THE DETERMINANTS OF NATIONAL TEAM PERFORMANCE IN EUROPEAN SOCCER

KEMAL EMİR ÜREY

BOĞAZİÇİ UNIVERSITY

2018

THE DETERMINANTS OF NATIONAL TEAM PERFORMANCE IN EUROPEAN SOCCER

Thesis submitted to the

Institute for Graduate Studies in Social Sciences

in partial fulfillment of the requirements for the degree of

Master of Arts

in

Management

by

Kemal Emir Ürey

Boğaziçi University

2018

The Determinants of National Team Performance in European Soccer

The thesis of Kemal Emir Ürey

has been approved by:

Assoc. Prof. Yavuz Acar
(Thesis Advisor)

Assist. Prof. Mustafa G. Baydoğan

Prof. Cemal Zehir
(External Member)

June 2018

DECLARATION OF ORIGINALITY

I, Kemal Emir Ürey, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;
- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;
- this is a true copy of the thesis approved by my advisor and thesis committee at Boğaziçi University, including final revisions required by them.

Signature.....

Date .....June 12, 2018.....

ABSTRACT

The Determinants of National Team Performance in European Soccer

Understanding sports performance has always been one of the interests of researchers. Growing soccer industry has led to more scientific studies regarding the differences between successful nations and the others. However, none of these researchers presents an effective and efficient model that is valid all the time regardless of the scopes and data sets used. Rather, they serve as general assessments of nations' success potentials in soccer. This study aims to identify the main determinants that affect nations' soccer performances and introduce a model which is developed with the aspects that have never been used in this field before. Results show that worth of national team players is more effective in explaining national team performance than generally accepted determinants such as nation's wealth, population, geography, being of Latin origin and having hosted FIFA World Cup. Therefore, this study may become pioneer not only in its field but also in other sports and give future researchers a new direction.

ÖZET

Avrupa Futbolunda Milli Takım Performansına Etki Eden Faktörler

Spor performansını anlayış, araştırmacıların her zaman ilgisini çeken konulardan biri olmuştur. Büyüyen futbol endüstrisi ise başarılı uluslar ile diğerlerinin farkını konu alan daha fazla bilimsel çalışmaya sebep olmaktadır. Fakat bu çalışmaların hiçbiri, kullanılan kapsamdan ve veri setinden bağımsız bir şekilde her zaman geçerli olan etkili ve verimli bir model sunmamaktadır. Bunlar daha ziyade, ulusların futboldaki başarı potansiyellerini genel olarak değerlendirme amacına hizmet etmektedirler. Bu çalışma ulusların futboldaki performansını etkileyen ana faktörleri ortaya çıkarmaya ve bu alanda daha önce kullanılmamış bakış açılarıyla hazırlanan bir modeli tanıtmayı amaçlamaktadır. Sonuçlar gösteriyor ki milli takım oyuncularının değeri milli takım performansını açıklamakta zenginlik, nüfus, coğrafya, Latin kökenli olma ve FIFA Dünya Kupası'na ev sahipliği yapmış olma gibi genel olarak kabul edilmiş faktörlere göre daha etkili. Dolayısıyla, bu çalışma sadece alanında değil aynı zamanda diğer sporlarda da öncü olabilir ve gelecek araştırmalara yön verebilir.

ACKNOWLEDGEMENTS

I would first like to express my sincere indebtedness to my thesis advisor Dr. Yavuz Acar who helped me throughout the process tremendously and allowed me to pursue my own ideas which, I believe, enabled me to discover new knowledge in the field of this research.

I would also like to thank other committee members Dr. Mustafa G. Baydoğan and Dr. Cemal Zehir who allocated their valuable time for my thesis defense.

Similarly, I would like to express my profound gratitude to Mr. Şenes Erzik for sparing his priceless time for this study and allowing me to receive his invaluable opinions regarding the issues argued in this paper. Besides, I am deeply grateful to Dr. Eser Borak who led me to meet Mr. Şenes Erzik and arrange an interview with him.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: FACTORS 5

2.1 Wealth 5

2.2 Population 6

2.3 Geography 7

2.4 Soccer tradition 8

2.5 Foreigners in the league 10

2.6 Worth of national team players 13

2.7 Performance of club teams 14

CHAPTER 3: METHOD 16

3.1 Dependent variable: FIFA World Rankings 16

3.2 Independent variables 18

CHAPTER 4: RESULTS AND DISCUSSION 24

CHAPTER 5: LIMITATIONS AND FUTURE WORK 34

CHAPTER 6: CONCLUSION 37

APPENDIX A: LIST OF COUNTRIES AND AVERAGE ANNUAL TEMPERATURES OF THEIR PROMINENT SOCCER CITIES 38

APPENDIX B: SEASONS AND FIFA WORLD RANKINGS DATES 39

APPENDIX C: ANALYSIS RESULTS OF MODEL 1 40

APPENDIX D: ANALYSIS RESULTS OF MODEL 2 42

APPENDIX E: ANALYSIS RESULTS OF MODEL 3 44

APPENDIX F: ANALYSIS RESULTS OF MODEL 4 46

APPENDIX G: ANALYSIS RESULTS OF MODEL 5 48

APPENDIX H: ANALYSIS RESULTS OF MODEL 6 50

APPENDIX I: ANALYSIS RESULTS OF MODEL 7 52

APPENDIX J: ANALYSIS RESULTS OF MODEL 8 53

APPENDIX K: ANALYSIS RESULTS OF MODEL 9 54

REFERENCES 55

LIST OF TABLES

Table 1. Summary of Model 1 24

Table 2. ANOVA of Model 1 24

Table 3. Coefficients of Model 1 25

Table 4. Summary of Model 2 25

Table 5. ANOVA of Model 2 25

Table 6. Coefficients of Model 2 26

Table 7. Summary of Model 3 26

Table 8. Coefficients of Model 3 27

Table 9. Summary of Model 4 27

Table 10. Coefficients of Model 4 28

Table 11. Summary of Model 5 28

Table 12. Coefficients of Model 5 29

Table 13. Summary of Model 6 29

Table 14. Coefficients of Model 6 30

Table 15. Summary of Model 7 30

Table 16. Coefficients of Model 7 31

Table 17. Summary of Model 8 31

Table 18. Coefficients of Model 8 32

Table 19. Summary of Model 9 32

Table 20. Coefficients of Model 9 33

LIST OF APPENDIX TABLES

Table C1. Summary of Model 1 40
Table C2. ANOVA of Model 1 40
Table C3. Coefficients of Model 1 40
Table C4. Descriptive Statistics of Model 1 41
Table D1. Summary of Model 2 42
Table D2. ANOVA of Model 2 42
Table D3. Coefficients of Model 2 42
Table D4. Descriptive Statistics of Model 2 43
Table E1. Summary of Model 3 44
Table E2. ANOVA of Model 3 44
Table E3. Coefficients of Model 3 44
Table E4. Descriptive Statistics of Model 3 45
Table F1. Summary of Model 4 46
Table F2. ANOVA of Model 4 46
Table F3. Coefficients of Model 4 46
Table F4. Descriptive Statistics of Model 4 47
Table G1. Summary of Model 5 48
Table G2. ANOVA of Model 5 48
Table G3. Coefficients of Model 5 48
Table G4. Descriptive Statistics of Model 5 49
Table H1. Summary of Model 6 50
Table H2. ANOVA of Model 6 50
Table H3. Coefficients of Model 6 50

Table H4. Descriptive Statistics of Model 6 51

Table I1. Coefficients of Model 7 52

Table I2. ANOVA of Model 7 52

Table I3. Coefficients of Model 7 52

Table I4. Descriptive Statistics of Model 7 52

Table J1. Summary of Model 8 53

Table J2. ANOVA of Model 8 53

Table J3. Coefficients of Model 8 53

Table J4. Descriptive Statistics of Model 8 53

Table K1. Summary of Model 9 54

Table K2. ANOVA of Model 9 54

Table K3. Coefficients of Model 9 54

Table K4. Descriptive Statistics of Model 8 54

CHAPTER 1

INTRODUCTION

Soccer, also known as association football, is perhaps the only sport that is played across the whole globe. According to Fédération Internationale de Football Association (FIFA), there are more than two hundred million active soccer players (as cited in Halicioglu, 2006). International soccer is also considered as the most popular sport in the world (Houston & Wilson, 2002). Not surprisingly, FIFA World Cup is the most watched sports organization (Dyte & Clarke, 2000). Although it is not a subject of this study, the literature says that soccer's popularity is mainly caused by its high level of balance compared to other sports (McHale & Scarf, 2011).

Soccer is something more than a sport for some nations. For instance, although Boyle and Walter (2003) assert that it is transient at best; Berument, Ceylan, and Ogut-Eker (2009) show that soccer match results can affect even stock market returns where fanaticism of supporters is high. Similarly, soccer can reveal lots of attributes of nations. For example, women's international success in soccer can be an indicator of gender equality of the nations (Congdon-Hohman & Matheson, 2013).

Key success factors of some specific sports have been studied by a few authors (Brouwers, Sotiriadou, & De Bosscher, 2015) since sports experts often try to predict the results of a variety of sports events (Andersson, Edman, & Ekman, 2005). Considering its importance for all the nations, especially Olympic Games has always been appealing to researchers. For instance, Bernard and Busse (2004) and Johnson and Ali (2000) are two of the studies that analyze the nations' successes at Olympic Games. Likewise, FIFA World Cup's becoming one of the world's biggest

sports events causes researchers' attention to be directed towards the understanding the factors that lead to success (Torgler, 2006). Hence there are some studies that investigate national team performance in soccer such as Houston and Wilson (2002) as well as Hoffmann, Lee, and Ramasamy (2002b) who have motivations from Olympic Games study of Hoffmann, Lee, and Ramasamy (2002a).

