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International Women's Soccer and Gender Inequality: Revisited

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Abstract

A number of authors have identified the determinants of success in international sporting competitions such as the Olympics and soccer's World Cup. This paper serves to update past work on international women's soccer performance given the rapid development of the game over the past decade. We compare the determinants of men's international soccer team performance with that of their female counterparts and find that a different set of variables are important in explaining success for the two genders. While economic and demographic influences hold for both, the impacts of specific political and cultural factors diverge. In particular, Latin heritage predicts men's success but not women's, Muslim religious affiliation reduces women's success but not men's, and communist political systems tend to improve women's performance but reduce men's performance. Several measures of gender equality improve soccer performance for both men's and women's soccer suggesting these indicators of gender equality reflect overall levels of development while other measures of equality, particularly those related to women's access to education, improve women's soccer performance without enhancing men's performance.

JEL Classification Codes: I00, J16, L83, Z13

Keywords: soccer, football, gender inequality, FIFA World Ranking

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Introduction

The study of sport has established itself as a widely accepted area of inquiry within the discipline of economics. The vast majority of the research within the field of sports economics has dealt with microeconomic issues at the industry and firm-level, examining factors such as the demand for sports, market structure, the sports labor market, competitive balance, and the relationship between club costs and revenues. By comparison, macroeconomic research involving sports is still in its infancy. Even studies examining the public finance aspects of the sports industry tend towards the microeconomic side. While macroeconomic variables such as personal income, gross product, and employment are often analyzed in works examining the economic impact of sports teams, stadiums, and events, typically these variables are studied at a local or regional level rather than economy-wide. In addition, most work related to sports economics has focused on men's sports, largely due to the relative popularity of men's leagues and teams in comparison to their female counterparts. This paper serves to fill this gap in the sports economics literature by examining both of these relatively under-researched areas: the macroeconomics of sport and women's sports in general.

Most work in the area of the macroeconomics of sports reports cross-country differences in sporting achievement as well as in the social significance and commercial status of sport. There are several reasons to study the effect of economic variables on national sporting success beyond simple economic curiosity or as an exercise in forecasting. First, there may be important links between a nation's sporting performance and the economic value of its sports industry both domestically and in terms of foreign trade. Second, since the factors that determine this performance may be largely economic, it may be possible to use sports success as a proxy for

overall economic development. National wealth may generate sporting success through superior sports infrastructure and athlete earnings. In addition, greater national income may promote individual sports participation by making leisure time more available. When analyzing women's sports, international success may also reflect the level of gender equality in a country.

A number of studies have investigated national success in the Olympic Games (Johnson and Ali, 2000; Hoffmann et al., 2002a, 2004; Bernard and Busse, 2004) as well as in international soccer (Hoffmann et al., 2002b; Houston and Wilson, 2002; Leeds and Leeds, 2009). Hoffmann et al. (2006) and Torgler (2008) specifically examine the economic factors that predict success in international women's soccer (or women's football as it is referred to in many parts of the world). As in Hoffmann et al. (2006), this paper studies women's international soccer and seeks to ascertain: "(a) whether the same factors explain the performance of both men's and women's national teams; and if not, (b) which alternative variables can help explain female international success." (Hoffmann, et al., 2006, p. 999) In addition, this paper seeks to clarify and extend the results of previous work by taking advantage of the development of the international women's game.

Women's Soccer

Soccer is often considered a male-dominated sport in terms of both participation and support. This is partly due to the masculine imagine of sports generally and soccer in particular. Female participation, however, has existed nearly as long as soccer itself as noted by Murray (1996), Williams (2002) and FIFA (2003). Although the English Soccer Association (FA) banned women from playing at all grounds it controlled until 1970, women's soccer leagues were

formed in Italy and Germany in the 1930s, and the first women's national team was created in 1950 by Italy. In the subsequent 30 years, numerous countries, particularly in northern Europe, followed the Italian lead by forming their own amateur domestic leagues and international teams. Formal international competitions were begun in Europe in the early 1980s. In 1991, FIFA held the first Women's World Cup (nearly 60 years after the first Men's World Cup), followed by the first Olympic competition in 1996.

