

## The Impact of Gender Inequality on Women's Team Sports – Evidence from Europe

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*Gender inequality is a major challenge to tackle in the world of sports and has adverse effects on success in women's sports. Previous studies provide empirical evidence regarding these adverse effects yet they do not take the stereotyping in sports into consideration. This study acknowledges the presence of gender-typing in sports and investigates its influence on success in team sports. The results of a panel data estimation suggest that the impact of gender inequality differs both in magnitude and direction depending on the type of sports. In sports that are considered more feminine, gender inequality is actually positively influential on sporting success.*

**Keywords:** *gender-typing in sports, determinants of success in sports, European team sports*

### Introduction

Due to its growing social and economic impact, sports have become a top priority especially for the developed nations. A number of studies have tried to identify the factors that are influential on sports at the international level. From cycling (Torgler 2007) to football (Hoffman et al. 2002) numerous studies investigated the determinants of success in sports. Despite the differentiation in the determinants of success from sport to sport, socio-economic factors are highlighted as highly influential on success in almost all kinds of sports (Buts et al. 2011, De Bosscher et al. 2006).

Unlike before, the participation of women in sports is not seen as trespassing in men's territory anymore (Birrell and Cole 1994). The presence of women in sports has been increasing rapidly over the past decades however the perception of male and female appropriate sports is still present (Ross and Shinew 2008). Previous studies suggest that gender equality is an important element of success not only for women (Hoffmann et al. 2006) but also for men (Berdahl et al. 2011). The adverse effects of poor socio-economic conditions on success for both men and women have been documented in the literature.

Due to certain sociological and biological attributes, some kind of sports are associated with men and some with women. Metheny (1965) was the first to gender type sports based on these sociological and biological attributes. She categorized sports into acceptable and unacceptable for women. The society's perception of acceptable sports for women causes differentiation in sports participation for women and men (Koivula 1995). As women's and men's participation differentiates so does the success in different branches of sports. A

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higher interest in a certain kind of sport means more athletes and more resources therefore higher success.

This study investigates the impact of gender inequality on success taking gender-typing in sports into consideration. The popular three team sports in Europe are chosen which are, football, basketball and volleyball. First, the determinants of success for women's football, basketball and volleyball are identified by conducting a panel data analysis. The official women's rankings from FIFA, FIBA and FIVB which are regressed on United Nations' gender inequality index (GII), women population and men's rankings. UN introduced the GII in 2010 and most recent GII was released in 2018 therefore the study investigates the period between 2010 and 2018. In light of the regression results, the impact of gender inequality on success is discussed within a gender typing framework.

In general women's sports have been neglected by the sports economics and in cases of women's basketball and volleyball there are no studies regarding the determinants of success. Despite being the most popular team sports, after football in Europe, both volleyball and basketball did not receive much attention from the scholar. This study is contributing to the reduction of this gap in the literature.

## **Literature Review**

As mentioned earlier, Metheny (1965) was the first, to categorize sports in terms of their masculinity and femininity depending on certain attributes such as aesthetics, competition, bodily contact and face-to-face opposition. In her classification, volleyball was the only team sport which was considered appropriate for women. Both socially and physically, sports accommodate a historical hierarchy in favor of men (Kane and Snyder 1989). This male dominance in sports creates the sense of inappropriateness both in men's and women's perception. 55 years after Metheny's classification, the gender roles still exist in sports, despite the improving gender equality. It is not uncommon to see girls or young women to stop practicing sports because they feel like it contradicts with their gender (Guillet et al. 2000). The perception of feminine and masculine sports is still very common although there have been changes as the equality increased.

Individuals develop a perception of masculinity and femininity regarding sports through socialization during their childhood (Alley and Hicks 2005). Previous studies illustrate that small girls associates tasks that require strength and power with masculinity (Corbin and Nix 1979). The perception of male and female appropriate sports is present in both genders which affects individuals' choices in practicing sports. Studies that have been conducted among female athletes also provide evidence that even women perceive certain sports inappropriate for women (Salisbury and Passer 1982). Still there are numerous men and women who feel like some sports are not appropriate for them. When the importance of sports participation in overcoming gender barriers and women's empowerment (Deem and Gilroy 1998) is taken into consideration, investigation on gender-typing and its impact on performance is of utmost importance.