There is a scarcity of studies that move beyond the club level (Torgler, 2006) and the paucity of studies on national team performance (Macmillan & Smith, 2007) since soccer is mostly analyzed at the club level while tournaments cannot often take places in empirical studies (Torgler, 2008). Yet, more than 50% of the determinants of success is ascertained by the literature to be macro-level variables –such as wealth, population, geography– perhaps due to macro-level data's being readily available (De Bosscher, De Knop, Van Bottenburg, & Shibli, 2006). On the other hand, researchers have begun to agree upon the decreasing importance of macro-level factors such as wealth and population (Stamm & Lamprecht, 2001; as cited in De Bosscher et al., 2006). The way these resources are used is also significant. De Bosscher, De Knop, Van Bottenburg, Shibli, and Bingham (2009) show the link between nation's policies on its sporting development and its international sporting success. Since there are not so many studies that explain the relationship between sports policy and sporting success, the effect of sports policy on sporting success is not evident (De Bosscher et al., 2006). Similarly; early and effective youth training can also affect the performance (Houston & Wilson, 2002). However, because even the birth month of young players have an impact on the youth development in soccer (Helsen, Starkes, & Van Winckel, 1998; Helsen, Starkes, & Van Winckel, 2000), it is not simple to investigate.

Literature has also many studies which show the importance of dedication and motivation of athletes as well as the quality of coaching; however, they fail to present clearly defined and measurable variables for trans-national comparisons (De Bosscher et al., 2006). Analyses of Carron, Bray, and Eys (2002) as well as Tziner, Nicola, and Rizac (2003) show that there is a strong relationship between team cohesion and team success. Franck and Nüesch (2011) also present the negative effects of wage inequality among the players in the team on team cohesion and thereby on team performance; which is similar to the findings of Coates, Frick, and Jewell (2016).

There are also some factors from the soccer field that have effects on team performance. Clemente, Martins, Kalamaras, Wong, and Mendes (2015) show that connectivity of teammates affects team performance while, similarly, the interaction of team members also has a pivotal role for it according to Grund (2012). Lago-Ballesteros and Lago-Peñas (2010) also present some factors, related to goals scored, offense and defense statistics of the teams, from the field that discriminate top clubs from others.

Furthermore, the analysis in this field has reached a level where seemingly unrelated factors are even investigated. For instance, Congdon-Hohman and Matheson (2013) show how religion, education, and regime can also affect the soccer performance while Leeds and Leeds (2009) test the effects of exporting oil, being a colony or colonizer. Even where the referee is from has an impact on match results (Torgler, 2006). Chance also has a huge effect in soccer compared to other sports since scores are much less in soccer than in other sports (Groll, Schauberger, & Tutz, 2015).

All these result in various kinds of complex models which are neither effective nor efficient in explaining the variation of nations' performances in soccer. Also, most of the models are prone to generalization so high so that they cannot catch the performance difference of a particular nation in different years; rather, they serve as a general assessments of nations' soccer potentials. For instance, these models cannot explain the performance difference of Belgium national team which was not prominent a decade ago however it is now considered consistently as one of the most competitive teams. Since almost none the aforementioned factors of Belgium have changed dramatically in the meantime, the models that mainly use these attributes of nations are by no means good at explaining soccer performance. Creating a model that can explain international success of all the nations –also for all the sports– is not achievable (De Bosscher et al., 2006). However, it is undoubted that there is a gap in this field.

Therefore, this study aims to investigate the determinants of national team performance in smaller context and present additional variables to find simpler but more accurate model. Since European football is unquestionably the world's most popular sport (Matheson, 2004), Europe serves as the base for this research. In addition, author of this study believes that such contradictory results that were previously found by other researchers and are mentioned in next chapters are due to aforementioned factors' low or perhaps no performance effect which changes from study to study depending on the data sets used. Hence, this study tries not to be affected by minor factors but to identify the main determinants of performance that are valid all the time and in all the cases independent of the scope or data set chosen.

CHAPTER 2

FACTORS

2.1 Wealth

Wealth has always been an important resource for human beings. Not surprisingly, it is also crucial in sports. The determinants of performance may be mostly economic (Hoffmann, Lee, Matheson, & Ramasamy, 2006). Due to the availability of more leisure time, individual sports participation can increase as income increases (Congdon-Hohman & Matheson, 2013). Besides, sporting success can be an indicator of economic development (Congdon-Hohman & Matheson, 2013).

Bernard and Busse (2004) and Johnson and Ali (2000) show the positive effect of wealth on Olympic success. In soccer, there are also many studies which show the positive effect of wealth including Houston and Wilson (2002) and Leeds and Leeds (2009). Similar to Hoffmann et al. (2002b), Torgler (2006) finds that wealth and success have a quadratic relationship with each other so that their graph forms inverted U-shape when their relationship is demonstrated. Indeed, wealth increases performance in decreasing rate due to the law of diminishing marginal returns (Houston & Wilson, 2002).

Wealth is important for women's performance as well. According to Torgler (2008), as GDP per capita increases women's international performance also increases instead of showing an inverted U-shape relationship with each other. Likewise, Congdon-Hohman and Matheson (2013) and Hoffmann et al. (2006) demonstrate that wealth's effect is positive for both men's and women's performances.

On the contrary, gross national incomes of countries are insignificant in calculations of Karaca (2008). Nevertheless, it is evident that wealth is worth to be analyzed in this study. However, it should be kept in mind that results may not be robust to different data sets since performance and wealth can be considered to have a quadratic relationship (Torgler, 2006). Therefore, the following hypothesis is proposed.

$H1_0$: Wealth has no positive effect on national team performance

$H1_1$: Wealth has a positive effect on national team performance

2.2 Population

The population is where nations find their athletes. According to Houston and Wilson (2002), as population increases talent pool also increases. Therefore, it is an important resource for sporting development. Naturally, there are studies in the literature which support the population's positive effect on sporting performance.

Bernard and Busse (2004) and Johnson and Ali (2000) also demonstrate the population's significance in Olympic success. In soccer, Houston and Wilson (2002), Karaca (2008) and Leeds and Leeds (2009) show the positive effect of the population for men's while Torgler (2008) displays its importance for women's performances. In contrast, Hoffmann et al. (2002b) and Torgler (2006) find no impact of population on performance. They both show that only if the country is of Latin origin, the population influences performance. Nevertheless, it is patent that population should be included in this study. Therefore, the following hypothesis is proposed.

$H2_0$: Population has no positive effect on national team performance

$H2_1$: Population has a positive effect on national team performance

2.3 Geography

Geographical conditions can affect team performance strongly (Torgler, 2008). However, compared to wealth and population, geography has not been able to find such a place in the literature. Yet, there are some studies which show the impact of climate.

Hoffmann et al. (2002a) show how climatic conditions can affect outdoor sports activities. Then, Hoffmann et al. (2002b) use 14 Celsius degrees as the best average annual temperature for the performance. So, deviation from this degree is expected to decrease the performance independent of its direction. Findings of Karaca (2008) support this while Congdon-Hohman and Matheson (2013) show that deviation from the ideal temperature decreases not only men's but also women's performances.

On the other hand, Torgler (2006) finds no evidence of geography's effect on performance. Similarly, the climate is insignificant in the analysis of Hoffmann et al. (2006) regarding women's performance. However, Torgler (2008) demonstrates the opposite of it in women's soccer by observing that high temperature leads to low performance instead of findings of Hoffmann et al. (2002b) that show inverted U-shape relationship between soccer performance and average annual temperature. Nevertheless, increase in the deviation from the ideal temperature is expected to decrease the national team performance. Therefore, the following hypothesis is proposed.

$H3_0$: Distance to ideal temperature has no negative effect on national team performance

$H3_1$: Distance to ideal temperature has a negative effect on national team performance

2.4 Soccer tradition

Soccer tradition has a huge impact on national team success (Torgler, 2006). It is also one of the key determinants of women's performance (Torgler, 2008). Therefore, researchers have always tried to reflect it with proper methods. However, there is no any widely accepted proxy for soccer tradition.

The strong relationship between men's and women's soccer performances supports the notion of soccer tradition (Torgler, 2008) since there is a high correlation between men's and women's rankings (Hoffmann et al., 2006). However, as Congdon-Hohman and Matheson (2013) also state, there may be some independent variables that possibly have correlations with opposite gender's rankings as well. Hence using women's rankings to represent soccer tradition may be misleading due to multicollinearity.

Although only by interacting with population, Latin culture has a positive effect on men's soccer performance in Hoffmann et al. (2002b) while it is insignificant in women's soccer (Hoffmann et al., 2006). Still, due to a widespread perception that Latin nations have more affection towards soccer, this can be tested in this study.

Bernard and Busse (2004) and Johnson and Ali (2000) show the positive effects of hosting on performance in Olympic Games. Also, in soccer, playing the match at home has a significant impact on success as demonstrated by Lago-Peñas and Lago-Ballesteros (2011). Unsurprisingly, Torgler (2004) show that hosting soccer organization improves team performance. It also increases national well-being in short-term (Kavetsos & Szymanski, 2010). According to Pawlowski, Downward, and Rasciute (2014), hosting sports events contributes to well-being more than the positive effect of success.

Having hosted FIFA World Cup is considered as an indicator of soccer tradition (Torgler, 2006) and public's support for the event (Macmillan & Smith, 2007). Similarly, it also shows nation's devotion to soccer (Leeds & Leeds, 2009). It is used as a proxy for soccer tradition in Hoffmann et al. (2002b) while hosting and winning FIFA World Cup are considered as signs of soccer tradition in Torgler (2008). Although hosting a FIFA World Cup has some other political and economic factors, yet it is a huge investment which can be made mostly by countries that have high soccer tradition. Hence, this study chooses to analyze it as well.