While the success of women's soccer cannot be said to rival that of the men's game worldwide, the game is not without its fans. The gold medal match of the 1996 Olympics was played in front of a sold-out crowd of 75,000 in Athens, Georgia. The 1999 Women's World Cup drew 658,000 fans to 17 matches in the United States. The average attendance of over 38,000 per game compared favorably to the attendance in the men's English Premier League which averaged just over 30,000 fans per game during the same year. The success of the United States' national team in the 1999 Women's World Cup propelled stars such as Mia Hamm and Brandi Chastain to national prominence, and the American victory in the championship match was watched by a live audience of 92,000 at the Rose Bowl, the largest crowd ever to witness a women's sporting event. The television audience in the United States for the final exceeded 40 million viewers, the highest ratings for any soccer match ever shown on U.S. television and a number comparable to the television ratings for a typical World Series baseball game or National Basketball Association Finals game.

The 2011 Women's World Cup hosted by Germany was similarly successful, averaging over 26,000 fans per game and generating strong television ratings. The final between the U.S. and Japan was watched by 14.1 million and 10.1 million viewers in the two countries,

respectively, and matches involving the host country averaged roughly 16 million viewers in Germany, nearly one-quarter of the country's population.

The popular success of the 1999 Women's World Cup led to the formation in 2001 of the Women's United Soccer Association (WUSA) in the U.S., the first fully professional women's soccer league in the world. The WUSA drew 8,300 fans per game in their inaugural season. Though this number is substantially lower than men's attendances in the world's major leagues, it is in the neighborhood of many teams in the smaller soccer playing nations or the average team in the lower divisions of larger countries. For example, 48 of the 72 teams in England's 1st, 2nd, and 3rd Divisions (representing, quirkily, the 2nd, 3rd and 4th highest divisions of play) averaged less than 8,300 fans per match in 1999-2000.

The WUSA collapsed after only three years in September 2003 (ironically during the U.S.-hosted World Cup tournament) due to "a shortfall in sponsorship revenue and insufficient revenue from other core areas of the business" according to WUSA chairman John Hendricks (BBC, 2003). Other professional women's teams have followed in the footsteps of WUSA, however. The Union of Europe Football Associations (UEFA), the governing body for soccer in Europe, has sponsored a continent-wide women's club championship since 2000-01 and in 2009-10 rebranded the competition as the UEFA Women's Champions League which attracted 54 clubs from 46 nations in 2011-12. The clubs participating in this event range from fully amateur to professional. Women's Professional Soccer (WPS) resurrected professional women's soccer in the United States in 2009 and has attracted average attendances in the range of 3,500 to 4,500 per game with peak matches seeing as many as 15,000 fans.

Still, women's soccer has so far remained largely an amateur sport. According to FIFA,

“soccer for young girls in many parts of the world is often considered [...] a solely recreational activity [owing to] cultural barriers, social mores and the lack of any financial hope for a future in the game” (FIFA, 2003). As a result, one may expect different factors to drive international success in the women’s game compared with men’s international soccer.

FIFA Rankings

FIFA regularly publishes a ranking of men’s and women’s national soccer teams. The men’s rankings have been published since 1993 and are updated monthly while the women’s rankings have been published since 2003 and are updated roughly quarterly. For both ranking systems, FIFA calculates a points total for each country on the basis of international senior games, weighted by match result, home advantage, importance of the match, ranking of the opponent, and time since the match. Full details of the ranking procedure are available from the FIFA website. As of July 2011, the men’s ranking includes 206 national teams that have played a sufficient number of games recently enough to earn a ranking. These national teams typically represent recognized independent countries but also include a handful of quasi-independent territories such as Guam and the Faroe Islands, and for historical reasons, the four countries comprising the United Kingdom: England, Scotland, Wales, and Northern Ireland. On the women’s side, 129 countries are ranked and another 43 countries have provisional ranks either because they have played fewer than 5 full international matches or because the team has been inactive for more than 18 months. The 172 countries with an active or provisional points total in the women’s ranking represent a substantial increase in the number of countries with a ranked women’s program since 2003. The original 2003 list ranked just over 100 teams and Hoffmann et

al. (2006) study of women's soccer only analyzed 88 countries.