Following Metheny, numerous studies have been conducted to investigate the gender stereotypes in sports. Since the participants perception of sports differ from culture to culture, the studies conducted in the United States and the studies conducted in Europe provide different results. Football (soccer) is very popular among women in US. The popularity of soccer among men started increasing after the 1994 World Cup which was hosted in US and continued with the arrival of superstars in MLS (Baxter 2014). Although the popularity of football (soccer) among men is increasing as Riemer and Visio (2013) and Sobal and Milgrim (2019) suggest, football is seen as a gender-neutral sport in the US whereas in Europe it is one of most masculine sports (Koivula 1995, Lauriola et al. 2004, Plaza et al. 2017). The other two team sports, basketball and volleyball, which are investigated in this study are considered gender-neutral sports by the previous studies in the literature however it should be mentioned that basketball is on the masculine edge of the scale and volleyball is on the feminine edge.

Teams sports are chosen over individual sports due to the fact that; many athletes are born and trained in different countries yet they compete for other countries. The effect of being born and trained abroad is much less in team sports compared to individual sports since there are several players on the pitch or the court. Furthermore, in individual sports, an extraordinary athlete might achieve success despite a country's lack of success in a particular sport. Success in team sports rely highly on the resources and the sports legacy in a country.

Socio-economic determinants of success in sports at an international level is an essential element of the literature and a number of studies tried to identify the factors that are influential on sportive success. Men's football has been the most popular sport in this sense (Torgler 2004a, Hoffmann et al. 2006, Gásquez and Royuela 2016). Although women's football is not as popular as men's, there are a number studies investigating the determinants of success (Torgler 2004b, Hoffman et al. 2006, Jacobs 2014). Both Jacobs and Hoffman and his colleagues conclude that gender equality is a key element of success in women's football. Another common determinant of success for women's football is the men's football legacy in a country. Nations which are successful in men's football are more likely to be successful in women's football as well (Hoffman et al. 2006, Valenti et al. 2020). Factors like the presence of facilities, expertise of coaches and trainers and the general interest of public are all related to men's football legacy therefore the positive correlation between men's and women's success in football is easy to anticipate. Talent pool is of course another important determinant of international success in sports which is proxied by population by a number of studies in the literature (Hoffmann et al. 2002, Valenti et al. 2020). More populated countries are likely to have more talented players compared to the less populated countries.

For men's and women's national basketball and volleyball teams, there are no studies investigating the socio-economic factors that are influential on success. The literature on basketball and volleyball focus on tactical and in-game factors that are influential on success (Vute 1999, Csataljay et al. 2009, Sampaio et al. 2010).

## Materials and Methods

To identify the determinants of national team success and investigate the impact of gender inequality, following equations are estimated:

$$WR_{it}^f = \alpha_i + \beta_i GII_{it} + \delta_i \ln WP_{it} + \theta_i MR_{it}^f + \varepsilon_{it} \quad (1)$$

$$WR_{it}^b = \alpha_i + \beta_i GII_{it} + \delta_i \ln WP_{it} + \theta_i MR_{it}^b + \varepsilon_{it} \quad (2)$$

$$WR_{it}^v = \alpha_i + \beta_i GII_{it} + \delta_i \ln WP_{it} + \theta_i MR_{it}^v + \varepsilon_{it} \quad (3)$$

Equations 1, 2 and 3 will enable the identification of determinants of success for football, basketball and volleyball respectively. Where,  $WR_{it}$  is the women's ranking for country  $i$  at time  $t$ ,  $GII_{it}$  is the gender inequality index for country  $i$  at time  $t$ ,  $\ln WP_{it}$  is the natural logarithm of women population for country  $i$  at time  $t$  and  $MR_{it}$  is the men's ranking for country  $i$  at time  $t$ . Women population is included in the model as a proxy for the talent pool. The higher the population is, the more options are available to pick players for the national team. Men's ranking is also included in the model which is used as a proxy for the resources in a country. A successful men's national team indicates that the country has the required resources, such as facilities, trainers etc. Since the dependent variable used to measure success is world rankings, the independent variables with negative coefficients would be positively influential on success and the ones with positive coefficients would be negatively influential.