Besides hosting FIFA World Cup, Torgler (2006) uses the number of years of FIFA membership and number of years of having FIFA president as proxies for soccer tradition. Similarly, Houston and Wilson (2002) test the effect of the number of years of FIFA membership and some other variables such as FIFA World Cup appearances and youth World Cup appearances to reflect the impact of soccer tradition. Although longer FIFA membership may imply the nation's soccer culture (Leeds & Leeds, 2009), the duration of FIFA membership is not significant when used as a proxy for soccer tradition in Houston and Wilson (2002) and Leeds and Leeds (2009). Rest of the aforementioned variables either fail to present a proper representation of soccer tradition logically or were found to be insignificant in previous studies so that they are not used by other researchers. So, soccer tradition is represented by being of Latin origin or not and having hosted FIFA World Cup or not. The following hypothesis is proposed.

$H4a_0$: Being of Latin origin has no positive effect on national team performance

$H4a_1$: Being of Latin origin has a positive effect on national team performance

$H4b_0$: Having hosted FIFA World Cup has no positive effect on national team performance

$H4b_1$: Having hosted FIFA World Cup has a positive effect on national team performance

2.5 Foreigners in the league

Changes in the rules create fields that can be investigated (Torgler, 2006). Such a change was observed in European soccer in the mid-1990s. In 1995, the verdict of European Court of Justice on Belgian player Jean-Marc Bosman's case changed European soccer dramatically although Parrish and Mcardle (2004) assert that it has not brought something new but the straightforward application of existing legal provisions. According to Simmons (1997), it led to panic and dire warnings in the soccer industry. This ruling says that transfer system and nationality restrictions of Union of European Football Associations (UEFA) were violating the EU laws such as freedom of movement of labor and therefore such restrictions were going to be invalidated (Croci, 2001). One of its effects has been seen on player migration in Europe. Although since 1960s Western Europe has been subject to the migration of foreign players, this was enlarged by the Bosman ruling (Frick, 2009). Findings of Brownstone (2010) also show that international migration of players to the Western European leagues has been increased by the Bosman ruling. Similarly; Richardson, Littlewood, Nesti, and Benstead (2012) claim that foreign player exchange has increased during the recent years. According to Poli (2008), an increase from 146 to 496 was observed in the number of players recruited outside of Europe by the clubs of the five main European leagues between 1995 and 2005. Meanwhile, commercial interest in soccer has also increased tremendously (Magee & Sugden, 2002) as well

as salaries of wealthy clubs' players in major leagues (Poli, 2006). At last but not least, clubs have started to seek ready-made, experienced foreign players instead of training young players in youth academies (Maguire & Pearton, 2000b).

Player migration is a serious issue in sports. According to Ben-Porat (2002), a modern soccer league without foreign players is not achievable. However, very little attention is received by the globalization of professional sport in the academic literature, particularly in business and management fields (Madichie, 2009) although there are many similarities between migration of athletes and movement of business world's highly skilled workers (Elliott & Maguire, 2008). Nevertheless, there are some studies on player migration in a variety of sports besides soccer (Maguire & Pearton, 2000a).

Canadian migrants create some problems in British ice hockey regarding labor rights, work permits and salary caps (Maguire, 1996). Olin (1984) also shows some other negative effects of player migration especially in lower leagues of Finnish basketball. On the other hand, positive effects of player migration in sports are also shown by some researchers. In American baseball league, also known as Major League Baseball, it increases the talent pool as demonstrated by Schmidt and Berri (2003) and also contributes to the sport's economy according to Tainsky and Winfree (2010). Similarly; Alvarez, Forrest, Sanz, and Tena (2009) show that as the number of foreign basketball players in the league increases national team's performance of that country is prone to increase as well.

Similar to other sports, the effect of foreigners' import in soccer has not reached an agreement yet. There is some evidence which shows its negative effects on national teams. Taylor (2007) claims that player migration limits young English players' development and hence hinders English national team. Findings of Marcén

(2014) also demonstrate the negative effect of Bosman ruling on local Spanish players by showing their less number of minutes played in the matches.

On the contrary, some researchers say that it is not negative. Although local players' time in the matches is now less than before, it has not caused any change in the competitive balance between importing and exporting countries (Frick, 2009). Likewise; Flores, Forrest, and Tena (2010) examine the effect of foreigners on competitive balance between big and small clubs, and their findings are consistent with the prediction in economics saying that globalization increases the competition in local markets. Binder and Findlay (2012) also claim that only some countries are affected by it either positively or negatively while negative effects of it are fairly small compared to its benefits. Karaca (2008) asserts that foreigners increase performances of club teams in international organizations while there is no negative effect of them on national teams' performances. By considering English youth academies, Elliott and Weedon (2011) show that player exchange does not have any negative effect on both host and donor nations; instead, it creates an environment that increases the performance of all players. Similarly, Solberg and Haugen (2008) maintains that import of foreigners has no significant negative effect on national teams; rather, some prominent countries benefit from foreigner import while some other countries –mostly considered outside the top leagues– exploit the export of their players perhaps due to the possibility that players' going abroad causes them to learn in better environment.

Indeed, import of skilled labor may increase the skill level of local workers with new techniques and practices (Alvarez et al., 2009). Berlinschi, Schokkaert, and Swinnen (2013) assert that migrated players can improve their skills and thereby increase their national teams' performances which is similar to the claim of

Milanovic (2005). Likewise, Brownstone (2010) shows that non-Western European countries which had exported their players improved their points in FIFA World Rankings. Baur and Lehmann (2008) also find that both importing and exporting countries that qualified for the World Cup benefited from player trade.

All these studies may not agree upon a certain conclusion regarding the effect of player import on national teams, however, it is undoubted that player migration should also be analyzed. Perhaps, this study can also be helpful for resolving the long-standing issue. Therefore, the following hypothesis is proposed.

$H5_0$: Percentage of foreigners in the league has no effect on national team performance

$H5_1$: Percentage of foreigners in the league has an effect on national team performance

2.6 Worth of national team players

There are some advantages of the study of soccer including reliability and availability of data (Torgler, 2006). Also, traditional economic tools are effective in the analysis of soccer (Torgler, 2008). Availability of detailed information regarding player salaries, transfer fees, contract lengths and career duration is one of the developments that enabled researchers to make empirical analyses on the labor market for soccer players since the mid-1990s (Frick, 2007). Besides, collecting data with lower costs is now available from the internet (Torgler, 2006). Easy access to the information on transfer payments would benefit theoretical findings (Matheson, 2004). Although economists are not very interested in writing papers on the economics of sports; large and well-registered data sets provide fruitful space for empirical studies (Torgler, 2008).

At the beginning of 2014/2015 season, snooker –the most prestigious cue sport– switched to a different ranking scale which uses prize money won by the players from the tournaments in the latest 2 years. Therefore, players' classification is based on the money they earn from the competitions that are open to the participation of every player. The London insurance market Lloyd's (2014) also establishes a model which mainly uses player wages and endorsement incomes for estimating player incomes until retirement in order to assess insurable values of player attributes. Groll et al. (2015) assert that such model could have predicted at least one of the finalists of 2014 FIFA World Cup correctly if estimated insured values were considered. Since earnings and future values of soccer players are contingent upon their performances (Torgler, 2006), such variables can be used in the analyses.

Players' earnings are not readily available on the internet; however, their worth is estimated by some parties. Therefore, worth of national team players can be represented in the analysis. According to the author's knowledge, there has never been such a variable used in previous studies. Therefore, the following hypothesis is proposed.

$H6_0$: Worth of national team players has no positive effect on national team performance

$H6_1$: Worth of national team players has a positive effect on national team performance

2.7 Performance of club teams

Although Milanovic (2005) claims that strong club teams are not needed for the strong national team, Leeds and Leeds (2009) assert that there is a high correlation

between performances of the club and national team since it is a sign of nation's commitment to soccer.

In the author's interview, which was specially organized for this study, with Şenes Erzik, who was executive committee member of UEFA from 1990 to 2015 – which is a record– and FIFA from 1996 to 2017, he stated that there is no any relationship between performances of club teams and national teams in the recent years (personal communication, May 22, 2018). Yet, this relationship is worth to be analyzed. Therefore, the following hypothesis is proposed.

$H7_0$: Performance of club teams has no positive effect on national team performance

$H7_1$: Performance of club teams has a positive effect on national team performance

CHAPTER 3

METHOD

This study uses ordinary least squares regression to identify the main determinants of national team performance. With using backward selection, all the independent variables are put into the model and the one with the highest p-value is discarded until there is no any independent variable which has p-value higher than significance level. Since this study aims to find the main determinants rather than minor factors, the significance level is chosen to be 1% to obtain the highest accuracy.

The sample consists of 18 European countries' data of 8 seasons starting from 2009/2010 season to 2016/2017 season. The reason of using only these seasons is the lack of available data of independent variable. Also the purpose of selection of these countries is to catch the differences between not only the performances of countries but also the performances of each country in different years. Countries that are successful all the time, countries that have oscillating performances, countries that are improving each year and countries that are deteriorating each year are the most suitable countries for this study. Therefore, countries that are unsuccessful most of the times are not considered. The list of these countries can be seen in Appendix A.

