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Esports – an Avenue for the Future of Economic Research

Abstract

Esports is a rapidly growing industry with structural and behavioral characteristics that closely resemble traditional sports, positioning it as a promising arena for empirical economic research. Building on the premise that sports serve as valuable natural laboratories for testing economic theory, this study argues that esports may present an even more compelling setting for such research. A bibliometric analysis was conducted, collecting all articles from the Web of Science Core Collection that included the terms *esport*, *e-sport*, *esports*, or *e-sports* in their title, abstract, or keywords. Each publication was categorized by disciplinary domain, with particular focus on economics and its adjacent fields. The findings reveal that while esports research has expanded across various disciplines, economics research remains relatively sparse, with fewer than two publications per year over the past two decades, despite the fact that esports data is abundant, high-quality, and increasingly accessible. The study emphasizes the unique advantages of esports data, such as its precision, scale, and quality, and argues that esports offers a largely untapped opportunity for economists to study decision-making and incentive structures in highly controlled yet naturalistic environments. This article further highlights potential sources of esports data, encouraging economic researchers to consider esports in their future scientific endeavors.

Key Words: Esports, Bibliometric Analysis, Sports Economics

JEL Classification: **Z20, C8**

Introduction

In their aptly named article, Bar-Eli et al. (2020) argue that sports offer a unique opportunity to test economic theories, or, as they put it, *an excellent laboratory to study human behavior in real competitive environments*. They also add that this idea, which is the backbone of the field of sports economics, is shared by Nobel Prize Laureates Daniel Kahneman and Gary Becker. Sports are great natural experiments as they present high-stakes outcomes, and the data sports tend to generate is of high quality with near-complete information. These advantages make sports data valuable for testing economic theories and exploring divergences from classical economic models.

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Researchers have used sports data to test foundational economic theories, such as the effect of stakes on performance, market efficiency, optimality of decision-making, intentional underperformance, or sabotage. Similarly, sports data has been used to study deviations from *optimal* performance and other behavioral economics phenomena, such as choking under pressure, the hot hand, discrimination, loss aversion, reference-point effects, or over-optimism. However, sports might not be unique in this regard, as esports might provide similar or even bigger advantages. Despite those potential advantages, esports economics research seems to be rare, as this article will try to demonstrate.

1. Methods of Research

This study conducts a bibliometric analysis of recent trends in esports research and research utilizing esports data. To gather relevant publications, the Web of Science (WoS) Core Collection database was employed. The search focused on journal articles, conference papers, and editorial materials indexed in WoS that featured any of the terms *esport*, *esports*, *e-sport*, or *e-sports* in the title, abstract, author keywords, or keyword-plus fields. Furthermore, retracted publications and duplicate records, which can happen when a single article is indexed in multiple WoS databases, were removed.

The collected articles were then categorized into six groups: Economics; Business & Management; Psychology; Other Social Sciences & Humanities; Sport Sciences & Medicine; and Computer Science, Natural Sciences & Engineering, based on WoS categorization. Articles from miscellaneous fields and subfields (e.g., Multidisciplinary sciences, Interdisciplinary applications, Applied mathematics, or Leisure, sport & tourism) were categorized manually, based on the author's best judgment. If an article falls under the umbrella of multiple fields, the following priority relations were applied: Economics $\succ$ Business & Management $\succ$ Psychology $\succ$ Other Social Sciences & Humanities $\succ$ Sport Sciences & Medicine $\succ$ Natural Sciences & Engineering $\succ$ Computer Science. Therefore, for instance, to maximize the possible size of esports economics research, if an article is categorized into both Economics and Psychology, it gets put into the Economics category.

2. Results of the Research

Esports can be broadly defined as organized, competitive digital gaming (Formosa et al., 2022). What began as a small subculture of passionate enthusiasts has evolved into an industry barely recognizable from sports such as football, ice hockey, or tennis, with events rivaling some of the biggest sporting events in their prize pool or viewership (Bavelier & Green, 2019).

While the classification of esports as sports remains a topic of ongoing debate, Wagner (2006) noted that the answer to that question is not relevant to whether esports could or should be studied. Whether esports and sports are different categories of human endeavor or not, they definitely share some key characteristics that should also make

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esports an excellent laboratory to study human behavior. Esports also contain competitive environments and present high-stakes outcomes, employ similar league or tournament structures and formats, and provide high-quality data.

Despite Wagner's (2006) call for esports research and the fact that video games became the leading revenue-generating sector in the entertainment industry a decade ago (Bavelier & Green, 2019), deeply ingrained in the daily lives of millions, Shengjie (2019) and Xenopoulos et al. (2020) expressed the view that esports had been under-researched and under-utilized, despite esports data often being readily available and easily obtainable.

Tab. 1, which shows the number of esports-related publications, supports this view, at least when it comes to economics, as categorized by WoS. There have been 1,776 articles in the WoS that have esport, esports, e-sport, or e-sports in either the title, abstract, author keywords, or keyword plus fields, 1,584 of which were published in 2005 or later. While comparing the categories is difficult due to their heterogeneity, it is abundantly clear that economic research in esports is quite rare, with fewer than two articles a year, even in the last two decades.