Historical data for women's and men's rankings for football are available at FIFA's webpage however for basketball and volleyball only the recent rankings can be found at FIBA and FIVB websites. Officials, from both FIBA and FIVB, were kind enough to share the historical data for women's and men's rankings which made this study possible. Table 1 presents the summary statistics for world rankings for women and men in football, basketball and volleyball.

**Table 1.** Summary Statistics of World Rankings

	Obs	Mean	Std. Dev.	Min	Max
$WR^f$	337	42.09	31.08	1	121
$MR^f$	360	46.25	39.70	1	184
$WR^b$	199	28.72	20.28	2	98
$MR^b$	230	35.21	25.07	2	126
$WR^v$	341	56.16	36.65	1	121
$MR^v$	325	54.27	38.86	2	141

Gender inequality index (GII) and women population data is available publicly and are gathered from United Nation's Human Development Reports webpage and World Bank database respectively. Table 2 presents the summary statistics for the GII and women population.

**Table 2.** Summary Statistics of GII and Population

	Obs	Mean	Std. Dev.	Min	Max
<i>GII</i>	354	0.17	0.09	0.04	0.42
<i>lnWP</i>	343	15.26	1.38	11.97	18.16

There are 40<sup>1</sup> countries in the data set for the nine-year period and as Tables 1 and 2 suggest, the panel data is highly unbalanced. The data regarding the rankings especially in basketball is missing. Some countries in the data set did not make to the international rankings in the investigated period. For GII and population there are also missing observations due to the unavailability of data for some of the countries in the investigated period.

## Results

As presented in the previous section, three different equations are estimated for football, basketball and volleyball. In order to avoid any methodological issues, due to the missing data, each equation is estimated with a different number of observations. Equation 1 is estimated with, 337 observations, Equation 2 is estimated with 199 observations and Equation 3 is estimated with 325 observations. The number of observations used in the estimated equations is bounded by the minimum number of observations in men's and women's rankings for a particular type of sport. Table 3 presents the estimation results of Equation 1.

**Table 3.** Estimation Results for Women's Football Rankings

$WR_{it}^f$	Model 1 Random Effects	Model 2 Fixed Effects	Model 3 - FGLS
$GII_{it}$	124.847*** (17.283)	85.668*** (20.366)	148.417*** (7.082)
$lnWP_{it}$	-14.243*** (2.077)	-23.114 (15.386)	-9.922*** (0.343)
$MR_{it}^f$	0.001 (0.022)	-0.015 (0.022)	0.151*** (0.019)
<i>Constant</i>	242.477*** (32.079)	382.643 (236.853)	162.474*** (5.701)
	$\chi^2$ value	prob > $\chi^2$	
<i>Hausman Test M1-M2</i>	63.67	0.000	
<i>Modified Wald Test for Heteroskedasticity</i>	92611.25	0.000	
	$F(1, 36)$	prob > F	
<i>Wooldridge test for autocorrelation</i>	1.839	0.184	
	<i>CD-Test</i>	p-value	
<i>Pesaran CD Test</i>	0.503	0.615	

Note: Numbers in the parentheses are standard errors, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Hausman Test results in favor of the fixed effects regression and Modified Walt Test provides evidence for the presence of heteroskedasticity. The Wooldridge

<sup>1</sup>The list of countries can be found at the Appendix.

autocorrelation and Pesaran cross-sectional dependency test results show that there is no autocorrelation and no cross-sectional dependency in the data. Therefore Model 3's results are taken into consideration. All three explanatory variables are statistically significant in 99% confidence. The gender inequality index and men's ranking have both positive coefficients indicating that they have adverse effects on success and population has a negative coefficient which indicates a positive effect on success.

