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First Mover Advantage in Team Sports

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Abstract

In sports it is apparently the case that certain nations are very successful in a specific sport over a long period of time. In this paper the concept of "first mover advantage" is used to explain this phenomenon. We provide preliminary evidence for the connection between early specialization and success for the team sports soccer, volleyball, handball, ice hockey, and rugby. To do this, we examine the relationship between the date of establishment of each national sports association and later success as measured by the country's world ranking in the corresponding sport. We can show that the national date of establishment of a sport is is decisive for the nation's succes in this sport.

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1. Introduction

There is a large number of empirical studies that analyze the factors influencing sports success on elite level (Jacobs, 2020; see literature in Wunderlich et al. 2021). However, what has not yet been investigated, is whether first mover effects are the cause of success in a country's sport, and in league sports especially. Therefore, the aim of this paper is to examine whether a *first mover advantage* is a decisive reason why certain states are dominant in certain sports. Thus, we test an approach of industrial economics for its validity in sport and at the same time, our results can be shown as a starting point for deriving implications for a national sport policy. The paper provides preliminary results on correlations between the founding year of the national sports association and the sporting success of a discipline.

2. First Mover Advantage in Sports

The first mover advantage approach focuses on the relationship between market entry and success (Lieberman & Montgomery 1988) and is understood as the effect that accrues to a market participant by offering a product or service temporally ahead of other actors and being able to consume a temporary rent from this temporal advantage (e.g., Mueller 1997). The concept is usually based on company levels. Transferring the concept of first mover approach to team sports in countries, similar aspects can be identified as is the case at the company level.[1] A technological lead arises in such a way that first mover leagues develop efficient routines in the formation of human capital. In this respect infrastructure such as training centers for coaches and athletes can be set up, where previous experience can be exploited and where training is continuously improved through new experiences. Leagues can also realize learning curves in the field of training science or in the construction of sports facilities. As production increases, learning curve effects set in for a nation, for example, in terms of optimal training and competition scheduling, so that for the sport produced, the average cost decreases as quantity increases, allowing the specialized nation to produce at a lower cost per unit. A first mover league also has advantages when it comes to using resources, for example on markets for human capital, such as for coaches, athletes, or officials. First and foremost, the players' capital should be mentioned here. For example, Frick and Wicker (2016) show that international success – and this is likely to be assumed in a first mover league – results in an increased willingness of the population to deal with the sport in question on an amateur level. Furthermore, the argument of Hsiao et al. (2017) that early movers can develop and improve their core competencies in technology and management must be considered. It can be assumed that the entities involved in the production of the entertainment product of a league (clubs, associations, state organizations, etc.) develop and improve their core competencies in the areas of technology and management. The first mover league also attracts a corresponding demand. Analogously, the demand side must familiarize itself with the rules of the sport, for example. Here, specialization takes place accordingly as well. In the country concerned, consumption capital (Stigler & Becker, 1977) is built up in this sport. With an increasing consumption, consumers learn more about the sport and its rules and finally can understand it better. Based on this capital they can derive higher benefits from its consumption.

[1] These peculiarities, which are listed below, are mainly found in team sports and less so in individual sports. In the case of the latter, it is rather the case that the top athletes often stay in different countries for longer periods of time for training purposes, so that the dominant influence of a particular national sports system on the athlete hardly arises. Additionally, there is no national team for individual sports, which is determined in particular by the respective national sports system.

The existence of this consumption capital increases the relative switching costs to other sports for the demand side. An existing consumption capital would also be associated with a significant amount of uncertainty for the consumer consuming other sports. The effect of high switching costs and the uncertainty in consumption can be seen well in the case of baseball or American football struggling to be established in Europe.
Overall, it can be assumed that countries in which leagues in a certain team sport are implemented first or at an early stage have long-term advantages and these are reflected in a higher performance in international competitions. Since leagues regularly need appropriate organizational structures and these structures are provided by the national sports associations, the time when the national sports association was founded should be a decisive indicator for the establishment of this league-based sport in the country concerned. Therefore, the following hypothesis can be derived from this:

H_1: *The longer a national association in team sports exists, the more successful it is (the better world ranking it has).*

It can be assumed that consumption capital plays a major role in team sports since high consumption capital is necessary to generate high financial resources in the sales markets. In this respect, countries that were previously settler colonies (Osterhammel 1997) can be just as successful as the mother countries of these colonies, since a close cultural and personal exchange took place between these two units and therefore consumption capital was built up in the respective colony with a slight delay compared to the mother country. For this reason, the prerequisites for practicing a certain type of sport in the settler colony concerned should already exist before the establishment of the sport association in this colony. In fact, they should be present in the settler colony a short time after the sports association of the mother country was founded.