3.1 Dependent variable: FIFA World Rankings

FIFA announces rankings and corresponding points of the countries' national teams monthly since 1993. At the early years, it was calculated based on the performances of previous 8 years however after the 2006 World Cup it started to consider only the latest 4 years' performances. Points depend on the results and importance of the matches, and strength of the teams and their regions. Weighted averages of these

points collected in the latest 4 years are summed in decreasing proportions in order to end up with the points which are used to rank the national teams next.

In formal literature, there is a small interest in major world sports rating systems (Stefani, 1997). Still, there are some studies which pay attention to this. According to Houston and Wilson (2002), FIFA World Rankings indicate the competitiveness of each member of FIFA. Similarly, McHale and Scarf (2011) show FIFA World Rankings's effectiveness on international soccer match results. Also, neither soccer experts nor non-experts could perform better than rankings in the prediction of match results in the study of Andersson et al. (2005).

On the other hand, according to Torgler (2004), FIFA World Rankings do not serve as it is assumed as a measure of the strength of national teams. Likewise, Dyte and Clarke (2000) show that FIFA World Rankings cannot be considered as a perfect indicator of national team performance at all, however, their adjustment offers only a small improvement.

The only drawback regarding the use of FIFA World Rankings is its being constituted by the performances of the last 4 years not the last year per se. However, it can be acceptable since there may not be a sufficient number of matches in a season for a precise assessment. For instance, in seasons with only qualifier games, there are merely a couple of matches except friendly games. Therefore, using only the points of last year may not be accurate. Using the matches of last 4 years also possess the results of 1 FIFA World Cup, 1 European Championship and qualifier seasons of each of them.

Although there is another ranking scale suggested by Macmillan and Smith (2007), FIFA World Rankings are used as performance indicator by many other studies including Hoffmann et al. (2002b), Groll et al. (2015), Karaca (2008), Leeds

and Leeds (2009) and Solberg and Haugen (2008) for men's and Congdon-Hohman and Matheson (2013), Hoffmann et al. (2006) and Torgler (2008) for women's soccer. This study also uses FIFA World Rankings as a measure of performance. However, not the rankings but the corresponding points are considered for the sake of precision. Data are collected from Transfermarkt (www.transfermarkt.com).

The first rankings announced after the end of each season is used in this study. However, due to the time of tournaments, ending dates of seasons change. If there is a tournament, the season ends in mid-July. Therefore, rankings announced in July or August are used depending on the ending time of each season. The dates of rankings that are used in this study can be found in Appendix B. In the analyses, this variable is represented with the name of FIFA.

3.2 Independent variables

3.2.1 Wealth

GDP per capita is one of the measures that shows the wealth of countries. In the literature, it is seen that most of the studies use GDP per capita as measure of wealth including Congdon-Hohman and Matheson (2013), Hoffmann et al. (2006), Houston and Wilson (2002), Leeds and Leeds (2009) and Torgler (2006, 2008). This study also uses GDP per capita. Wealth data of countries are collected from World Bank (www.worldbank.org). Since data of UK nations are available only at aggregated level (Torgler, 2006; Leeds & Leeds, 2009), England's wealth data are missing. However, England's wealth data of 2009 are available on Google (www.google.com) without a source. Its ratio to UK's wealth data of 2009 is used to estimate the England's wealth for the rest of the years. For a particular season, beginning year's wealth is used since it is considered as resource. However, wealth data are

normalized before being put into the study in order to obtain the highest accuracy. Average wealth in each season is calculated and every country's wealth is divided by this average to find the proportions of each country's wealth to the mean in percentages. This leads wealth factor to be robust to the changes in the data at large. For instance, boom or depression in the world economy as a whole cannot affect the precision of the results obtained from the data. In the analyses, this variable is represented with the name of Wealth.

3.2.2 Population

Population data are also collected from the World Bank (www.worldbank.org). Similar to wealth, data of UK nations are available only at aggregated level (Torgler, 2006; Leeds & Leeds, 2009), therefore England's population data are missing. However, its population data of 2011 are available again on Google (www.google.com) without a source. Its ratio to UK's population data of 2011 is used to estimate England's population for the rest of the years. Again, for a particular season, beginning year's population is used since it is also a resource similar to wealth. The method for using the population data is the same as the method that is used for wealth. So, although the population is not really subject to booms or downfalls compared to wealth, data are normalized for the sake of precision. In the analyses, this variable is represented with the name of Population.

3.2.3 Geography

Generally, temperature data of countries' capitals are used in the previous studies including Hoffmann (2002a, 2002b) and Karaca (2008). However, since soccer is not played only in the capital of the country, it is more appropriate to use representative

temperature values for the whole country (Torgler, 2008). Therefore, this study uses the most prominent soccer city of each country instead of the capital. If there is not only one prominent city, then the mean of at most two prominent soccer cities' average annual temperatures is used. The table that shows the cities and corresponding temperatures can be found in the Appendix A. To obtain the highest accuracy, average monthly temperatures with single decimal are used to calculate the average annual temperatures. Data are collected from www.yr.no except for Milan whose data are obtained from www.weatherbase.com due to its absence from the first source. Then, squares of deviations from the ideal average annual temperature of 14 Celsius degrees of each country are calculated. In the analyses this variable is represented with the name of Temperature.

3.2.4 Soccer tradition

Soccer tradition is represented with the dummy variables that indicate whether the nation is of Latin origin or not and whether the nation has ever hosted FIFA World Cup or not. In the European context, only Spain and Portugal are considered as Latin. The information regarding the FIFA World Cup hosts is available at FIFA's website (www.fifa.com). In the analyses, soccer tradition is represented with the variable names of Latin and World Cup.

3.2.5 Foreigners in the league

Since the number of teams in the leagues differs from country to country, exact number of foreign players must not be used in order to sustain the accuracy. Instead, the percentage of the foreigners in the league is calculated for each season and for

each country. Data are readily available at Transfermarkt (www.transfermarkt.com). In the analyses, this variable is represented with the name of Foreigners.

3.2.6 Worth of national team players

The market value of each player is subjective and hence cannot be known if there is no any transfer payment. However, there are some estimates that can be found on the internet. The generally accepted authority on this is again Transfermarkt (www.transfermarkt.com). Although the method for calculating the market value of players is unknown, it is believed that players' statistics are taken into consideration including age, nationality, game statistics and so on. Generally, every transfer term market value of players are updated. If there is an unexpectedly high or low performance which requires an immediate change in the market value, users at the Transfermarkt (www.transfermarkt.com) forum propose some suggestions regarding the market value a player should have and change is made accordingly if needed.

For a particular season, the average market value of all national team players is readily available at Transfermarkt (www.transfermarkt.com). The values are taken from the end of the previous season. More specifically, the most recent value announced before the month of July is used for upcoming season's market value of each player. So, there is no any causality issue between this independent variable and dependent variable regarding which one affects the other. For sure, national team performances of players affect their values, especially the performances in tournaments such as FIFA World Cup and European Championship. However, such an influence is mostly attenuated since players' market values are taken before the tournaments and hence next season's values are taken 10 or 11 months after the completion of these tournaments. So if there is a high performance that results in

boom or low performance that causes steep decline in market value of a player, his club team performance will mostly weaken this since club teams have far more matches than national teams meaning that market values of soccer players are mostly dependent on their performances in club teams rather than national teams. This also vanishes the apprehensions regarding the FIFA World Rankings' considering the performances of last 4 years. It could be asserted that there is a causality problem since one may argue whether worth affects the performance or performance affects the worth. Again, players' performances in club teams mostly mitigate this.

Similar to wealth and population, this independent variable is also normalized to catch if there are changes at large. This may be crucial since soccer is a growing industry and transfer payments for players are increasing day by day. In the analyses, this variable is represented with the name of Worth.

3.2.7 Performance of club teams

Similar to FIFA World Rankings, UEFA also announces rankings and their corresponding points for showing nations' international soccer performances at the club level. These rankings are used for determining the number of clubs that will participate in UEFA organizations in the next year for each country. UEFA sums the last 5 years' points in equal weights in order to find the rankings. Unlike FIFA World Rankings, the use of only last year's points may be appropriate since countries generally attend the organizations with more than 1 club team and there is significant number of matches in the UEFA organizations. However, last year's points per se may also be misleading since countries do not attend the organizations with the same number of teams. Therefore, UEFA points are divided by the number of teams that attend the UEFA organizations from the same country to find the average UEFA

points that are collected by club teams of each country. In the analyses, this variable is represented with the name of UEFA.

CHAPTER 4

RESULTS AND DISCUSSION

In Model 1, generally accepted factors such as wealth, population, geography, and soccer tradition are tested to see their effectiveness in explaining the national team performance which is represented with the dependent variable FIFA in all of the models. Although results show that a significant model is created, R square values support the aforementioned motivation of this study which says that previous models are not effective in national team performance in soccer. It is also seen that even in Model 1 some of the variables are insignificant. Details of Model 1 can be found in Appendix C.

Table 1. Summary of Model 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.575	0.331	0.307	238.039

Table 2. ANOVA of Model 1

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
1	Regression	3869309.038	5	773861.808	13.657	.000
	Residual	7819464.288	138	56662.785		
	Total	11688773.326	143			

Table 3. Coefficients of Model 1

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	738.513	58.412		12.643	0.000
	Latin	352.004	69.002	0.388	5.101	0.000
	World Cup	59.178	66.657	0.101	0.888	0.376
	Wealth	1.342	0.495	0.299	2.708	0.008
	Population	0.819	0.309	0.259	2.654	0.009
	Temperature	-2.210	1.284	-0.155	-1.721	0.088

Then, as Model 2 all of the variables are put into the model to start the backward selection process. It is immediately seen that a significant model with higher R square values is formed.