The limited number of countries examined is the greatest limitation of the earlier studies. Hoffmann et al. dealt with missing countries by excluding them from their econometric analysis. Unfortunately, this decision results in the omission of important information. Back in 2003, socio-economic factors played a significant role in not only how highly ranked the existing teams were but also played a crucial role in determining whether or not a country fielded a team in the first place. For example, even a cursory look at 2003 data revealed that few predominately Muslim countries had a women's soccer program in the initial rankings; however, since the original study only examined existing programs, it was unable to comment on the role that religion may have played in a country's strength in women's international soccer. By contrast, the development of the international women's game now allows for many more countries to be examined, and this paper takes a further step by assigning countries without a women's program a women's point value equal to 500, a convenient round figure that is just below the minimum points value for any of the currently ranked women's teams

Table 1 shows the point totals of the top 20 women's teams as of July 2011 as well as the FIFA ranks of their corresponding men's national teams and their placings in the four women's Olympics and six Women's World Cup tournaments that have been held to date. The table attests that there are three apparent women's soccer hubs in the world, North America (USA and Canada), Northern European (Norway, Sweden, Denmark, Germany, England, Netherlands, Iceland and Finland) and East Asia (China, Japan and North Korea). Conversely, with the exception of Brazil, the traditional Latin American powerhouses on the men's side do not appear near the top of the women's rankings. Additionally, predominately Islamic nations participate in

international women's soccer at a much lower rate than other countries as only 69 percent of Islamic nations with a men's team also have a women's team compared to 87 percent of non-Islamic nations. These observations point to clear geo-political and/or geo-economic forces behind women's soccer.

Figure 1 shows the relative performance of women's teams compared with their male counterparts. For clarity, only countries with ranked women's and men's programs are displayed. Overall soccer strength decreases as one moves away from the origin. Nations in the South-West quadrant have above-average international soccer performance for both men's and women's teams and typically include most developed countries and those with large population sizes. Conversely, smaller and developing nations with below-par men's and women's soccer performance are located in the North-East quadrant. Teams tend to be loosely clustered along the 45-degree line indicating that success in the men's game tends to also predict success in the women's game. The 45-degree line serves as a measure of relative quality of men's versus women's soccer in a country. Countries to the right of the diagonal exhibit stronger performance in women's soccer than men's, and this group includes countries such as the United States, Canada, and China. To the left of the diagonal are countries with relatively stronger men's teams, and the group includes notable teams such as Portugal, Uruguay, Côte d'Ivoire, Argentina, and Croatia (country code "HRV").

Empirical Model and Results

We model success by examining the FIFA points attained by both women and men (y_i) using the following OLS regression model:

$$y_i = \beta_0 + \beta X_i + e_i \quad (1)$$

In equation (1), X_i represents a vector of independent variables for each country i. These explanatory variables have been selected based on past literature and to explore new explanations for success for both men's and women's sides. We start by defining X_i as purchasing power parity GDP per capita (in thousands of dollars), the population of the country (in millions), and indicators for whether a country has a majority of citizens identifying themselves as of the Islamic faith, whether a country is ruled by a communist regime, and whether the country has a Latin heritage. GDP per capita is a proxy for a country's level of economic development which is associated with the availability of better sporting infrastructure as well as leisure time for athletes. In addition, the personal financial incentives for sports participation are likely to be greater in more affluent nations. Population is included since countries with large populations have a larger talent pool from which to draw players. Communist regime, which is included based on the findings of the prior literature, is defined as a country controlled by single party rule where the political party is self-identified as communist. In 2011, this group includes China, North Korea, Cuba, Vietnam, and Laos. Latin heritage will be identified by whether the country is majority Spanish, Portuguese, or Italian speaking. Latin cultural origin captures the special status of soccer in these countries which is rooted in the particular conceptions of gender roles and the significance of masculinity in these societies (Bar-On, 1997; Archetti, 1999). Based on earlier findings by Hoffman et al. (2002b, 2006), we also include the squared value of the deviation of a country's average Celsius temperature (as computed by Mitchell et al. (2003)) from the "ideal" temperature of 14 degrees Celsius. Given the fact that soccer is generally played outside, climates that are either too hot or too cold will limit the ability of players to participate in

the game. Therefore, it is hypothesized that soccer success will fall as the deviation from the ideal temperature rises. The e_i term represents unobserved error term for each country and is assumed to be distributed with a mean of zero and finite variance.