**Table 4.** Estimation Results for Women's Basketball Rankings

$WR_{it}^b$	Model 1 Random Effects	Model 2 Fixed Effects	Model 3 Pooled OLS Driscoll and Kraay SEs
$GII_{it}$	47.844* (25.287)	143.422*** (36.464)	143.422*** (21.572)
$\ln WP_{it}$	-3.953* (2.143)	-13.779 (35.406)	-13.779 (14.738)
$MR_{it}^b$	0.426*** (0.064)	0.331*** (0.073)	0.331*** (0.077)
Constant	74.212** (33.663)	214.409 (564.532)	214.409 (236.661)
	$\chi^2$ value	prob > $\chi^2$	
Hausman Test M1-M2	17.90	0.000	
Modified Wald Test for Heteroskedasticity	4388.77	0.000	
	F(1, 15)	prob > F	
Wooldridge Test for Autocorrelation	32.669	0.000	
	CD-Test	p-value	
Pesaran CD Test	1.974	0.048	

Note: Numbers in the parentheses are standard errors, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 presents the estimation results for Equation 2 and as in the case of Equation 1, Hausman, Modified Wald and Wooldridge tests yield similar results however there is no autocorrelation and the Pesaran CD test provides evidence for the presence of cross-sectional dependency. Therefore, Driscoll and Kraay standard errors are used in the estimation of the equation and the results are presented in the third column. Gender inequality index and men's ranking are statistically significant and have positive coefficients which indicates that they are adversely effective on women's rankings.

**Table 5.** Estimation Results for Women's Volleyball Rankings

$WR_{it}^v$	Model 1 Random Effects	Model 2 Fixed Effects	Model 3 – FGLS AR(1)
$GII_{it}$	-66.357** (27.653)	-86.531* (45.526)	-42.732*** (11.741)
$\ln WP_{it}$	-9.202*** (2.515)	9.245 (32.554)	-8.347*** (0.925)
$MR_{it}^v$	0.296*** (0.042)	0.232*** (0.044)	0.339*** (0.032)
<i>Constant</i>	190.492*** (39.168)	-88.752 (503.529)	169.126*** (14.905)
	$\chi^2$ value	prob > $\chi^2$	
<i>Hausman Test M1-M2</i>	21.17	0.000	
<i>Modified Wald Test for Heteroskedasticity</i>	1.9e07	0.000	
	$F(1, 15)$	prob > F	
<i>Wooldridge Test for Autocorrelation</i>	109.540	0.000	
	<i>CD-Test</i>	p-value	
<i>Pesaran CD Test</i>	0.884	0.377	

Note: Numbers in the parentheses are standard errors, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As in the cases of football and basketball, the test results in favor of the fixed effects and there is heteroskedasticity. The Wooldridge and Pesaran tests show there is autocorrelation but no cross-sectional dependency therefore Equation 3 is estimated using FGLS with AR(1) All the independent models are statistically significant at 99% and gender inequality index's coefficient is negative unlike in basketball and football indicating that countries with higher gender inequality perform relatively better in women's volleyball.

## Discussion

The first sub-section of the discussion chapter, interprets the results presented in Tables 3-5 and identify the determinants of success for football, basketball and volleyball. The second sub-section investigates the relationship between gender inequality and gender-typing in sports in detail.

### *Determinants of Success*

The findings of this study regarding women's football are aligned with the previous studies (Torgler 2004b, Hoffman et al. 2006). Gender inequality is adversely influential on success in women's football. Also, countries with higher women's population are relatively more successful. The coefficient on men's football ranking is positive indicating that it is adversely effective on women's rankings. Nations with a higher men's football ranking have relatively higher women's rankings. Despite the popularity of football all around Europe, some nations have better facilities, trainers and players therefore they are more successful.

The determinants of success for basketball are similar to football but women's population is statistically insignificant. There is no evidence that more populated countries in Europe are relatively more successful women's basketball. It should be noted that basketball is the only type of sports with cross-sectional dependency out of the three investigated sports. Undoubtedly, football is the most popular sport in Europe. Unlike football, there are some countries with a basketball tradition and some without one. For example, Yugoslavia was a basketball nation with great players and great enthusiasm for the sport. Former Yugoslavian countries inherited the basketball legacy and they are all very competitive and passionate in basketball. Yugoslavia breakup into seven countries: Bosnia, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Slovenia (Zejnnullahi 2014). Out of these seven, countries six of them (excluding Kosovo) are in the data set. Another example would be the lack of interest in basketball in the Great Britain (Buckner 2019). The British are very passionate about not just football but also about rugby and cricket. Basketball is never a priority for them therefore the interest hence success is low at basketball. Therefore, cross-sectional dependence can be explained by the existence or non-existence of basketball legacy in European countries.

