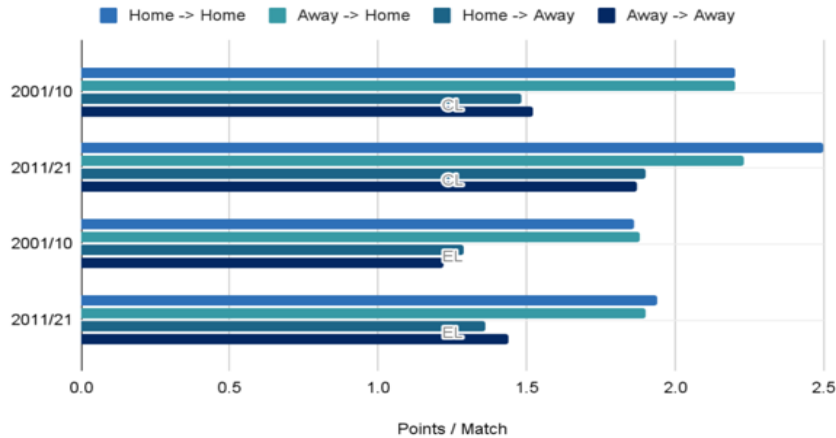
NON-EUROPEAN TEAMS IN LEAGUE AT HOME WHILE NON CONGESTED				
Period	2001/02 - 2010/11		2011/12 - 2020/21	
Win	41.2%	5079	38.5%	4906
Draw	27.6%	3400	26.5%	3367
Lose	31.2%	3837	35.0%	4459
Points/match	1.51	12316	1.42	12732



**Fig. 6.** Percentage of domestic wins for Champion Leagues (CL) teams when playing against non-CL teams only 2 days after a mid-week CL match during 2001/10 and 2011/21 decades. The short lines on each bar represent percentages of wins for CL teams when not playing European mid-week matches (67/46% and 70.2/52.6% for home/away over the 1st and 2nd decade, respectively). The grey lines represent percentages of wins for non-European teams when playing at home followed by a domestic home match. Home ->Home: home mid-week European match at home followed by a domestic home match. Home ->Away: home mid-week European match followed by a domestic away match. Away ->Home: away mid-week European match at home followed by a domestic home match. Away ->Away: away mid-week European match at home followed by a domestic away match.



**Fig. 7.** Percentage of domestic wins for Europa League (EL) Teams when playing against non-EL teams only 2 days after a mid-week EL match during the 2001-10 and 2011-21 decades. The short lines on each bar represent percentages of wins for EL teams when playing with no European mid-week matches (51.2/32.2% and 56.2/41.2% for home/away over the 1st and 2nd decade, respectively). The grey lines represent percentage wins of non-European teams playing at home followed by a domestic home match. Home ->Home: home mid-week European match followed by a domestic home match. Home ->Away: home mid-week European match followed by a domestic away match. Away ->Home: away mid-week European match at home followed by a domestic home match. Away ->Away: away mid-week European match at home followed by a domestic away match.



**Fig. 8.** Points per domestic match gained for Champions League (CL) and Europa League (EL) teams when playing a mid-week European match, for all four location scenarios over the past 2 decades. **Home->Home:** home mid-week European match followed by a domestic home match. **Away->Home:** away mid-week European match at home followed by a domestic home match. **Home->Away:** home mid-week European match followed by a domestic away match. **Away->Away:** away mid-week European match at home followed by a domestic away match.

When looking specifically at the effect of match location for European teams during congested fixtures in domestic leagues, the % of wins for CL and EL teams decreased when the domestic league match was played away vs home, with no effect of the mid-week match location during the first decade (Table 3 and Figure 6 & 7). Overall, performance was as follows; home/home = away/home > home/away = away/away. During the second decade, there was a decreased performance for away/home, so the performance sequence was as follows: home/home > away/home > home/away = away/away (Table 3 and Figures 6 & 7).

The average points per domestic match gained for Champions League (CL) and Europa League (EL) teams when playing a mid-week European match, for all the four location scenarios over the past 2 decades is shown in Figure 8. Overall the trends followed that of the wins presented in Figures 6 and 7 ( $p < 0.001$ ).