Table 4. Summary of Model 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	0.762	0.581	0.556	190.434

Table 5. ANOVA of Model 2

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
2	Regression	6792995.706	8	849124.463	23.414	.000
	Residual	4895777.620	135	36265.019		
	Total	11688773.326	143			

Among the insignificant variables, the highest p-value belongs to Latin variable. Therefore, $H4a_0$ is not rejected. This means that there is no evidence found for the assertion that nation's being of Latin origin has a positive impact on national

team performance. Since only Spain and Portugal are considered as Latin, it may not show its effect in European context properly. Also, only worth of national team players is significant at 1%. Details of Model 2 can be found in Appendix D.

Table 6. Coefficients of Model 2

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
2	(Constant)	634.590	64.833		9.788	0.000
	Latin	25.427	69.782	0.028	0.364	0.716
	World Cup	-41.830	57.172	-0.072	-0.732	0.466
	Wealth	0.292	0.500	0.065	0.583	0.561
	Population	-0.553	0.333	-0.175	-1.663	0.099
	Temperature	1.959	1.169	0.137	1.676	0.096
	Foreigners	1.648	1.938	0.074	0.851	0.396
	Worth	3.811	0.446	0.917	8.538	0.000
	UEFA	-0.068	0.034	-0.164	-1.979	0.050

As Model 3, Latin variable is discarded, and the test is run again. It is observed that adjusted R square increases a little while R square remains the same.

Table 7. Summary of Model 3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	0.762	0.581	0.559	189.826

In this model, Wealth has the highest p-value among the insignificant variables. It can be said that it is unexpected considering the previous studies. So, $H1_0$ is not rejected meaning that there is no proof found for the claim that wealth increases national team performance. Countries such as Sweden and Switzerland that have high wealth, but low performance may be the reason for such results. Again,

only worth of national team players is significant at 1%. Details of Model 3 can be found in Appendix E.

Table 8. Coefficients of Model 3

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
3	(Constant)	633.212	64.515		9.815	0.000
	World Cup	-40.979	56.942	-0.070	-0.720	0.473
	Wealth	0.224	0.463	0.050	0.483	0.630
	Population	-0.606	0.298	-0.192	-2.032	0.044
	Temperature	2.013	1.156	0.141	1.741	0.084
	Foreigners	1.775	1.900	0.079	0.934	0.352
	Worth	3.878	0.406	0.933	9.552	0.000
	UEFA	-0.066	0.034	-0.159	-1.952	0.053

As Model 4, wealth is dropped, and the test is run again. R square shows a very little decrease while adjusted R square slightly increases.

Table 9. Summary of Model 4

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	0.762	0.580	0.562	189.294

World Cup is seen to have the highest p-value among the insignificant variables. So, rejection of $H4b_0$ is not possible. This says that there is no evidence found for the positive effects of having hosted FIFA World Cup on national team performance. It may not be unexpected since there are some countries that admittedly have no soccer tradition but hosted FIFA World Cup such as Sweden and Switzerland. It can be claimed that hosting FIFA World Cup requires wealth rather

than soccer tradition considering their wealth. Even if it was significant, it would have a negative effect on national team performance as its coefficient is negative. Also, population joins worth of national team players regarding the significance at 1%. Details of Model 4 can be found in Appendix F.

Table 10. Coefficients of Model 4

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
4	(Constant)	636.609	63.952		9.955	0.000
	World Cup	-21.721	40.565	-0.037	-0.535	0.593
	Population	-0.695	0.233	-0.220	-2.980	0.003
	Temperature	2.229	1.063	0.156	2.097	0.038
	Foreigners	2.288	1.572	0.102	1.455	0.148
	Worth	3.858	0.403	0.928	9.579	0.000
	UEFA	-0.067	0.033	-0.162	-2.004	0.047

As Model 5, World Cup variable is delisted. Very little decreases in R and R square are seen while adjusted R square increases similarly.

Table 11. Summary of Model 5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
5	0.761	0.579	0.564	188.804

Foreigners has the highest p-value among the insignificant variables. Hence, $H5_0$ is not rejected. So, no any effect of foreign players in the league on national team performance is proved. This can be understood by comparing England and Spain. English league is mostly comprised of foreigners while Spanish league is mostly constituted by local players. However, both countries' national teams usually

perform well. Even if it was significant, it would have a positive effect on national team performance meaning that foreigners in the league have positive effect on national team performance of that country. The worth of national team players and population remain significant at 1%. Details of Model 5 can be found in Appendix G.

Table 12. Coefficients of Model 5

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
5	(Constant)	640.216	63.432		10.093	0.000
	Population	-0.698	0.233	-0.221	-2.997	0.003
	Temperature	2.275	1.057	0.159	2.153	0.033
	Foreigners	2.122	1.538	0.095	1.380	0.170
	Worth	3.791	0.381	0.912	9.938	0.000
	UEFA	-0.067	0.033	-0.162	-2.001	0.047

As Model 6, the percentage of foreigners in the league is not considered now. Slight decreases in R values are observed. However, these are not major.

Table 13. Summary of Model 6

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
6	0.757	0.573	0.561	189.418

This time UEFA has the highest p-value among the insignificant variables. So, $H7_0$ is not rejected. This implies that no any positive correlation between the performances of club teams and the national team is substantiated. This is comprehensible since some countries often have bad club teams but occasionally have good national teams such as Belgium and Netherlands. Indeed, even if it was

significant, it would be a negative correlation. Also, worth of national team players and population are still significant at 1%. Details of Model 6 can be found in Appendix H.

Table 14. Coefficients of Model 6

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
6	(Constant)	695.527	49.332		14.099	0.000
	Population	-0.672	0.233	-0.213	-2.887	0.005
	Temperature	2.225	1.059	0.156	2.100	0.038
	Worth	3.964	0.361	0.953	10.972	0.000
	UEFA	-0.061	0.033	-0.148	-1.844	0.067

As Model 7, UEFA is excluded. Decreases in the R values increase. However, they are only minor.

Table 15. Summary of Model 7

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
7	0.750	0.563	0.554	191.034

Temperature is the only insignificant variable at 1%. So, $H3_0$ is not rejected. This can be interpreted as there is no proof regarding the negative effect of distance to ideal temperature on national team performance. This is not inconceivable since there are some countries that have good climate but bad performance such as Turkey and also have bad climate but good performance such as Germany. However, even if it was significant, it would be opposite of the results found by the previous studies since its coefficient is positive meaning that as distance to ideal temperature

increases national team performance increases as well. Also, worth of national team players and population are still significant at 1%. Details of Model 7 can be found in Appendix I.

Table 16. Coefficients of Model 7

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
7	(Constant)	640.012	39.412		16.239	0.000
	Population	-0.757	0.230	-0.239	-3.289	0.001
	Temperature	2.360	1.066	0.165	2.214	0.028
	Worth	3.574	0.296	0.860	12.093	0.000

As Model 8, geography is eliminated. Again, increasing decreases in R values are observed. However, they are still not major.

Table 17. Summary of Model 8

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
8	0.740	0.548	0.541	193.661

The population becomes insignificant at 1% when it is put into the model with only worth of national team players. It can be said that $H2_0$ is not rejected. So, there is no evidence regarding the population's positive effect on national team performance. This can be understandable considering there are some highly populous countries such as Russia and Turkey which often have low performances. Even if it is assumed as significant, it has negative coefficient meaning that as population increases performance of national team decreases. This is also contradictory with the

previous studies. However, worth of national team players is still significant at 1%. Details of Model 8 can be found in Appendix J.

Table 18. Coefficients of Model 8

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
8	(Constant)	695.809	30.722		22.648	0.000
	Population	-0.454	0.188	-0.144	-2.420	0.017
	Worth	3.204	0.247	0.770	12.970	0.000

As Model 9, the population is discarded and only worth of national team players is represented. Even there is only 1 independent variable in the model, R values do not decrease dramatically compared to Model 2 which contains all the independent variables and has R square of 0.581 and adjusted R square of 0.556.

Table 19. Summary of Model 9

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
9	0.727	0.529	0.525	196.944

Worth is still significant at 1%. So, $H6_0$ is rejected meaning that worth of national team players has a positive impact on national team performance. Indeed, in all of the models worth of national team players is robust to changes since it is significant all the time even at 0.1%. This is actually what this study searches for, namely a factor which is valid all the time and in all the cases independent of the scope or data set chosen. This factor per se leads to better results than generally accepted factors such as wealth, population, geography etc. as it can be seen by

comparing Model 1, which has R square of 0.331 and adjusted R square of 0.307, and Model 9. Details of Model 9 can be found in Appendix K.

Table 20. Coefficients of Model 9

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
9	(Constant)	668.394	29.041		23.016	0.000
	Worth	3.024	0.240	0.727	12.624	0.000

CHAPTER 5

LIMITATIONS AND FUTURE WORK

As Pain and Harwood (2007) also mention, soccer performance is multifaceted due to its dependency on a broad range of interacting factors that go beyond the traditional psychosocial and physical domains. This may lead to unexpected results. For instance, the effect of hosting differs from superior teams to inferior teams (Lago-Peñas & Lago-Ballesteros, 2011). Such surprising observations engender the analyses of lots of different factors that are seemingly unrelated to sporting performance. As an example, Leeds and Leeds (2009) show that colonist countries perform better than others.

However, going deeper into the details may lead to conflicting results. For instance, communism affects women's performance positively while it has a negative impact on men's soccer (Congdon-Hohman and Matheson, 2013). Similarly, Leeds and Leeds (2009) show that formerly communist countries have higher performances as opposed to Macmillan and Smith (2007), while currently communist ones have lower performances. Also, women's performance is affected by education and religion while they are not important in men's soccer (Congdon-Hohman and Matheson, 2013). Therefore, profound analyses complicate the matter further as conflicting results arise in which real factors may be overshadowed. This is the reason that causes this study not to take the trouble of analyzing every possible factor.