H_2: *Settler colonies will show similar sporting results as the mother country. Therefore, the sporting success of a settler colony can be better explained by the founding year of the motherland's sport association than by the founding year of the colony's sport association.*

Based on the different mean founding years of the countries, the long-term success (as measured with the proxy current world ranking), should be lower in non-settler colonies and also in settler colonies compared to countries that were not recently a colony. However, if they would have been founded in the same year, no differences might be detectable.

H_3: *Settler colonies, non-settler colonies, and countries that were not recently a colony differ in the actual world ranking position. If the settler colonies, non-settler colonies, and countries that were not recently a colony would be founded in the same year, no differences would be revealed.*

3. Data and Empirical Results

To provide first empirical evidence, we hand-collected data for different countries. Our unique sample includes nations that are listed at least in one of the sports to be examined if they are either included in the international federation or occupy a position on the world ranking list. We operationalize the first mover advantage by the founding year of the national association in the sport in question. The founding year is, therefore, the independent variable. The actual world

ranking position was used as a proxy to rate the country's long-term success (the dependent variable). Furthermore, as described below, settler colonies and non-settler colonies were identified and the founding date of the colonial power was listed. We collected data for men's teams for soccer (FIFA),[2] basketball (FIBA),[3] volleyball (FIVB),[4] handball (IHF),[5] ice hockey (IIHF),[6] and rugby (IRB).[7]

The number of countries included in the statistical analysis for each federation varies (Table I). All countries were included if we were able to determine the founding year of the national association. For FIFA (100%), IHF (96%), and IRB (99%) all or most listed countries could be included in the analysis. However, for FIBA (57%), FIVB (33%), and IIHF (75%) a relevant portion is missing potentially biasing the results.

Table I: Number of countries included in the statistical analysis for each federation

Federation	number of countries listed at the date of the search	number of countries included into the analysis
FIFA	210	210 (100%)
FIBA	168	95 (57%)
FIVB	219	73 (33%)
IHF	53	51 (96%)
IIHF	54	41 (75%)
IRB	105	104 (99%)

Since we were taking a historical view, the problem arose that numerous countries were colonial territories up to a certain point in history. We distinguished between countries that are an overseas territory of a nation but have autonomous structures, especially in the sports federation system, completely independent countries and countries that are to be considered separately because they gained their independence only a few years ago. Colonies were included as "settler colonies" into our analysis if they were considered settler colonies according to LinkFang[8] or if they were:

- an overseas territory of Great Britain, France, or the U.S.,
- a former settler colony of Great Britain, but British settlers constitute a small minority in terms of numbers,
- an autonomous part of the Kingdom of Denmark or the Kingdom of the Netherlands,
- belonging to Australia,
- a successor state of the former Soviet Union, Yugoslavia, Serbia, Czechoslovakia, or Austria-Hungary.

[2] https://de.fifa.com/fifa-world-ranking/ranking-table/men/; https://de.fifa.com/associations/.

[3] http://www.fiba.basketball/rankingmen/. For basketball, the founding years of the national associations were collected from Wikipedia.

[4] https://www.fivb.com/en/volleyball/rankings/seniorworldrankingmen. The founding dates of the national associations were collected using Wikipedia and supplemented with homepages of the national associations for Zimbabwe, Qatar, Maldives, Armenia, and Belize.

[5] http://www.ra-first.com/handball/men-prefab/. We had to collect the founding dates of national associations from Wikipedia due to the lack of alternatives, which is a limitation.

[6] https://www.iihf.com/en/worldranking/; https://www.iihf.com/en/associations. We had to collect the founding dates of national associations from Wikipedia due to the lack of alternatives, which is a limitation

[7] https://www.world.rugby/tournaments/rankings/wru; https://www.rugbyafrique.com/unions/; https://oceania.rugby/inside-oceania-rugby/member-unions; https://www.sudamerica.rugby/. We supplemented the founding dates of national associations using Wikipedia.

[8] https://de.linkfang.org/wiki/Siedlungskolonie.

Within all associations, for colonies, the own founding date of the national association, as well as the founding date of the last colonial power, were listed. If the founding date of the national association is before the founding date of the last colonial power, the own founding date of the national association is used as the founding date of the last colonial power, instead. Considering all states, there was a significant correlation between the actual world ranking and the founding year of the national association for all federations (Table II). If there was any significant relationship for the colonies (settler and non-settler colonies), the effect size (Pearson's r) is higher using the colonies' own founding years compared to correlations using the founding year of the mother country (Table II). Therefore, in all subsequent analyses, we used the colonies' own founding years.