Additionally, it is reasonable to presume that some countries simply have a greater affinity for soccer for purely cultural reasons that will lead to success for both the men's and women's teams. It is possible to use FIFA points of the other gender's soccer team to control for this affinity. Of course, given the hypothesis that socio-economic factors drive success in men's and women's international soccer, the FIFA points of the other gender's soccer team is presumably high correlated with the other variables in the equation and the inclusion of opposite gender FIFA points is likely to obscure or diminish the effects of the other variables. For this reason, the relevant equation for each model in this paper is estimated separately including and omitting the opposite gender's FIFA points in the regression.

Columns 1 and 2 of Table 2 present the results from equation (1) when the level of focus on soccer in each country is not controlled for with the performance of the other gender's team. As found in previous work, per capita income has a statistically significant positive effect on FIFA points for both men and women while Latin heritage is associated with significantly higher points for men but not women. While Hoffman et al. (2006) found deviations from the ideal temperature had a statistically significant negative effect only on men when examining 2003 rankings, we find that temperature had a significantly negative effect on both genders' points. Communism does not have a statistically significant impact on men's or women's points although the relatively large coefficients displaying opposite signs for men's and women's teams suggests some level of difference will be exposed in subsequent modeling. The inclusion of an

indicator for strong Muslim affiliation in a country proves to be an important addition to the literature as this indicator has a significantly negative association with the number of points a country's women's team earns while having no effect on the men's team. This result is most likely rooted in the cultural differences in regard to the freedoms of women in many Islamic countries.

The results change slightly when the cultural affinity of a country towards soccer is controlled for. The results in columns 3 and 4 of Table 2 show that the success of a country's men's team strongly predicts success of a women's team and vice versa. While the significance and sign of most independent variables have not changed, the inclusion of a country's general soccer success reduces the impact of per capita income below standard significance thresholds. Additionally, the role of communism is amplified and now has a significantly positive impact on women's soccer points and a negative impact for men's performance.

The communist results have a compelling explanation. The observed market in 2011 for men's soccer is much larger than that for women's soccer. The high wages offered to top male soccer players in free market economies provide strong incentives for men to develop their talent. Communist nations, on the other hand, do not traditionally offer such disparate rewards to top performers (in sports or other activities) limiting the incentive for potential male players to develop their skills. Women's soccer stars earn only a fraction of their male counterparts, and even top players have difficulty earning a living purely as a player. Under these conditions, where pure market forces do not provide strong incentives to develop female talent, communist nations may be better able to subsidize the development of the women's side of the sport. Communist advantages in excelling in non-revenue sports in the Olympics have been widely identified in the

existing literature (Johnson and Ali, 2000; Hoffmann et al., 2002a, 2004; Bernard and Busse, 2004).

It is interesting to note that the United States has been far and away the most successful nation in women's soccer, and its success on the women's side stands in stark contrast to its relatively modest success on the men's side. The U.S., however, is unique among industrialized nations in the level of its promotion of athletics in its public school system both at the secondary and the college and university levels. The connection between schooling and athletics essentially results in wholesale subsidization of sports in what is otherwise a strongly free market economy. Furthermore, Title IX of the Education Amendments of 1972 prohibited gender discrimination in federally funded educational programs. The provision of athletic opportunities for women has been among the most visible results of the Title IX legislation. In effect, the success of the United States is at least in part the result of the non-market provision of athletic opportunities, particularly in low-revenue sports such as women's soccer, through the educational system.

It is now worth looking beyond the baseline model to examine the role of women's cultural position in each country on soccer success. Sports sociologists have highlighted the male domination of soccer as an expression of masculinity (Giulianotti, 1999), which has hampered the development of women's sport (Williams, 2002). As a result, gender inequality as reflected in economic variables within a country should negatively impact women's soccer performance.

