Report on **Bachelor / Master Thesis**

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Aner Hadzić
Advisor:	prof. PhDr. Ladislav Krištoufek Ph.D.
Title of the thesis:	**Do Left-handers and Left-footers Have a Competitive Advantage in Sports?**

OVERALL ASSESSMENT:

Short summary

The thesis aims to analyse the potential advantage of lefties in sports. It investigates the benefit of left-handed/left-footed players in 3 team sports (football, handball, basketball) and the possible advantage of having a dominant lefthand in 2 individual sports (tennis and table tennis). It aims to extend the current knowledge by examining alternative performance measures that might be more telling of the performance of the individual athletes rather than just looking at the number of scored points. Overall, the author does not find strong evidence supporting the hypothesis that lefties have an advantage over righties in top-level sports. However, the author confirms previous research findings that left-handed or left-footed athletes are disproportionately represented among top athletes compared to the general population (except for basketball). This might indicate that they are more likely to get to the top level, but once among the best, their performance is not significantly better.

Contribution

The conducted analysis extends the literature, among other things, by examining the potential benefits of having a dominant left hand/foot on several selected performance characteristics and not only on the number of goals/points scored or obtained. This analysis is extremely useful, especially for team sports, as these variables are key determinants of overall performance. This analysis, therefore, can be viewed as an attempt to find the possible source of the potential advantage of lefties. In my view, the used metrics are often more suitable measures of the given athlete´s performance. By focusing on more specific performance measures (less influenced by the rest of the team), the possible advantage of lefties, if present, should be determined or discovered with higher precision.

Methods

Methods corresponding to the required level of knowledge of bachelor students at our institute are applied. There are several possible drawbacks or rather possibilities for improvements. However, most of them are outside the scope of bachelor studies. The only exception is the formulation of the regression models and the selection of included independent variables. The author uses cross-sectional data from one season or tournament to assess the difference between lefties and righties. Even though I understand that using panel data or instrumental variables would yield more precise results, I would consider the choice of using only cross-sectional data when assessing the players sufficient for a bachelor's thesis. However, I would welcome it if the author stressed more the potential drawbacks of using such data (for example the presence of individual fixed effects) and if and how he tried to overcome them.

I understand that to clear the effect of being lefties is an extremely complex and demanding task. However, I believe that if more space had been devoted to the explanation of the author's decision to use the given explanatory variables, what would have been the perfect case, if we can expect any bias and what is the logic behind including these variables, etc., would highly increase the credibility of the study. For example, in the team sport, I would suggest including also the team to which the player belongs to as a control variable. As the dependent variable is the number of goals per game (or analogous metric for the given sport), I believe that this measure strongly depends on the team's performance as a whole. I praised the usage of alternative (and more player-specific) metrics for evaluating the possible advantage in performance in the thesis's contribution. I would also appreciate seeing regression using these alternative measures as dependent variables (or instrumental variables

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Aner Hadzić
Advisor:	prof. PhDr. Ladislav Krištoufek Ph.D.
Title of the thesis:	Do Left-handers and Left-footers Have a Competitive Advantage in Sports?

in 2SLS) of the regressions. In my opinion, it would significantly increase the credibility of the presented results. I would also suggest standardising the data before using them in regressions. In general, it might have been better to focus on one sport and try several different approaches and look more into the depth of the possible biases or drawbacks.

Literature
The provided literature review is adequate. I would only suggest giving more space could to the comparison of the different results found in the literature– do they mostly agree, do they all find no/significant difference among lefties/righties, etc., and how the thesis relates to that (is there a reason stemming from the literature to chose these sports for the analysis or to chose the different metrics, etc.).

Unfortunately, some citations are not formatted correctly. It appears that the author did not use a citation manager or Bibtex for all of them.

Manuscript form

The thesis is nicely written in English using Latex. There are only a few minor linguistic mistakes. This mostly holds also for the formatting of the thesis. The thesis is written in good English and is logically organised. Sections are clearly presented and generally easy to follow. In the case of the Introduction, I would suggest using the last paragraph to explain the usefulness of the thesis a lot sooner. It would have had the potential to attract the readers more, and many may not get that far to read it, which is a pity.

However, there are a few points that would have been worth improving. Firstly, references to the existing literature in the text are inconsistent across the thesis and often incorrect reference form is used. Secondly, even though the presented tables are clear, a more detailed description of them in a footnote would make them more self-explanatory. More importantly, the tables are not referenced in the text, making it harder for the reader to orientate. Thirdly, I would appreciate seeing some graphs in the thesis as I saw the potential for several charts that would have added great value for the reader and I saw no figure constructed by the author.

I suggest referring to variables in the complete form, i.e. GpG as Goals_per_Game, etc. It would make it easier for the reader to follow, mainly because many different variables are used for the different sports.

Other than that, I suggest moving the paragraph Limitation from page 65 to Methodology. Similarly, the discussion of used methods from the section dealing with hypothesis would serve better in methodology. It would have been enough to state the hypotheses there.

Overall evaluation and suggested questions for the discussion during the defense

The results of the Turnitin analysis do not indicate significant text similarity with other available sources.

The thesis fulfils the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade B. However, if the author can defend his approach during the thesis defence, I would be in favour of a better grade.

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	**Aner Hadzić**
Advisor:	**prof. PhDr. Ladislav Krištoufek Ph.D.**
Title of the thesis:	**Do Left-handers and Left-footers Have a Competitive Advantage in Sports?**

My report is rather lengthy, but I also took it as an opportunity to provide feedback to the author from the point of an independent reader, as I believe he might benefit from it during his following studies.

Suggested questions:
1.) In the case of football, the dependent variable is the number of scored goals per game. However, in the case of handball, the author decided to account for the different number of played games, not by standardising the number of goals to the number of goals per game, but by including a control variable reflecting the number of played games. What is the reason behind that?
2.) How would the author expect the result to change if he included the player's team in the explanatory variables for team sports?
3.) Why did the author decide to estimate the results for football for the five leagues separately and not jointly using a dummy for the given league? Do the thesis results suggest this would have been an incorrect approach?
4.) In football, the author also analyses the effect of the percentage of lefties in a team on the team's performance during a tournament. Would it be possible (using this or different data) to analyse the optimal proportion of lefties on a football team? Did anyone try to examine this before? As in the thesis, it was rightly stated that there are positions in the team more suitable for lefties and other positions more ideal for righties. Could all the analysed teams be at the optimal level of left-footed players as they are among the top teams? And that might be why no significant difference was found among them?
5.) Could the result for football and handball also be influenced by the lateralisation of the goalkeepers? Teams with more lefties, or lefties themselves, can have a lower advantage against goalkeepers with dominant lefthand. Could this be tested and could this have influenced the presented results?

SUMMARY OF POINTS AWARDED *(for details, see below):*

CATEGORY	POINTS
Contribution *(max. 30 points)*	30
Methods *(max. 30 points)*	23
Literature *(max. 20 points)*	15
Manuscript Form *(max. 20 points)*	15
TOTAL POINTS *(max. 100 points)*	**83**
GRADE **(A – B – C – D – E – F)**	**B**

NAME OF THE REFEREE: *Anna Pavlovová*

DATE OF EVALUATION: **15. 05. 2023**

Digitally signed (15. 05. 2023)

_Anna Pavlovová_____

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F