Furthermore, financial resources are important but how these resources are used is also crucial for creating successful athletes (De Bosscher et al., 2006) since young soccer players can be better developed with the wealth (Torgler, 2006). In the

interview, Şenes Erzik also suggested the investment on youth development for national team success (personal communication, May 22, 2018). However, statistical analysis of policies and sporting success is not easy since data are neither reliable nor quantifiable (De Bosscher et al., 2006). This is not limited to the use of wealth, it applies to use of population as well. Unfortunately, the relationship between policies and international sporting success will always have uncertainties (De Bosscher et al., 2006).

Likewise, the representation of geography is not very effective. Average annual temperature cannot reflect the variance of weather. This may lead to a situation in which a country with extremely high temperatures in summer months and extremely low temperatures in winter months can be even the most ideal country in the analyses. Therefore, another approach that uses variance in the temperatures can produce better results.

Moreover, although results show that foreigners in the league do not have any significant effect on national team performance, as Binder and Findlay (2012) also state, if there are limited opportunities for domestic players due to foreigners, national team will be affected later some time. However, it is not as simple as it sounds to reflect the possible future effect of foreign players in the league on national team performance.

Similarly, human factor cannot be easily implemented in the analyses. Therefore, effects of athletes and coaches on the success are mostly overlooked in the previous studies (De Bosscher et al., 2006). As Lago-Peñas and Lago-Ballesteros (2011) also suggest, future research should include team form into the study in the analysis of team performance considering Shafizadeh, Taylor, and Peñas (2013) that show the importance of performance consistency. This may be important since the

model suggested by this study still cannot explain the dramatic performance decrease of Spanish national team in 2014 FIFA World Cup after dominating the realm of soccer from 2008 to 2012. A team form variable can explain the performance difference in such cases as well.

The model proposed here can be tested with larger scopes and/or data sets by future works. For instance, context can be expanded to the whole world rather than Europe per se. Future works can test this model on women's national team performance as well. However, to the author's knowledge, worth of women soccer players are not estimated by a party. Yet, such data may become available in the future and this model can be used effectively at that time. The model presented here can also be easily converted to the international performance of nation's club teams. At last, this model can be applicable to other sports if there are related data available.

CHAPTER 6

CONCLUSION

In the analyses regarding the Olympic Games and national teams in soccer, it is found that there are some factors including wealth, population, and geography that have impacts on nation's performance. Also, soccer tradition which can be represented by being of Latin origin and /or having hosted soccer event is thought to have an effect. However, in a smaller context such as Europe, such models are not effective. They fail to explain the difference in performances of a nation in different years. Instead, they serve as general assessments of nations' soccer potentials. Therefore, models are not robust to changes in the scopes or data sets and hence literature is replete with lots of conflicting results. However, in this study, other possible variables such as foreigners in the league, worth of national team players and performance of club teams are also introduced to the field. It is found that a model which contains worth of national team players per se is significantly more effective than other models with lots of different independent variables including the generally accepted ones. So, this study may influence the future works of not only its field but also other sports.

APPENDIX A

LIST OF COUNTRIES AND AVERAGE ANNUAL TEMPERATURES

OF THEIR PROMINENT SOCCER CITIES

Country	City 1	Temperature 1	City 2	Temperature 2	Mean
England	London	11.7	Manchester	9.7	10.7
Spain	Madrid	14.6	Barcelona	15.5	15.1
Italy	Milan	11.4	Turin	11.3	11.3
Germany	Munich	7.8	Dortmund	9.9	8.8
France	Paris	12.0	Monaco	15.6	13.8
Turkey	Istanbul	14.1			14.1
Portugal	Porto	14.5	Lisbon	17.0	15.7
Russia	Moscow	5.0			5.0
Ukraine	Kiev	7.7	Donetsk	8.0	7.9
Belgium	Bruges	9.9	Anderlecht	9.0	9.4
Czechia	Prague	8.0			8.0
Switzerland	Basel	10.1	Zurich	8.9	9.5
Austria	Vienna	10.2	Salzburg	9.0	9.6
Netherlands	Amsterdam	9.8	Eindhoven	7.6	8.7
Romania	Bucharest	10.6			10.6
Poland	Warsaw	7.8	Krakow	7.7	7.8
Croatia	Zagreb	11.3	Split	15.9	13.6
Sweden	Malmö	8.2	Gothenburg	7.8	8.0

APPENDIX B

SEASONS AND FIFA WORLD RANKINGS DATES

Season	FIFA World Rankings Date
16/17	10th of August, 2017
15/16	14th of July, 2016
14/15	6th of August, 2015
13/14	17th of July, 2014
12/13	8th of August, 2013
11/12	8th of August, 2012
10/11	27th of July, 2011
9/10	14th of July, 2010

APPENDIX C

ANALYSIS RESULTS OF MODEL 1

Table C1. Summary of Model 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.575	0.331	0.307	238.039

Table C2. ANOVA of Model 1

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
1	Regression	3869309.038	5	773861.808	13.657	.000
	Residual	7819464.288	138	56662.785		
	Total	11688773.326	143			

Table C3. Coefficients of Model 1

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
1	(Constant)	738.513	58.412		12.643	0.000
	Latin	352.004	69.002	0.388	5.101	0.000
	World Cup	59.178	66.657	0.101	0.888	0.376
	Wealth	1.342	0.495	0.299	2.708	0.008
	Population	0.819	0.309	0.259	2.654	0.009
	Temperature	-2.210	1.284	-0.155	-1.721	0.088

Table C4. Descriptive Statistics of Model 1

Descriptive Statistics			
Model 1	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Latin	0.11	0.32	144
World Cup	0.39	0.49	144
Wealth	100	63.63	144
Population	100	90.48	144
Temperature	20.75	20.00	144

APPENDIX D

ANALYSIS RESULTS OF MODEL 2

Table D1. Summary of Model 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	0.762	0.581	0.556	190.434

Table D2. ANOVA of Model 2

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
2	Regression	6792995.706	8	849124.463	23.414	.000
	Residual	4895777.620	135	36265.019		
	Total	11688773.326	143			

Table D3. Coefficients of Model 2

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
2	(Constant)	634.590	64.833		9.788	0.000
	Latin	25.427	69.782	0.028	0.364	0.716
	World Cup	-41.830	57.172	-0.072	-0.732	0.466
	Wealth	0.292	0.500	0.065	0.583	0.561
	Population	-0.553	0.333	-0.175	-1.663	0.099
	Temperature	1.959	1.169	0.137	1.676	0.096
	Foreigners	1.648	1.938	0.074	0.851	0.396
	Worth	3.811	0.446	0.917	8.538	0.000
	UEFA	-0.068	0.034	-0.164	-1.979	0.050

Table D4. Descriptive Statistics of Model 2

Descriptive Statistics			
Model 2	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Latin	0.11	0.32	144
World Cup	0.39	0.49	144
Wealth	100	63.63	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Foreigners	39.18%	12.76%	144
Worth	100	68.75	144
UEFA	1636.89	692.74	144

APPENDIX E

ANALYSIS RESULTS OF MODEL 3

Table E1. Summary of Model 3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	0.762	0.581	0.559	189.826

Table E2. ANOVA of Model 3

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
3	Regression	6788180.623	7	969740.089	26.912	.000
	Residual	4900592.703	136	36033.770		
	Total	11688773.326	143			

Table E3. Coefficients of Model 3

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
3	(Constant)	633.212	64.515		9.815	0.000
	World Cup	-40.979	56.942	-0.070	-0.720	0.473
	Wealth	0.224	0.463	0.050	0.483	0.630
	Population	-0.606	0.298	-0.192	-2.032	0.044
	Temperature	2.013	1.156	0.141	1.741	0.084
	Foreigners	1.775	1.900	0.079	0.934	0.352
	Worth	3.878	0.406	0.933	9.552	0.000
	UEFA	-0.066	0.034	-0.159	-1.952	0.053

Table E4. Descriptive Statistics of Model 3

Descriptive Statistics			
Model 3	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
World Cup	0.39	0.49	144
Wealth	100	63.63	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Foreigners	39.18%	12.76%	144
Worth	100	68.75	144
UEFA	1636.89	692.74	144

APPENDIX F

ANALYSIS RESULTS OF MODEL 4

Table F1. Summary of Model 4

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	0.762	0.580	0.562	189.294

Table F2. ANOVA of Model 4

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
4	Regression	6779762.710	6	1129960.452	31.535	.000
	Residual	4909010.617	137	35832.194		
	Total	11688773.326	143			

Table F3. Coefficients of Model 4

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
4	(Constant)	636.609	63.952		9.955	0.000
	World Cup	-21.721	40.565	-0.037	-0.535	0.593
	Population	-0.695	0.233	-0.220	-2.980	0.003
	Temperature	2.229	1.063	0.156	2.097	0.038
	Foreigners	2.288	1.572	0.102	1.455	0.148
	Worth	3.858	0.403	0.928	9.579	0.000
	UEFA	-0.067	0.033	-0.162	-2.004	0.047

Table F4. Descriptive Statistics of Model 4

Descriptive Statistics			
Model 4	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
World Cup	0.39	0.49	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Foreigners	39.18%	12.76%	144
Worth	100	68.75	144
UEFA	1636.89	692.74	144

APPENDIX G

ANALYSIS RESULTS OF MODEL 5

Table G1. Summary of Model 5

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
5	0.761	0.579	0.564	188.804