Hoffmann et al. (2006) included the ratio of women's to men's earnings in their original study concluding that countries with relatively equal earnings across genders tended to exhibit better performance in women's soccer. While current data on relative income shares is not

available, we examine a number of other potential measures of gender equality such as the ratio of women's to men's labor force participation rates (as suggested by Klein (2002)), percentage of women in parliament, and the United Nations Development Programme's (UNDP) composite Gender Inequality Index. In most cases the measures were correlated with improved success in the women's game, but interestingly they also were correlated with improved success in the men's game. For brevity, these results are not replicated here but are available from the authors upon request. One possible interpretation of these findings is that many measures of gender equality are more reflective of overall economic development rather than the relative status of men versus women in the economy. Not all measures of gender quality exhibit this tendency, however, and we examine some alternative measures more closely.

Specifically, we have modified equation (1) by including the ratio of female to male secondary enrollment rates (Enrollment_ratio) as reported by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics in 2009. A value of 100 would represent the case where the enrollment rate is equal for men and women. We believe that this ratio fairly captures the opportunities for women in a country and should be an important determinant of success for female athletes. Like most available measures of gender equality, data is not available for all countries. Countries with missing values tend to be small or underdeveloped nations such as Angola, Barbados, North Korea, Sri Lanka and Vietnam. We have included an indicator to identify countries that do not have a reported enrollment ratio and replaced that missing value with zero. By identifying and replacing the unreported values, we are able to continue to use the full sample of countries and expand our ability to compare results across specifications. Though unreported, the coefficient and significance of the new enrollment

ratio is not affected if we conduct the same OLS regression on only the subsample that reports a value for that variable.

The adjusted OLS model can be represented as:

$$y_i = \beta'_0 + \beta'_1 * \text{Enrollment_ratio}_i + \beta'_2 * \text{Missing}_i + \beta' * X_i + e_i \qquad (2)$$

The results when our measure of gender equality is included are presented in Table 3. The gender ratio of enrollment has significantly positive impact on women's success when men's points are not included and a strongly significant positive impact (at the one percent level) when those points are included. Countries that provide women with academic opportunities on par with those given to men tend to have more success in female sports than those countries that do not. The impact for men is starkly different. Though gender equality in education does not appear to significantly impact the success of men when our measure of taste for soccer is not included, it does have a highly significant and negative impact on men's success once women's points are controlled for. It would appear that the gender equality in a country increases the resources for a women's program at the expense of the men's program. Additionally, the inclusion of this gender equality measure has slightly improved the quality of fit of the OLS model as reflected by the higher R-squared values.

We might also expect that the level of education (as opposed to the relative opportunities afforded men and women) in a country may have an impact on the success for women's athletic teams. Specifically, education may be a complement to team athletics for women as the alternative to formal education may be home responsibilities. This may be different for males who may have more freedom outside of school to meet and play with others. To examine this question, we modify the OLS regression represented by equation 1 to include the gross

enrollment rates at all levels separately for young men (Male_rate) and women (Female_rate). We include both rates in each specification in order to capture both a country's investment in the gender of interest and its overall investment in education. The resulting OLS regression model can be represented by the following equation.

$$y_i = \beta''_0 + \beta''_1 * \text{Female_rate}_i + \beta''_2 * \text{Male_rate}_i + \beta''_3 * \text{Missing}_i + \beta'' * X_i + e_i \qquad (3)$$

As in equation (2), an indicator has been included for any country missing an enrollment value for either gender allowing us to keep our full complement of countries.

The separate inclusion of the academic enrollment rates of men and women show an interesting difference in their impact on the success of men's and women's soccer teams. The results in Table 4 show that women's team success is strongly related to their enrollment rate, but they are not significantly affected by the general level of education as measured by the enrollment rate of males. For men's teams, the education level of both genders is not significantly related to their success. These results suggest that education may be a key avenue under which unequal treatment of women may affect performance. Specifically, by looking at the impact of the two educational quality measures on the coefficient of the Islamic faith indicator, we see that the relative educational participation does not change the effect of customs related to Islamic practices but the level of education does. It would appear that both the unequal treatment of women in a society and the lack of interactions with other women outside of the home together hinder the development of a strong female national soccer team.