Table 4 shows the percentage of home wins for non-European teams while not playing congested during the 2 consecutive decades ( $p < 0.001$ ). The average point gained per match was around 1.5.

### Discussion

Following the pioneering work on match congestion and “the effect of recovery days between matches on teams’ performance” by R. Verheijen in 2012 (6), we revisited the topic with a specific focus on the performance of European teams in their domestic league over the past 2 decades. The current data set is unique, with more than 61,000 fixtures analysed in total.

While match programming is mainly dictated by TV broadcasters, we believe that the information provided here may help 1) European club staff to understand expected performance in the specific context of congested domestic league matches following mid-week matches, and which match(es) may require advanced recovery protocols and enhanced travel logistics to maintain their higher chances of winning, 2) non-European clubs to make their programming wishes ahead of the season (and try to maximise their chance of winning against European teams).

The first findings showed a progressive increase in the percentage of wins of European teams in their domestic leagues

over the past 2 decades (approx. +0.5% win/year for both CL and EL, Table 1 and Figures 1-4). This translates into approx. +0.15 and +0.1 points/match or 4 to 6 points in total per year for CL and EL teams respectively (Figure 5). This likely reflects the increase in the financial power of the richest clubs, which after receiving more funding from both private investors (e.g., Man City, Tottenham, PSG, and more recently Newcastle) and TV rights, have the opportunity to recruit more talented players - which in turn, creates a bigger gap between them and the rest of the club in their respective leagues.

It’s also probably because of the higher player quality and quantity that European teams tend not to dramatically suffer from congestion, at least when playing the domestic league matches at home (Table 3, Figures 5 & 6). In fact, the domestic league performance of European teams was almost always similar (or even superior at some points, e.g., 77% vs 70% for home/home vs home/home > home/away = away/away) when playing congested than when not (Table 3 and Figure 5 & 6).

In the worst-case scenario (away/away), the % of wins for CL (41 and 56.5% vs. non-European and EL teams for the 1st and 2nd decade, Table 3) was still similar (2001-2010) or even superior (2011-2020) to the overall % of wins of non-European teams at home during non-congested fixtures (41 and 38.5% for the 1st and 2nd decade, Table 4) (Figure 5). In practice, following a mid-week match, CL teams were still gaining >0.5 points more per match than their non-European counterparts ( $\geq 2$  vs 1.5 points/match).

With respect to EL teams, when playing in the worst-case scenario (away/away), they tended to win less (32%, 2001-2010) or slightly more (40%, 2011-2020) than the pool of non-European teams at home during non-congested fixtures (Figure 6). The exact reasons for this difference in comparison with CL teams remain unclear, but may be related to their lower squad quality that may not allow them to be as consistent as CL teams when rotations occur during congested schedules.

More specifically, the % of wins for CL and EL teams decreased when the domestic league match was played away, with no effect of the mid-week match location during the first

decade (Table 3 and Figures 5 & 6). Overall, performance was as follows; home/home = away/home > home/away = away/away. During the second decade, there was a decreased performance for away/home, so the performance sequence was as follows: home/home > away/home > home/away = away/away (Table 3 and Figures 5 & 6).

This current trend for a greater percentage of domestic league wins at home vs away after a mid-week European match is actually not very surprising since home matches (irrespective of teams and context) are generally associated with almost 2x more chance of winning (Table 2). In practice, this translates into +15 to 20% of chance winning at home for 2001/02-2010/11 and 2011/12-2020/21, respectively (Table 2). More specifically, the % drop between away and home domestic matches for European teams (e.g., -15 to -26% depending on the decade and the European standard, Figures 5 and 6) is very similar to that of the overall difference between home and away matches (Table 2), which suggests that congestions and travels are unlikely to worsen the effect of match location per se.