Table II: Correlation (Pearson's r) between the actual world ranking and the founding year of the national associations

Federation	all countries	settler colonies	settler colonies with founding year of the colonial power	non-settler colonies	non-settler colonies with founding year of the colonial power
FIFA soccer	r= 0.47 p< .001 n=210	r=0.49 p<.001 n=62	r=-0.12 p=.372 n=62	r=0.26 p=.005 n=112	r=-0.08 p=.398 n=112
FIBA basketball	r= 0.34 p< .001 n=95	r=0.16 p=.402 n=29	r=-0.19 p=.336 n=29	r=0.53 p<.001 n=42	r=-0.14 p=.386 n=41
FIVB volleyball	r= 0.39 p< .001 n=73	r=0.13 p=0.533 n=26	r=-0.04 p=.849 n=25	r=0.73 p<.001 n=30	r=0.07 p=.710 n=30
IHF handball	r= 0.29 p= .038 n=51	r=0.23 p=.382 n=17	r=0.34 p=.187 n=17	r=0.39 p=.110 n=18	r=0.25 p=.342 n=17
IIHF ice hockey	r= 0.43 p= .005 n=41	r=0.27 p=.241 n=20	r=0.06 p=.812 n=20	r=0.84 p=.009 n=8	r=0.47 p=.242 n=8
IRB rugby	r= 0.70 p< .001 n=104	r=0.68 p<.001 n=34	r=0.55 p<.001 n=34	r=0.63 p<.001 n=47	r=-0.05 p=.741 n=47

Note. For colonies, the correlation between the actual world ranking and the founding year of the national foundation of the mother country was also assessed. Non-significant results are displayed in gray.

To analyze if the effects of the founding year on the current world ranking position differ between different state types, we predicted the current world ranking based on the founding year and the state type (Table III). Here, for states that were not recently a colony, only for FIFA (b=1.45, p<.001) and IRB (b=0.69, p<.001) a significant effect for the founding year on the current world ranking could be revealed. Comparing the effect of the founding year on the current world ranking, this effect was smaller in FIFA (p=.040) for non-settler colonies compared to countries that were not recently a colony. If all states would have been founded in the same year (the mean founding year across all countries), the models predict no differences for the current world ranking positions comparing settler colonies or non-setter colonies with countries that were not recently a colony (Table III).

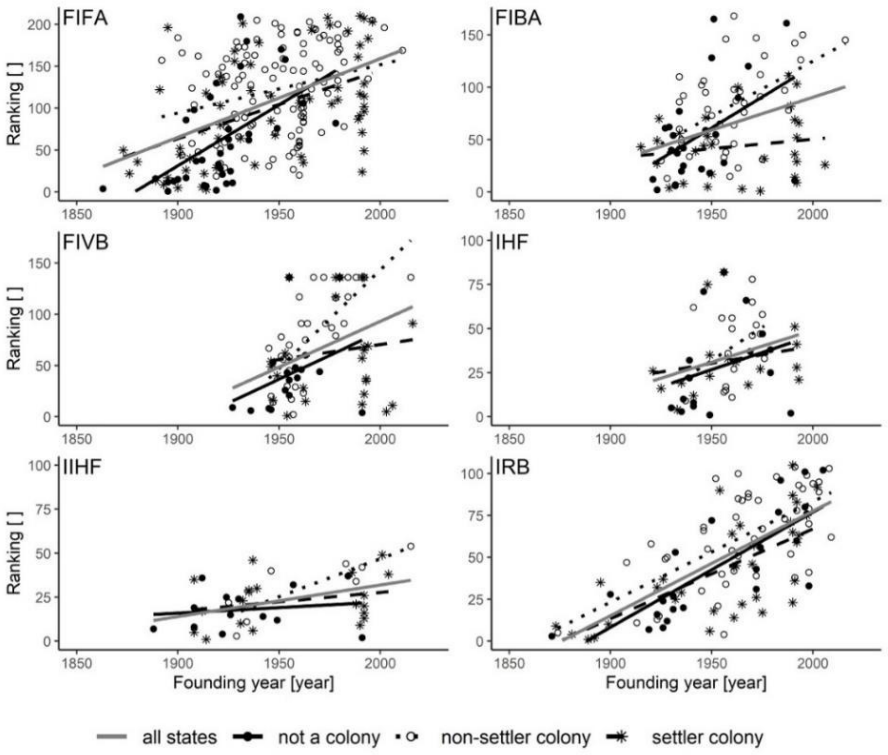
However, the model-based predicted current world ranking is better (lower world rankings) for settler colonies compared to non-settler colonies in FIFA (p=.017), FIBA (p<.001), and IRB (p=.003, Table III).