Conclusions

Sports success reflecting individual participation may be an indicator of a particular type of human development not reflected in standard economic measures such as GDP per capita. As Anand and Sen (1995) argue, "a great deal has been achieved [...] in shifting the focus of attention of the world community from such mechanical indicators of economic progress [...] to indicators that come closer to reflecting the well-being and freedoms actually enjoyed by populations". Non-material indices of economic development and individual well-being such as the United Nation's *Human Development Index* (HDI) combine traditional measures of productivity and income with quality of life indicators such as life expectancy, health, education and political freedom. It may be that sports success also reflects this type of welfare.

There are implications of this line of reasoning for the analysis of women's soccer. The results of the current paper suggest that men's national team sporting performance alone may not be a good indicator of human development in a country to the extent that women's sporting success is driven by a partially different set of factors. In Anand and Sen's (1995) words, a "simple arithmetic average of achievement [...] overlooks systematic and potentially large differences between distinct groups of people, in particular women and men." Indeed, in recognition of this very fact, in 2008 UNDP produced a modified form of their own HDI, dubbed the Gender Inequality Index, that combined the same types of measures, but adjusted for differences in the distribution of achievements between men and women. Similarly, a comparative look at women's sport may shed light on human development as well as the extent of gender inequalities in the countries under investigation. Women's soccer may therefore provide a useful indication of the ability of women to realize their potential in different societies.

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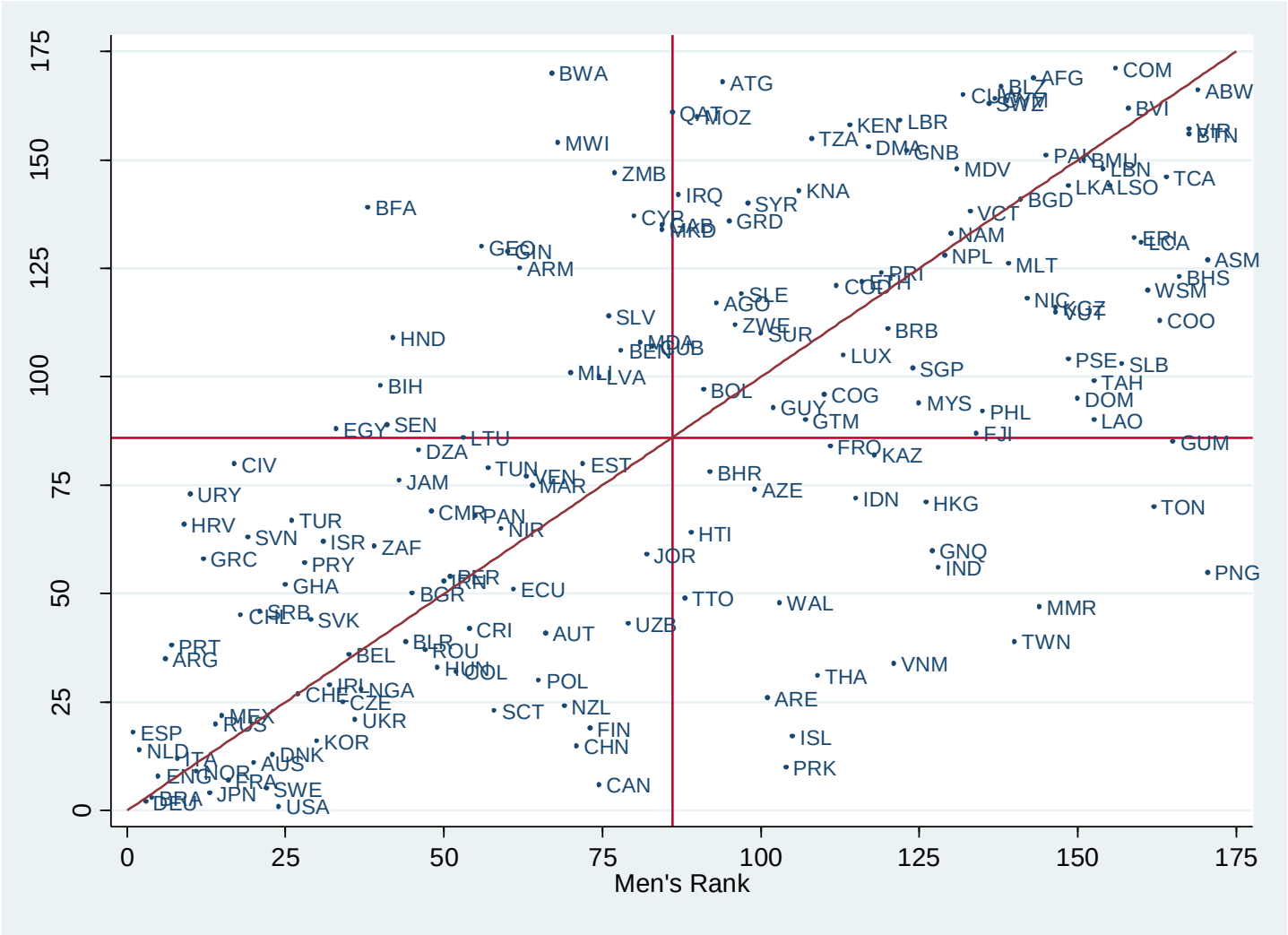
Table 1: The top twenty women's soccer teams

