# HOME ADVANTAGE IN EUROPEAN INTERNATIONAL SOCCER: WHICH DIMENSION OF DISTANCE MATTERS? *First response to referee comments.*

We thank the referees and the invited reader for their swift and constructive comments. We believe we are able to tackle all these concerns in the context of a short-term revision. In this document, we provide a first response to their feedback, which is shaded in grey.

## First response to the invited reader

> My assessment of the paper "Home advantage in European international soccer: Which dimension of distance matters" is overall good.

We thank the invited reader for her/his overall positive appreciation of our manuscript.

> A detailed account of major and minor comments can be found in the enclosed document; below I briefly summarize my two major comments:
>
> 1) the magnitude of the effect of difference in altitude that they find is much larger than the result from a paper they cite (and by the way, they have left out of the references list one important study from BMJ)

The magnitude of this effect of difference in altitude will be thoroughly discussed in the revised manuscript, in case we are invited to submit such a revision.

> 2) I do not think that there is a strong difference in altitude among European teams homes, and that such a difference could have an actual impact on performance. I am afraid that the most important result they find is strongly driven by outliers; thus, they should present descriptive statistics for each difference dimension.

An outlier analysis will be conducted in case we are invited to revise the manuscript.

Also the four minor suggestions of the invited reader will be followed.

# First response to referee 1

**General comments**

The manuscript is interesting and well written. The methodology is appropriate and there is a large amount of data. However, I have some recommendations and observations.

We thank the invited reader for her/his overall positive appreciation of our manuscript.

**Abstract**

Abstract should be rewritten and more information added:

1. Specify the methodology used.

2. Specify the main results (only one result was cited).

3. The authors present only one conclusion of the study (What are the main conclusions of the study?).

In case we are invited to revise the manuscript for publication in *Economics*, we will specify the methods used and multiple main results and conclusions in the abstract.

**1. Introduction**

1. "…moving from country-specific studies in Australia (Goumas, 2014a), Brazil (Pollard, Silva, & Medeiros, 2008), England (Clarke & Norman, 1995; Nevill, Newell, & Gale, 1996; Carmichael & Thomas, 2005), Germany (Oberhofer, Philippovich, & Winner, 2010), Greece (Armatas & Pollard, 2012), Spain (Sánchez, Garcia-Calvo, Leo, Pollard, & Gómez, 2009; Saavedra, Gutiérrez, Fernández, & Sa Marques, 2015), **and** Turkey (Seckin & Pollard, 2008)…"

By citing the countries and, before Turkey, using "and", the author passes the idea that only these countries have been investigated. (i) Remove the word "and" and add "among others" after Turkey; or (ii) add other countries that have studies in their national leagues (e.g., Leite & Pollard (2018) analised 47 countries).

We will follow suggestion (i) in the context of the revision work but also cite the mentioned cross-country study.

2. "In addition, in Germany, Bäker et al. (2012) indicate that the home advantage vanishes whenever a match is a derby".

Some studies claim that this advantage is only smaller, but still can be there is (e.g., Leite & Pollard, 2018; Pollard, 1986: Seckin & Pollard, 2008), mainly using different stadiums for the teams, e.g., the derby Corinthians (Pacaembu Stadium) and Palmeiras (Allianz Arena) in the city of São Paulo (Brazil) is different of the derby Milan and Internazionale (San Siro Stadium) in the city of Milan (Italy).

We will acknowledge this in the revised manuscript.

> 3. "We are not aware of any previous work investigating the importance of distance factors **(b)**, (c), or (d)…"
>
> I think the author could rewrite the sentence. Pollard, Armatas & Sani (2017) and Watanabe Wicker & Yan (2017) analysed this aspect (references below).

The reviewer is right. Climatic differences were investigated as a moderator of the home advantage in the mentioned studies. We will acknowledge them before (re)submitting the manuscript (again). We thank the referee for her/his acuteness.

> 4. "To this end, we analyse 2,012 matches in the Union of European Football Associations (UEFA) Champions League and UEFA Europa League between 2008 and 2016. The match data are merged with country and city-level data…"
>
> I think this part should be within the methodology (sample).

We do not agree with the referee with respect to this point. Briefly mentioning the methods already in the introduction is quite common in the field of economics. Moreover, we need the mentioned sentences to introduce an additional contribution of our study (i.e. as mentioned in the next sentence, to test, as a first study, whether or not the home advantage in international soccer matches is different in derbies and whether or not an elevated home advantage in the national leagues in the Balkan translates into a higher home advantage for Balkan teams in international matches).