For women's volleyball, all three independent variables are statistically significant. As in the cases of basketball and football, men's ranking is adversely influential on women's ranking. Population, on the other hand, is positively influential on success as in football. Lastly, unlike in football and basketball, gender inequality index is positively influential on success. European countries with higher gender inequality, are relatively more successful in women's volleyball.

#### *Gender Inequality and Gender-Typing in Sports*

United Nation's gender inequality index takes three dimensions into consideration which are health, empowerment and labor market (UNDP 2019). These three dimensions reflect the conditions women live in within a country and therefore they are expected to be correlated with sports participation and sports success. It is reasonable to assume that women living in prosperous countries will be more involved in sports and more successful. Although that is the case in football and basketball, the results presented in Table 5 suggest otherwise for volleyball.

As mentioned earlier despite the improving gender inequality in recent years, gender-typing still exists in sports. The perception of male and female appropriate sports and the societal attitude towards sports can affect individuals' involvement in sport (Plaza et al. 2017). Therefore, men and women will be more likely to participate in sports which are considered "appropriate" for them. The gender-typing studies in the literature regarding European countries have been all conducted in countries where gender inequality is relatively low such as Sweden, Italy and France (Koivula 1995, Lauriola et al. 2004, Plaza et al. 2017). Out of the 40 countries in the dataset, these three are among the top 10 in gender equality therefore how gender-typing in sports differs in countries with higher gender



inequality is a matter of question. How GIIs' coefficients change for different kinds of sports is intriguing in a gender-typing framework. As presented in Tables 3 and 4, GII is adversely influential on success in women's football and basketball yet the magnitude of the impact is more than two and a half times higher on football when compared to basketball. Football is considered a more masculine sport than basketball as the previous studies suggest and whereas GII is positively influential on success for volleyball, it can be seen that gender inequality is positively influential on success. Out of the three investigated sports, volleyball is considered as the most feminine among the three (Koivula 1995, Lauriola et al. 2004, Plaza et al. 2017). These results can be interpreted as such: countries with higher gender inequality are relatively more successful in feminine sports. Perhaps, the societal norms direct girls and women to play sports which are considered more appropriate for them therefore they are more successful. Although volleyball is perceived as gender-neutral sport according to the previous studies, the perception of volleyball might be more feminine in countries with higher gender-inequality which is a subject which definitely needs more investigation.

## **Conclusion**

The determinants of international success for football, both for men and women, have been subject to academic studies before however basketball and volleyball did not receive much attention from scholars in socio-economic terms. This study contributes to the literature by identifying the determinants of international success in both women's basketball and volleyball. Although the impact of gender inequality on success has been accounted for, how the impact changes for different sports has not been investigated before. The findings of study conclude that the impact does not only differ in magnitude but also in sign for different kinds of sports. The empirical evidence suggests that countries with higher gender inequality are relatively more successful in feminine sports and furthermore despite the negative impact of gender inequality on masculine sports, the adverse effects decrease as the masculinity of the sports decreases. How the impact of gender inequality changes for different kinds of sports has not been investigated in previous research therefore this study fills a gap in the literature in this sense.

In general, gender equality is associated with human development and developed countries are doing better in these terms. In countries, where women are discriminated, sports could be an extremely effective tool in fortifying their grounds in the society. The benefits of sports for social inclusion have been documented numerous times in the literature (Waring and Mason 2010, Frost et al. 2013). Sporting success at the national level empowers women in the public eye and sets great example for children which makes the determinants of success in women's sports even more important.

The perception of female appropriate sports within a society affects the participation rates of women and especially in countries with high gender

inequality, girls and young women are more likely to participate in feminine sports (Riemer and Visio 2003). The question of how female appropriate sports, hence gender typing in sports, differs in countries with higher gender inequality will be answered through future research.

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**Appendix**

<b>List of Countries in the Dataset</b>
Albania
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Czechia
Denmark
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Italy
Latvia
Malta
Moldova (Republic of)
Montenegro
Netherlands
North Macedonia
Norway
Poland
Portugal
Romania
Russian Federation
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine
United Kingdom