Country	FIFA Rank (Women's)	FIFA Points (Women's)	FIFA Rank (Men's)	1st	2nd	3rd	4th
USA	1	2162	30	5	2	3	0
Germany	2	2146	3	2	1	3	1
Brazil	3	2121	4	0	3	1	2
Japan	4	2101	16	1	1	0	1
Sweden	5	2085	19	0	0	2	1
England	6	1997	6	0	0	0	0
France	7	1981	15	0	0	0	1
Canada	8	1953	105	0	0	0	1
Australia	9	1946	23	0	0	0	0
Norway	10	1940	12	2	1	1	2
Italy	11	1934	8	0	0	0	0
North Korea	12	1927	115	0	0	0	0
Denmark	13	1888	21	0	0	0	0
Netherlands	14	1888	2	0	0	0	0
China	15	1870	73	0	2	0	1
South Korea	16	1851	28	0	0	0	0
Iceland	17	1848	121	0	0	0	0
Spain	18	1816	1	0	0	0	0
Finland	19	1811	75	0	0	0	0
Russia	20	1809	18	0	0	0	0

Notes: FIFA rankings based on the FIFA World Rankings in July 2011. Tournament results are from positions in the previous four Olympics and previous six World Cup tournaments.

Figure 1


Men's Rank
0
25
50
75
100
125
150
175
BWA
ATG
AFG
COM
ABW
QAT
MOZ
KEN
LBR
BVI
TZA
DMA
GNB
MWI
MDV
PAN
BMU
LBN
TCA
ZMB
IRQ
KNA
LKA
ALSO
BGD
BFA
SYR
CYR
GRD
VCT
NAM
GEO
GIN
ARM
NPL
MLT
ASM
BHS
WSM
SLE
AGO
NIC
SLV
ZWE
SUR
BRB
COO
HND
MDA
BEN
LUX
PSE
SLB
SGP
MLI
LVA
TAH
BIH
BOL
COG
MYS
DOM
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LAO
GTM
EGY
SEN
LTU
FJI
GUM
DZA
FRO
KAZ
CIV
TUN
EST
BHR
JAM
MAR
AZE
URY
IDN
HKG
TON
CMR
PAN
HRV
TUR
NIR
HTI
SVN
ISR
ZAF
GNQ
GRC
PRY
JOR
IND
PNG
GHA
ECU
BGR
TTO
WAL
MMR
SRB
SVK
UZB
CRI
AUT
TWN
PRT
ARG
BEL
ROU
VNM
THA
POL
IRL
NGA
CHE
CZE
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NZL
UKR
ESP
FIN
ISL
NLD
KOR
CHN
DNK
AUS
PRK
SWE
JPN
CAN
USA