However, if the journal's editor agrees with the referee on this point, we are ready to drop these sentences in the introduction.

> 2. Methods
>
> 2.1. Data
>
> 1. "For more information on the regulations of the two competitions and the rules of a soccer match, we refer to the UEFA website (http://www.uefa.com) and to FIFA (2017)".
>
> I think this information is unnecessary.

We believe this sentence is relevant for readers who are not familiar with soccer – they exist – but are ready to drop it.

> 2. "Again, these numbers highlight the relevance of this study's key contribution to the literature, i.e. jointly investigating multiple distance related drivers of the home advantage in soccer".

> I do not know if this sentence is good to put in the study. I believe that is not the case, but sometimes this kind of statement can pass on a certain kind of author's presumption. It is best for readers to come to this conclusion.

We will drop this sentence in case we are invited to revise the manuscript for *Economics*.

> 3. "A team does not play in its own stadium if its stadium does not meet the requirements of the UEFA, for example, at Zulte Waregem (Belgium) in 2013, or if there are security concerns, as at Shakhtar Donetsk (Ukraine) in 2014."
>
> Specify the countries of the teams. Some people can do not know the teams. What was the league? Champions League or Europe League?

We will add this information in case we are invited to revise the manuscript for *Economics*.

> The author presents some results in this section, perhaps it is better to reorder in the "results".

In this section, we only provide the reader with descriptive statistics, which is quite common in the field of economics. However, if the journal's editor agrees with the referee on this point, we are ready to start the Results section with a subsection on descriptives.

> 3. Results
>
> 3.1 Main Analysis
>
> 1. "...and (iii) the expected number of points with 0.550, ceteris paribus".
>
> I recommend use an English expression, a translate or a footnote. Not every reader will understand Latin.

We will change this into "all other variables held constant".

> 2. "We do not find evidence for the home advantage to be heterogeneous by the derby status of the match or the region of the country of the team..."
>
> Past? We did not find...

Our results section is written in the present tense, which is quite common in the field of economics. However, if the journal's editor agrees with the referee on this point, we are ready to write in the past tense.

3. "A possible explanation for this may be that the available oxygen decreases with increasing altitude. Home team players are likely to be more adapted to performing well in the condition of low oxygen levels".

This is only one (perhaps the main) of the explanations for this phenomenon. Decreased air friction, higher ball velocity, etc. are also other explanations. In fact there is an interaction between some aspects.

We thank the referee for these great suggestions and will include them in the revised version of the manuscript. We will acknowledge the referee when doing so.

**Recommendation**

I recommend the authors add a section (Conclusion) with the main conclusions of the study.

The main conclusions are mentioned at the start of the Discussion section. We will rename this section as "Conclusion".

# First response to referee 2

**Summary**

Using data from the UEFA Champion and Europe league, this paper tests whether "distance" matters for the home advantage. In contrast to previous papers on home advantage, the authors use several different measures, including travel distance, altitude difference, temperature difference, precipitation difference, culture difference, wealth difference. Estimating the interaction between these difference measures and the "home" variable, the authors find that only the altitude interaction effect is significantly different from zero.

**Major comments**

- Discussion of results: the authors miss to discuss and interpret the results and differences to other studies. E.g., in the Discussion section, they mention their own result on altitude (100m difference=0.032 points difference) and the result of Pollard and Armatas (2017) who find that (with a different sample) that 1000m are related to 0.1115 points difference. How can this strong difference (3x) be explained?

As mentioned in our first response to the invited reader, we will discuss this magnitude (and its divergence with the one measured by Pollard and Armatas (2017)) in depth in the revised version of the manuscript, in case *Economics* invites us to submit one. In this revision, we will also discuss an outlier analysis.

One explanation might be related to the following two concerns of the referee, i.e. Europeans might be less used to these differences in altitude.

Altitude: in contrast to Pollard and Armatas (2017) who use matches in the World Cup qualification, which also includes South American stadiums playing partly at very higher altitudes, there is not much information on the actual altitude difference. In the descriptive statistics, the mean is 0 (since each game is counted twice). What is the average difference between home and away teams? What does the distribution look like?

These descriptives will be discussed in the revised version of the manuscript.

For altitude, but also for other variables central to this paper: while this variables certainly differ between the location of teams, many of the teams are from rather similar backgrounds (most teams, for example, in Germany, France, UK, Netherlands, Belgium, Denmark, …, probably play at very similar levels of altitude). Are results driven by outliers? Not that this would be not interesting, but it would be important to discuss this sufficiently in the paper.

See above.