Table G2. ANOVA of Model 5

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
5	Regression	6769489.137	5	1353897.827	37.981	.000
	Residual	4919284.189	138	35646.987		
	Total	11688773.326	143			

Table G3. Coefficients of Model 5

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
5	(Constant)	640.216	63.432		10.093	0.000
	Population	-0.698	0.233	-0.221	-2.997	0.003
	Temperature	2.275	1.057	0.159	2.153	0.033
	Foreigners	2.122	1.538	0.095	1.380	0.170
	Worth	3.791	0.381	0.912	9.938	0.000
	UEFA	-0.067	0.033	-0.162	-2.001	0.047

Table G4. Descriptive Statistics of Model 5

Descriptive Statistics			
Model 5	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Foreigners	39.18%	12.76%	144
Worth	100	68.75	144
UEFA	1636.89	692.74	144

APPENDIX H

ANALYSIS RESULTS OF MODEL 6

Table H1. Summary of Model 6

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
6	0.757	0.573	0.561	189.418

Table H2. ANOVA of Model 6

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
6	Regression	6701569.075	4	1675392.269	46.695	.000
	Residual	4987204.251	139	35879.167		
	Total	11688773.326	143			

Table H3. Coefficients of Model 6

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
6	(Constant)	695.527	49.332		14.099	0.000
	Population	-0.672	0.233	-0.213	-2.887	0.005
	Temperature	2.225	1.059	0.156	2.100	0.038
	Worth	3.964	0.361	0.953	10.972	0.000
	UEFA	-0.061	0.033	-0.148	-1.844	0.067

Table H4. Descriptive Statistics of Model 6

Descriptive Statistics			
Model 6	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Worth	100	68.75	144
UEFA	1636.89	692.74	144

APPENDIX I

ANALYSIS RESULTS OF MODEL 7

Table I1. Coefficients of Model 7

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
7	0.750	0.563	0.554	191.034

Table I2. ANOVA of Model 7

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
7	Regression	6579590.869	3	2193196.956	60.097	.000
	Residual	5109182.457	140	36494.160		
	Total	11688773.326	143			

Table I3. Coefficients of Model 7

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
7	(Constant)	640.012	39.412		16.239	0.000
	Population	-0.757	0.230	-0.239	-3.289	0.001
	Temperature	2.360	1.066	0.165	2.214	0.028
	Worth	3.574	0.296	0.860	12.093	0.000

Table I4. Descriptive Statistics of Model 7

Descriptive Statistics			
Model 7	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Population	100	90.48	144
Temperature	20.75	20.00	144
Worth	100	68.75	144

APPENDIX J

ANALYSIS RESULTS OF MODEL 8

Table J1. Summary of Model 8

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
8	0.740	0.548	0.541	193.661

Table J2. ANOVA of Model 8

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
8	Regression	6400632.746	2	3200316.373	85.331	.000
	Residual	5288140.580	141	37504.543		
	Total	11688773.326	143			

Table J3. Coefficients of Model 8

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
8	(Constant)	695.809	30.722		22.648	0.000
	Population	-0.454	0.188	-0.144	-2.420	0.017
	Worth	3.204	0.247	0.770	12.970	0.000

Table J4. Descriptive Statistics of Model 8

Descriptive Statistics			
Model 8	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Population	100	90.48	144
Worth	100	68.75	144

APPENDIX K

ANALYSIS RESULTS OF MODEL 9

Table K1. Summary of Model 9

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
9	0.727	0.529	0.525	196.944

Table K2. ANOVA of Model 9

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
9	Regression	6181040.013	1	6181040.013	159.359	.000
	Residual	5507733.313	142	38786.854		
	Total	11688773.326	143			

Table K3. Coefficients of Model 9

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	p
9	(Constant)	668.394	29.041		23.016	0.000
	Worth	3.024	0.240	0.727	12.624	0.000

Table K4. Descriptive Statistics of Model 8

Descriptive Statistics			
Model 9	Mean	Std. Deviation	N
FIFA	970.84	285.90	144
Worth	100	68.75	144

REFERENCES

Alvarez, J., Forrest, D., Sanz. I, & Tena, J. D. (2009*). Impact of importing foreign talent on performance levels of local co-workers* (Working Paper CRENoS 200914). Retrieved from https://ideas.repec.org/p/cns/cnscwp/200914.html

Andersson, P., Edman, J., & Ekman, M. (2005). Predicting the World Cup 2002 in soccer: Performance and confidence of experts and non-experts. *International Journal of Forecasting, 21*(3), 565–576. https://doi.org/10.1016/j.ijforecast.2005.03.004

Baur, D. G., & Lehmann, S. (2008). *Does the mobility of football players influence the success of the national team?* (IIIS Discussion Paper No. 217). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=980936 https://doi.org/10.2139/ssrn.980936

Ben-Porat, A. (2002). The political economy of soccer: The importation of foreign soccer players to the Israeli league. *Soccer & Society, 3*(1), 54–68. https://doi.org/10.1080/714004872

Berlinschi, R., Schokkaert, J., & Swinnen, J. (2013). When drains and gains coincide: Migration and international football performance. *Labour Economics, 21*, 1–14. https://doi.org/10.1016/j.labeco.2012.12.006

Bernard, A. B., & Busse, M. R. (2004). Who wins the Olympic games: Economic resources and medal totals. *Review of Economics and Statistics, 86*(1), 413–417. https://doi.org/10.1162/003465304774201824

Berument, M. H., Ceylan, N. B., & Ogut-Eker, G. (2009). Soccer, stock returns and fanaticism: Evidence from Turkey. *Social Science Journal, 46*(3), 594–600. https://doi.org/10.1016/j.soscij.2009.06.001

Binder, J. J., & Findlay, M. (2012). The effects of the Bosman ruling on national and club teams in Europe. *Journal of Sports Economics, 13*(2), 107–129. https://doi.org/10.1177/1527002511400278

Boyle, G., & Walter, B. (2003). Reflected glory and failure: International sporting success and the stock market. *Applied Financial Economics, 13*(3), 225–235. https://doi.org/10.1080/09603100210148230

Brouwers, J., Sotiriadou, P., & De Bosscher, V. (2015). Sport-specific policies and factors that influence international success: The case of tennis. *Sport Management Review, 18*(3), 343–358. https://doi.org/10.1016/j.smr.2014.10.003

Brownstone, J. (2010). *The Bosman ruling: Impact of player mobility on FIFA rankings* (Bachelor's thesis). Haverford College, Cambridge, MA.

Carron, A. V., Bray, S. R., & Eys, M. A. (2002). Team cohesion and team success in sport. *Journal of Sports Sciences, 20*(2), 119–126. https://doi.org/10.1080/026404102317200828

Clemente, F. M., Martins, F. M. L., Kalamaras, D., Wong, P. D., & Mendes, R. S. (2015). General network analysis of national soccer teams in FIFA World Cup 2014. *International Journal of Performance Analysis in Sport, 15*(1), 80–96. https://doi.org/10.1080/24748668.2015.11868778

Coates, D., Frick, B., & Jewell, T. (2016). Superstar salaries and soccer success: The impact of designated players in major league soccer. *Journal of Sports Economics, 17*(7), 716–735. https://doi.org/10.1177/1527002514547297

Congdon-Hohman, J., & Matheson, V. (2013). International women's soccer and gender inequality: Revisited. In E. M. Leeds, & M. A. Leeds (Eds.), *Handbook on the economics of women in sports* (pp. 345-365). Cheltenham, UK: Edward Elgar Publishing. https://doi.org/10.4337/9781849809399.00026

Croci, O. (2001). *Taking the field: The EC and the governance of European football*. Paper presented at the 7th ECSA-USA International Conference, Madison, Wisconsin.

De Bosscher, V., De Knop, P., Van Bottenburg, M., & Shibli, S. (2006). A conceptual framework for analysing sports policy factors leading to international sporting success. *European Sport Management Quarterly, 6*(2), 185–215. https://doi.org/10.1080/16184740600955087

De Bosscher, V., De Knop, P., Van Bottenburg, M., Shibli, S., & Bingham, J. (2009). Explaining international sporting success: An international comparison of elite sport systems and policies in six countries. *Sport Management Review, 12*(3), 113–136. https://doi.org/10.1016/j.smr.2009.01.001

Dyte, D., & Clarke, S. R. (2000). A rating based Poisson model for World Cup soccer simulation. *Journal of the Operational Research Society, 51*(8), 993–998. https://doi.org/10.1057/palgrave.jors.2600997

Elliott, R., & Maguire, J. (2008). Thinking outside of the box: Exploring a conceptual synthesis for research in the area of athletic labor migration. *Sociology of Sport Journal, 25*, 482–497. https://doi.org/10.1123/ssj.25.4.482

Elliott, R., & Weedon, G. (2011). Foreign players in the English premier academy league: "Feet-drain" or "feet-exchange"? *International Review for the Sociology of Sport, 46*(1), 61–75. https://doi.org/10.1177/1012690210378268

Flores, R., Forrest, D., & Tena, J. D. (2010). Impact on competitive balance from allowing foreign players in a sports league: Evidence from European soccer. *Kyklos, 63*(4), 546–557. https://doi.org/10.1111/j.1467-6435.2010.00487.x

Franck, E., & Nüesch, S. (2011). The effect of wage dispersion on team outcome and the way team outcome is produced. *Applied Economics, 43*(23), 3037–3049. https://doi.org/10.1080/00036840903427224

Frick, B. (2007). The football players' labor market: Empirical evidence from the major European leagues. *Scottish Journal of Political Economy, 54*(3), 422–446. https://doi.org/10.1111/j.1467-9485.2007.00423.x

Frick, B. (2009). Globalization and factor mobility: The impact of the "Bosman-Ruling" on player migration in professional soccer. *Journal of Sports Economics, 10*(1), 88–106. https://doi.org/10.1177/1527002508327399

Groll, A., Schauberger, G., & Tutz, G. (2015). Prediction of major international soccer tournaments based on team-specific regularized Poisson regression: An application to the FIFA World Cup 2014. *Journal of Quantitative Analysis in Sports, 11*(2), 97–115. https://doi.org/10.1515/jqas-2014-0051

Grund, T. U. (2012). Network structure and team performance: The case of English Premier League soccer teams. *Social Networks, 34*(4), 682–690. https://doi.org/10.1016/j.socnet.2012.08.004

Halicioglu, F. (2006). The impacts of football point systems on the competitive balance: Evidence from some European football leagues. *Rivista di Diritto ed Economia dello Sport, 2*(2), 67–76.