Table 2: OLS regression results for base model

	1	2	3	4
	Women Points	Men Points	Women Points	Men Points
GDP/Cap.	3.69	2.56	1.7	0.96
	[0.010]***	[0.017]**	[0.149]	[0.278]
Communist	212.02	-204.92	370.75	-297.04
	[0.283]	[0.166]	[0.023]**	[0.015]**
Muslim	-195.02	-35.96	-167.16	48.78
	[0.009]***	[0.515]	[0.006]***	[0.288]
Latin	118.33	209.07	-43.62	157.66
	[0.178]	[0.002]***	[0.553]	[0.004]***
Population	0.66	0.23	0.48	-0.06
	[0.006]***	[0.197]	[0.013]**	[0.692]
Temperature	-1.05	-1.41	0.04	-0.95
	[0.023]**	[0.000]***	[0.912]	[0.001]***
Men's Points			0.77	
			[0.000]***	
Women's Points				0.43
				[0.000]***
Constant	1,229.20	460.64	872.39	-73.47
	[0.000]***	[0.000]***	[0.000]***	[0.272]
Observations	196	196	196	196
R-squared	0.166	0.178	0.446	0.455

p values in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3: OLS regression results including enrollment ratio

	1	2	3	4
	Women Points	Men Points	Women Points	Men Points
Enrollment_ratio	4.59	-1.4	5.69	-3.46
	[0.045]**	[0.415]	[0.002]***	[0.014]**
GDP/Cap.	2.47	2.84	0.23	1.73
	[0.107]	[0.014]**	[0.857]	[0.065]*
Communist	239.27	-178.12	379.93	-285.49
	[0.230]	[0.235]	[0.019]**	[0.019]**
Muslim	-174.42	-53.05	-132.52	25.22
	[0.021]**	[0.349]	[0.030]**	[0.586]
Latin	58.2	211.44	-108.78	185.32
	[0.527]	[0.003]***	[0.153]	[0.001]***
Population	0.63	0.21	0.46	-0.07
	[0.008]***	[0.243]	[0.015]**	[0.608]
Temperature	-0.86	-1.41	0.25	-1.02
	[0.064]*	[0.000]***	[0.520]	[0.000]***
Men's Points			0.79	
			[0.000]***	
Women's Points				0.45
				[0.000]***
Missing	373.9	-214.56	543.34	-382.34
	[0.112]	[0.225]	[0.005]***	[0.008]***
Constant	800.21	604.13	323.13	245.03
	[0.000]***	[0.000]***	[0.086]*	[0.084]*
Observations	196	196	196	196
R-squared	0.185	0.187	0.474	0.475
p values in brackets				

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: OLS regression results including men's and women's enrollment rates

	1 Women Points	2 Men Points	3 Women Points	4 Men Points
Female_rate	10.58	3.34	8.52	-0.82
	[0.013]**	[0.325]	[0.023]**	[0.785]
Male_rate	4.9	6.03	1.19	4.1
	[0.366]	[0.165]	[0.803]	[0.279]
GDP/Cap.	-0.43	0.4	-0.67	0.56
	[0.757]	[0.720]	[0.577]	[0.558]
Communist	188.03	-202.8	313.11	-276.74
	[0.279]	[0.144]	[0.041]**	[0.023]**
Muslim	-38.23	50.67	-69.48	65.7
	[0.572]	[0.349]	[0.241]	[0.165]
Latin	28.76	161.32	-70.74	150.01
	[0.711]	[0.010]***	[0.306]	[0.006]***
Population	0.72	0.24	0.57	-0.04
	[0.001]***	[0.142]	[0.002]***	[0.795]
Temperature	0.02	-0.72	0.47	-0.73
	[0.960]	[0.037]**	[0.221]	[0.016]**
Men's Points			0.62	
			[0.000]***	
Women's Points				0.39
				[0.000]***
Missing	1,063.45	607.7	688.64	189.5
	[0.000]***	[0.000]***	[0.000]***	[0.175]
Constant	33.86	-257.43	192.63	-270.75
	[0.865]	[0.105]	[0.270]	[0.051]*
Observations	196	196	196	196
R-squared	0.371	0.296	0.524	0.467

p values in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%