Table III: Linear models for each Federation to predict the actual world ranking

	FIFA soccer	FIBA basketball	FIVB volleyball	IHF handball	IIHF ice hockey	IRB rugby
Intercept	b=93.49 p<.001	b=68.39 p<.001	b=53.64 p=.004	b=29.91 p<.001	not enough data	b=49.18 p<.001
founding year	1.45 p<.001	b= 1.18 p=.105	b=0.93 p=.322	b=0.39 p=.321		b=0.69 p<.001
state type: non-set. col.	b=25.39 p=.085	b= 10.26 p=.542	b=28.64 p=.126	b=8.16 p=.404		b=9.80 p=.081
state type: set. col.	b=5.00 p=.744	b=-25.96 p=.128	b=7.52 p=.715	b=2.00 p=.833		b=-3.88 p=.511
founding year x state type: non-set. col.	b=-0.88 p=.040	b=-0.12 p=.865	b=1.00 p=.317	b=0.37 p=.586		b=-0.09 p=.590
founding x state type: set. col.	b=-0.64 p=0.127	b=-1.00 p=.183	b=-0.63 p=.529	b=-0.19 p=.654		b=-0.15 p=.316
R^2	28%	33%	31%	14%		53%
linear Hypotheses:						
(state type: non-set. col.) – (state type: set. col.) = 0	p=.017	p<.001	p=.255	p=.223		p=.003

Note. Linear models for each Federation to predict the actual world ranking (dependent variable) based on the predictors' founding year of the national foundation and state type (the interactions were also included in the models). For each model, the variable founding year was centered on the mean of the founding years across all state types within a federation. Non-significant results are displayed in gray.

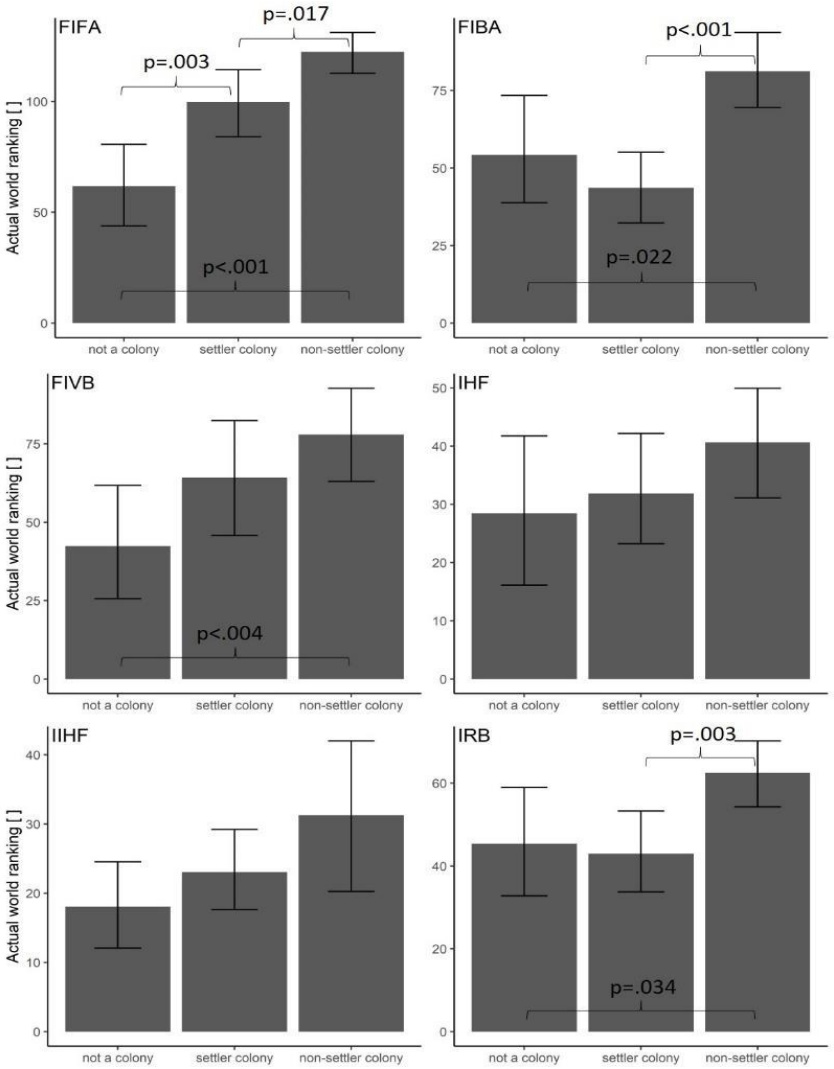
Figure 1: Effects of the founding year of the national foundation and state type



Note. Effects of the founding year of the national foundation and state type (was not recently a colony, settler colony, non-settler colony) on the actual world ranking.