Helsen, W. F., Starkes, J. L., & Van Winckel, J. (1998). The influence of relative age on success and dropout in male soccer players. *American Journal of Human Biology, 10*, 791–798. https://doi.org/10.1002/(SICI)1520-6300(1998)10:6<791::AID-AJHB10>3.0.CO;2-1

Helsen, W. F., Starkes, J. L., & Van Winckel, J. (2000). Effect of a change in selection year on success in male soccer players. *American Journal of Human Biology, 12*(6), 729–735. https://doi.org/10.1002/1520-6300(200011/12)12:6<729::AID-AJHB2>3.0.CO;2-7

Hoffmann, R., Lee, C. G., & Ramasamy, B. (2002a). Public policy and Olympic success. *Applied Economics Letters, 9*(8), 545–548. https://doi.org/10.1080/13504850110102784

Hoffmann, R., Lee, C. G., & Ramasamy, B. (2002b). The socio-economic determinants of international soccer performance. *Journal of Applied Economics, 5*(2), 253–272.

Hoffmann, R., Lee, C. G., Matheson, V., & Ramasamy, B. (2006). International women's football and gender inequality. *Applied Economics Letters, 13*(15), 999–1001. https://doi.org/10.1080/13504850500425774

Houston, R. G., & Wilson, D. P. (2002). Income, leisure and proficiency: An economic study of football performance. *Applied Economics Letters, 9*(14), 939–943. https://doi.org/10.1080/13504850210140150

Johnson, D. K. N., & Ali, A. (2000). *Coming to play or coming to win: Participation and success at the Olympic Games* (Wellesley College Dept. of Economics Working Paper No. 2000-10). Retrieved from SSRN: https://ssrn.com/abstract=242818 http://dx.doi.org/10.2139/ssrn.242818

Karaca, O. (2008). *The impact of foreign players on international football performance* (MPRA Paper 11064). Retrieved from https://ideas.repec.org/p/pra/mprapa/11064.html.

Kavetsos, G., & Szymanski, S. (2010). National well-being and international sports events. *Journal of Economic Psychology, 31*(2), 158–171. https://doi.org/10.1016/j.joep.2009.11.005

Lago-Ballesteros, J., & Lago-Peñas, C. (2010). Performance in team sports: Identifying the keys to success in soccer. *Journal of Human Kinetics, 25*(1), 85–91. https://doi.org/10.2478/v10078-010-0035-0

Lago-Peñas C., & Lago-Ballesteros, J. (2011). Game location and team quality effects on performance profiles in professional soccer. *Journal of Sports Science & Medicine, 10*(3), 465–471.

Leeds, M. A., & Leeds, E. M. (2009). International soccer success and national institutions. *Journal of Sports Economics, 10*(4), 369–390. https://doi.org/10.1177/1527002508329864

Lloyd's. (2014). *FIFA world cup: How much are those legs worth?* Retrieved from https://www.lloyds.com/news-and-risk-insight/news/market-news/industry-news-2014/fifa-world-cup-how-much-are-those-leg-worth

Macmillan, P., & Smith, I. (2007). Explaining international soccer rankings. *Journal of Sports Economics, 8*(2), 202–213. https://doi.org/10.1177/1527002505279344

Madichie, N. (2009). Management implications of foreign players in the English Premiership League football. *Management Decision, 47*(1), 24–50. https://doi.org/10.1108/00251740910929687

Magee, J., & Sugden, J. (2002). "The world at their feet": Professional football and international labor migration. *Journal of Sport & Social Issues, 26*(4), 421–437. https://doi.org/10.1177/0193732502238257

Maguire, J. (1996). Blade runners: Canadian migrants, ice hockey, and the global sports process. *Journal of Sport and Social Issues, 20*(3), 335–360. https://doi.org/10.1177/019372396020003007

Maguire, J., & Pearton, R. (2000a). Global sport and the migration patterns of France '98 World Cup finals players: Some preliminary observations. *Soccer & Society, 1*(1), 175–189. https://doi.org/10.1080/14660970008721257

Maguire, J., & Pearton, R. (2000b). The impact of elite labour migration on the identification, selection and development of European soccer players. *Journal of Sports Sciences, 18*(9), 759–769. https://doi.org/10.1080/02640410050120131

Marcén, M. (2014). *The impact of the Bosman ruling on the market for native soccer players* (MPRA Paper). Retrieved from https://mpra.ub.uni-muenchen.de/61013/

Matheson, V. (2004). *European football: A survey of the literature*. Retrieved from https://www.researchgate.net/publication/241558007_EUROPEAN_FOOTBALL_A_SURVEY_OF_THE_LITERATURE

McHale, I., & Scarf, P. (2011). Modelling the dependence of goals scored by opposing teams in international soccer matches. *Statistical Modelling, 11*(3), 219–236. https://doi.org/10.1177/1471082X1001100303

Milanovic, B. (2005). Globalization and goals: Does soccer show the way? *Review of International Political Economy, 12*(5), 829–850. https://doi.org/10.1080/09692290500339818

Olin, K. (1984). Attitudes toward professional foreign players in Finnish amateur basketball. *International Review for the Sociology of Sport, 19*(3–4), 273–282. https://doi.org/10.1177/101269028401900306

Pain, M. A., & Harwood, C. (2007). The performance environment of the England youth soccer teams. *Journal of Sports Sciences, 25*(12), 1307–1324. https://doi.org/10.1080/02640410601059622

Parrish, R., & Mcardle, D. (2004). The European Union's influence upon professional athletes' freedom of movement. *Sport in Society, 7*(3), 403–419. https://doi.org/10.1080/1743043042000291712

Pawlowski, T., Downward, P., & Rasciute, S. (2014). Does national pride from international sporting success contribute to well-being? An international investigation. *Sport Management Review, 17*(2), 121–132. https://doi.org/10.1016/j.smr.2013.06.007

Poli, R. (2006). Africans' status in the European football players' labour market. *Soccer & Society, 7*(2–3), 278–291. https://doi.org/10.1080/14660970600615369

Poli, R. (2008). *Explaining the "muscle drain" of African football players: World-system theory and beyond* (Working Paper No. 01). Retrieved from http://ww.etc-graz.at/typo3/fileadmin/user_upload/ETC-Hauptseite/Programm/Aktuelles/the_human_trade_of_african_football_players.pdf

Richardson, D., Littlewood, M., Nesti, M., & Benstead, L. (2012). An examination of the migratory transition of elite young European soccer players to the English Premier league. *Journal of Sports Sciences, 30*(15), 1605–1618. https://doi.org/10.1080/02640414.2012.733017

Simmons, R. (1997). Implications of the Bosman ruling for football transfer markets. *Economic Affairs, 17*(3), 13–18. https://doi.org/10.1111/1468-0270.00036

Schmidt, M. B., & Berri, D. J. (2003). On the evolution of competitive balance: The impact of an increasing global search. *Economic Inquiry, 41*(4), 692–704. https://doi.org/10.1093/ei/cbg037

Shafizadeh, M., Taylor, M., & Peñas, C. L. (2013). Performance consistency of international soccer Teams in Euro 2012: A time series analysis. *Journal of Human Kinetics, 38*(1), 213–226. https://doi.org/10.2478/hukin-2013-0061

Solberg, H. A., & Haugen, K. K. (2008). The international trade of players in European club football: Consequences for national teams. *International Journal of Sports Marketing and Sponsorship, 10*(1), 79–93. https://doi.org/10.1108/IJSMS-10-01-2008-B009

Stefani, R. T. (1997). Survey of the major world sports rating systems. *Journal of Applied Statistics, 24*(6), 635–646. https://doi.org/10.1080/02664769723387

Tainsky, S., & Winfree, J. A. (2010). Discrimination and demand: The effect of international players on attendance in major league baseball. *Social Science Quarterly, 91*(1), 117–128. https://doi.org/10.1111/j.1540-6237.2010.00684.x

Taylor, G. (2007). *Meltdown: The nationality of premier league players and the future of English football*. London, UK: Professional Footballers' Association

Torgler, B. (2004). The economics of the FIFA football world cup. *Kyklos, 57*(2), 287–300. https://doi.org/10.1111/j.0023-5962.2004.00255.x

Torgler, B. (2006). 'Historical excellence' in soccer world cup tournaments: Empirical evidence with data from 1930 to 2002. *Rivista di Diritto ed Economia dello Sport, 2*(1), 101–117.

Torgler, B. (2008). The determinants of women's international soccer performances. *International Journal of Sport Management and Marketing*, *3*(4), 305. https://doi.org/10.1504/IJSMM.2008.017208

Tziner, A., Nicola, N., & Rizac, A. (2003). Relation between social cohesion and team performance in soccer teams. *Perceptual and Motor Skills, 96*(1), 145–148.