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# Editorial: Sports, economics, and natural experiments: advances and retrospection

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## Editorial on the Research Topic

Sports, economics, and natural experiments: advances and retrospection

## Introduction

Sports provide a unique field laboratory for advancing behavioral microeconomics, offering precise and objective measurements of behavior due to standardized rules, clear observability, and highly motivated expert participants. Extensive data on sports are readily available, continuously refined and expanded, and cover the same or similar contestants over long periods. Additionally, sports offer numerous natural experiments where exogenous factors plausibly divide individuals, teams, or organizations into treatment and control groups, allowing for causal analysis. Despite these advantages, economic studies using sports often face challenges regarding external validity. Such studies can appear niche and may be difficult to understand for those unfamiliar with sports, potentially limiting the broader applicability of their findings and hindering the full use of sports as a platform for testing economic theories.

The aim of this Research Topic was to showcase examples of research that harness sports as a field laboratory, leverage natural experiments, and replicate or validate existing findings. This collection features two studies exploiting natural experiments, three capitalizing on the advantages of sports data for measuring productivity, and one replication study. Below is a brief overview of these studies.

## Overview of the articles

### Natural experiments

Lopez and Bliss examine how rest differentials, ranging from 6 to 8 days due to bye weeks, affect National Football League (NFL) team performance. A 2011 Collective Bargaining Agreement eliminated practice time during bye weeks, guaranteeing at least 4 days off and creating a natural experiment to test whether recovery or practice time is the main driver of a rest period advantage. Before 2011, bye weeks provided a significant +2.2-point advantage per game, which disappeared afterward. These findings suggest

that practice and preparation, rather than rest and recovery alone, drive competitive benefits of bye-week rest differentials, which have important implications for teams and the NFL schedule.

Dargahi and Reilly evaluate an experimental rule change in the League of Ireland during the early 1980s, previously studied by Butler and Butler (2017). The rule awarded more points for away wins and draws to encourage offensive play by away teams, countering defensive strategies and low scoring in football. However, the change neither reduced the frequency of draws nor increased away wins but did lead to home teams scoring more goals. These findings can be rationalized using behavioral economics, especially prospect theory: while the reform may not have altered the away team's loss aversion, it may have given the home team greater incentive to engage in riskier offensive play. These findings relate to a broader literature demonstrating how points systems in football shape incentives and affect the distribution of match outcomes (e.g., Moschini, 2010).

## Measuring productivity

Dietl et al. use the National Basketball Association (NBA) to test the Coase (1960) Theorem: frictionless markets will allocate scarce resources efficiently as long as there are property rights. It is particularly fitting that sports data are used to test this fundamental economic theorem. Sports economists often trace the origins of their field to Rottenberg's (1956) seminal article in the *Journal of Political Economy*, which introduced the "Invariance Principle" (see Fort et al., 2016, for a modern discussion), closely aligned with the Coase Theorem—a cornerstone of introductory economics textbooks. Dietl et al. analyze the transitions of players in the NBA between teams under two regimes: free agents, who consent to transfers, and non-free agents, who are transferred without consent. They find that productivity declines among free agents but not among non-free agents. This suggests that the initial distribution of property rights could matter for allocative efficiency, providing limited evidence against the Coase Theorem without statistically rejecting it in the NBA labor market.

Jain et al. investigate the trade-off between fitness and experience in One Day International (ODI) cricket, finding an inverted U-shaped relationship between performance and age: bowlers peak at 22–26 years, while batters peak at 27–30 years. They develop a theoretical framework to model the trade-off between experience and youth. While younger players benefit from fitness, they gain experience as they age. This relationship is empirically tested using ODI matches played between 1971 and 2000, with individual fixed effects controlling for time-invariant differences across players. These findings contribute to the literature that uses sports to estimate age-productivity relationships. Similar studies include Bertoni et al. (2015) on chess, Castellucci et al. (2011) on motorsports, Fair (2008) and Hakes and Turner (2011) on basketball, Fair and Kaplan (2018) on running, and Scarfe et al. (2024) on football. A potential extension could explore how performance and pay intersect, assessing whether athletes earn their marginal revenue product throughout their careers or whether market features distort this relationship.

Butler et al. use European football as a labor market laboratory to investigate the pay-performance relationship. In competitive labor markets, pay should reflect human capital, resulting in a strong connection between performance and salaries. Butler et al. leverage the recent rise of sports analytics, which has introduced advanced player performance metrics. Focusing only on new contracts, they find that the impact of advanced statistics on player salaries remains limited. While the effect of basic metrics is largely consistent across team performance and salary models, advanced metrics show less consistency. These results suggest that, although clubs use analytics, their application in salary negotiations remains inconsistent, offering important implications for clubs and player agents.

## Replication

Arrondel et al. replicate findings on how the absence of stadium crowds altered outcomes in professional football during the Covid-19 pandemic, a topic explored across various sports. The editors of this topic have contributed to some of these studies, examining not only match outcomes (Bryson et al., 2021; Reade et al., 2022) but also whether betting markets responded efficiently to the reduction in home advantage caused by empty stadiums (Meier et al., 2021). Arrondel et al. focus on football matches played during and before the pandemic in the top two tiers of five major European leagues. Their evidence is broadly in line with the wider literature (for a survey of "empty stadiums" studies, see Wang and Qin, 2023), showing reduced home advantage in final match outcomes, as well as relatively harsher punishments of home team players compared to away team players, when matches were played in empty stadiums. However, the study does not investigate whether home advantage returned with the crowds, though this appears to be the case for one-off closed-door matches prior to Covid-19 in European football (Reade et al., 2022) and according to research on Dutch football leagues since the pandemic (van Ours, 2024).

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The handling editor SC declared a past co-authorship with the author CS.

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