Differences between the state types (not recently a colony, settler colony, non-settler colony) in the current world rankings are shown in figure 2. For FIFA (p=.017 & p<.001), FIBA (p<.001 & p=.022), and IRB (p=.003 & p<.034), non-settler colonies are not as good as settler colonies nor as countries that were not recently a colony. Furthermore, for FIVB, the mean world ranking of countries that were not recently a colony is better than the mean world ranking of non-settler colonies (p=.004). Only for FIFA, significant differences between countries that were not recently a colony and settler colonies could be revealed. Here, the mean ranking is better in countries that were not recently a colony.

Figure 2: Comparisons of the actual world ranking between countries that were not recently a colony, settler colonies, and non-settler colonies



4. Concluding Remarks

We found a significant relationship between the founding year and the current world ranking position in all included federations (FIFA, FIBA, FIVB, IHF, IRB). An earlier founding date of the national association is related to long-term success, as measured by the current world ranking position. Therefore, our results agree with H_1. Furthermore, consumption capital plays a major role in team sports since high consumption capital is necessary to generate high financial resources in the sales markets. Since in settler colonies a close cultural and personal exchange with the mother countries took place, consumption capital was built up. Therefore, settler colonies should, with a slight delay, be as successful compared to the mother country. If so, for settler colonies, the relationship of the world ranking should be stronger with the founding year of the national association of the mother country compared to the relationship with the own founding year. Our data does not match that Hypothesis (H_2). For both state types, settler and non-settler colonies, the relationship is stronger if the founding year of the colonies' own national association is used. These findings allow various conclusions to be drawn: Either there was no transfer of the corresponding consumption capital, or the consumption capital is of subordinate importance for sporting success compared to the economies of scale that result from the other sports infrastructure (construction of sports facilities, accumulation of human capital, management know-how). Since there is an effect of the founding year on the world ranking position and based on the later founding dates of the colonies compared to the colonial power, we also hypothesized that the actual world ranking position should be better in countries that were not recently a colony compared to colonies. Our results partly confirm this prediction (part of H_3): The mean world ranking position was worse in non-settler colonies compared to the other state types (settler colonies and countries that were not recently a colony). The differences were statistically significant for FIFA, FIBA, and IRB (also for FIVB comparing non-settler colonies with countries that were not recently a colony). Furthermore, only for FIFA, the world ranking of countries that were not recently a colony was better compared to settler colonies. If all countries would have been founded in the same year (the mean across all founding years within a federation), according to our models we would not be able to reveal differences in the mean world ranking position comparing countries that were not recently a colony with both colony types. However, the model predicts a better world ranking position for settler colonies compared to non-settler colonies for FIFA, FIFB, and IRB. This partly agrees with our Hypotheses (H_3) where we a priori did not predict any model-based differences at all.

Our analysis is obviously only a first step to investigate the relationship between national success in a sport and the effect of history. The parameters that have an impact on the First Mover Advantage can vary: It could be the sports infrastructure, the consumption capital or better possibilities of recruiting successful players. Further research could analyze the impact of these factors on the first mover advantage.

There is also potential for further research to extend the investigation to other sports and to check whether a better proxy can be found for establishing a sport in a particular country. Research should also take into account a divergent regional development in a country – this applies in particular to territorial states.

Obviously, a deeper analysis of this relationship is necessary to control for other factors that play a role in sport success. In addition to GDP, these could be variables such as the amount of resources that are available for sport or, among other things, the climatic conditions of a country and the population size. Insofar, our results must be understood as preliminary results and a first step of a larger project.

However, the insights that we have gained and that we want to deepen in further research have considerable implications for national state sports policy. The success of a nation in a team sport

from an international perspective seems to be significantly influenced by when this sport is started on a nation's level. A national sports policy, whose aim is maximizing international success, must either aim to create new types of sport and then, by means of appropriate incentives, ensure that these sports are also introduced in other countries after a certain period of time. Or, in the sense of an early adopter, it has to get involved in newly emerging sports at an early stage.

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