The fact, however, that performance tended to be similar for the home/home vs. away/home for CL (Figure 5) and EL (Figure 6) during the first decade, and almost similar in all situations for away/home vs away/away (except for EL during the 2nd decade) shows that travelling is not that challenging for the European clubs to maintain their performance. This is likely related to the optimal travelling conditions they benefit from (private charter flights, 5-star hotels, optimal recovery conditions both in terms of treatment, hydrotherapy, exercise and nutrition), that seem to off-set the detrimental effect of travel (5) (in addition to the larger options for those bigger teams to rotate more players while maintaining a high probability of winning). The small decrease in % wins noted for CL and EL teams between home/home and away/home during the 2nd decade are unlikely related to these logistics since they are getting even more resources than before; the relatively higher rate of wins rather explains it during the home/home context (77% and 58% of wins for CL and EL teams, respectively!).

While the % of domestic league wins was clearly greater for CL than EL teams irrespective of the context (mid-week European matches or not, home or away, Table 3), the trends discussed above over time (across the 2 decades) and in relation to playing locations were very similar. This suggests that the potential reasons given above to explain the superiority of European teams are consistent across different contexts, with the magnitude of the 'European effect' related to the breaths of the squad of talented players and the available logistics facilitating recovery and player readiness during the repeated travels (i.e., CL vs. EL resources) (5). Of course, EL teams also have to play against CL teams which directly worsens their overall performance.

Practically, when it comes to making wishes as to when to play against European teams, the (logical) saying that non-European teams should request to play them at home following an away European match played mid-week (for the European team to play congested away/away) is only supported by the present results for EL teams over the 2nd decade analysis (Figure 6, with EL teams winning less than when non-congested). In comparison to their usual performance vs EL teams, this strategy may allow non-European teams to win 0.2 more points per match (Figure 8), which may translate into 1-2 extra points over the entire season if all of those matches were to be scheduled optimally.

When playing against a CL team away, it's probably also better to play them after an away mid-week match (Figure 5). In fact, and especially since 2011, CL teams won even more

domestic league matches in a home/home congested context than when playing home only once a week! This is again likely related to the fact that they can rotate players without affecting their chances of winning, and/or that the gap vs. lower status teams is large enough for them not to play the best team either.

While the current analysis has allowed us to shed some light on the potential effect of travel and congestions on European teams' performance, future work is now required to indirectly examine the effect of player rotation(s) on team performance (which tends to occur as a consequence of congested fixtures).

## Practical applications

- European teams (i.e., both CL and EL) have won more and more matches in their domestic leagues over the past 2 decades, with +0.3 and +0.2 points gained per game or a total of 8 to 12 points (over a full season) for CL and EL teams, respectively - in other words, the gap between European and non-European clubs has been increasing progressively.
- CL teams seem not to suffer much from congestion at their domestic levels: despite the fact that their % of wins is lower when they play away, the drop in % of wins is similar to that of generic away vs. home matches (i.e., -0.1 points/match), suggesting that congestion and travels are not substantially worsening the effect of match location per se.
- CL teams' winning rates during congested away/away matches are still largely greater than the average winning percentage of the rest of the non-European teams during non-congested fixtures (i.e., up to +0.5 points/match for CL teams).
- The fact that European Teams' performance was similar for the congested home/home vs. away/home fixtures (especially during the 1st decade) and between home/away and away/away fixtures (almost all cases except EL, 2nd decade) shows that travelling is not that challenging for the top clubs to maintain their performance.
- EL teams win fewer domestic matches than their CL counterparts (which translates into approx. 0.4 points/match overall), but all the trends over time (over the 2 decades) and effects of congestion and match location are similar to that of the CL teams.
- To slightly increase their chances of winning against EL teams, non-EL teams may request to play EL teams following an away mid-week European match - while it may be even more advantageous to play the EL teams at home (i.e., 1-4% less chance to lose than when EL teams don't have a mid-week European match, but with similar points/match gained).
- When it comes to playing CL teams, non-European teams may hope to avoid the home/home congested fixture for the CL teams, which was shown to be the one associated with the highest percentage of success and points/match for the CL teams during the last decade (77% of wins and >2.2 points/match).
- The current results may be used by coaches and staff of European teams to motivate players while showing them how high their winning chances remain, even in the context of congested fixtures with European mid-week matches.

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