Tab. 1: Esports publications by category

Indicator	All time	Since 2005	Topic examples
Economics	41	39	Tournament theory, superstar effect, attention economy
Business & Management	173	143	Brand evaluation, industry forecasting, marketing integration
Psychology	251	213	Stress, arousal, self-determination theory
Other Social Sciences & Humanities	525	476	Social media usage, esports definition, esports media analysis
Sport Sciences & Medicine	319	280	Injury prevention, practice regimens, rehabilitation
Computer Science, Natural Sciences & Engineering	466	433	Anti-cheat, computer graphics, bot detection
All articles	**1,775**	**1,584**	

Source: authors' own calculations, data from (Web of Science, 2025)

Fig. 1 shows that scientific interest in esports has been steadily rising in recent years in all categories, although the growth in economics is quite flat. While the esports economics research has been growing slowly, an increasing number of authors have been considering esports to be a relevant setting for studying economic theory. Esports have been used to study or test various economic theories and economics-related phenomena, such as tournament theory (Shenkman et al., 2024), the spillover effect (Parshakov et al., 2020), choking under pressure (Naidenova et al., 2024), contestable markets (Parshakov et al., 2022), the hot hand phenomenon (Rejthar & Kavřík, 2025), attention economy (Watanabe et al., 2021), or the superstar effect (Ward & Harmon, 2019).

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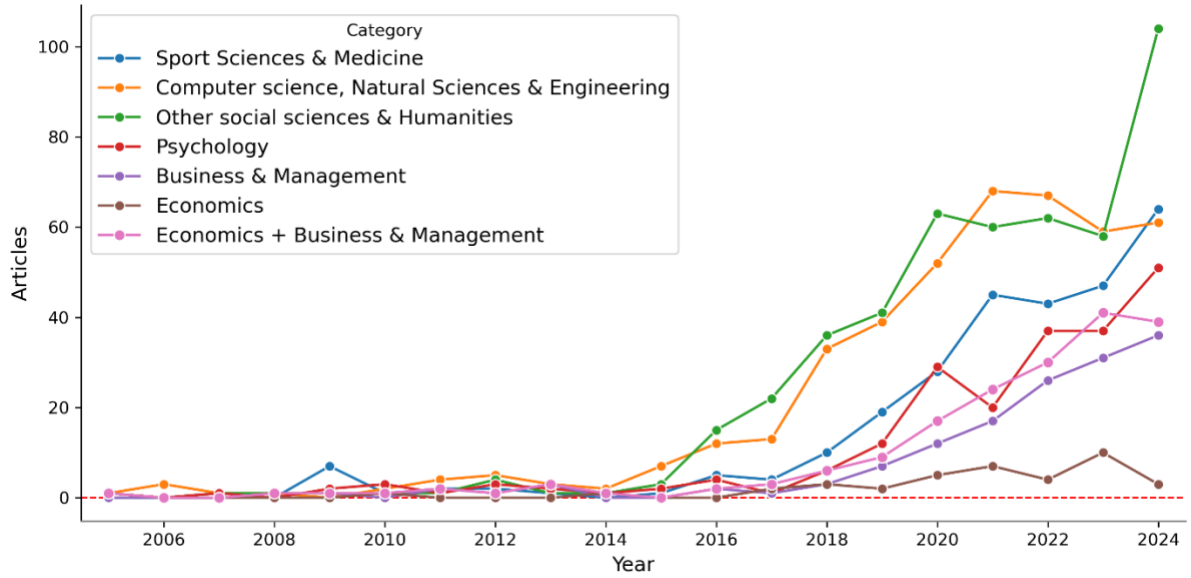
WoS classifies Economics and Business as separate domains. However, there are broader perspectives of what constitutes Economics, such as the JEL classification, which treats Business, Management, Finance, or Industrial organizations as part of the broader field of economics. To take that perspective into consideration, Fig. 1 also shows the number of publications in esports through the lens of the broader view of Economics, which puts Economics on par with Psychology. By broadening the scope, the depiction of esports economics is more optimistic, showing a higher level of engagement with economic topics within the esports literature than might initially appear when viewing the data through the narrower lens.

Fig. 1: Evolution of esports publications by category in 2005–2024



Source: authors' own calculations, data from (Web of Science, 2025)

Building on Bar-Eli et al. (2020), it could be argued that esports may present even greater opportunities than sports do for testing economic theory, as there are three key advantages of esports and esports data over sports and sports data.

First, esports is not merely supported by computers the way sports are; they are inherently integrated into the digital landscape as its byproduct. As a result, esports produce large and varied amounts of data that are often easy to obtain, allowing the study of a wide range of problems and the utilization of a broader range of methods.

One interesting example of benefits stemming from the digital nature of esports is that some games, such as Counter-Strike: Global Offensive (CS: GO) or Quake, use what is called *demos* to store information from every match. Demos are replay-like files containing serialization of the data transferred between the game server and its players, stored as a text of a sequential set of events. Demos contain all the information necessary for the game to recreate the match from start to finish. Therefore, it contains information such as position coordinates, pitch, and yaw of each player, state of their inventory, their actions, and so on, many times a second (e.g., 64 times a second, or with 64Hz frequency). None of the Economics articles in the WoS took advantage of demos in any capacity.

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Another interesting example is the case of aim trainers, specialized software designed to enhance and benchmark players' aiming abilities in shooter games, or so-called mouse control, and they are also used to compete. Rejthar (2024) shows that aim trainers produce real-world data of experimental quality, making them a promising source of usable data, especially for research where experimental design (especially laboratory experiments) bends human decision-making, such as the famous Hawthorne effect.

Several studies have leveraged large-scale esports datasets to investigate various aspects of player behavior and competition dynamics. For example, Xenopoulos et al. (2020) used demos of 4,682 professional CS: GO matches, amounting to 73 million states, to study value of individual player actions; Shenkman et al. (2024) used data from 74,632 CS: GO matches, amounting to 149,264 observations, to study the incentive effects of tournament prize dispersion; and Rejthar & Kavřík (2025) used data from 19,272 CS: GO matches amounting to 74,451 observations, to study whether incentives affect the presence of the hot hand phenomenon. These studies exceed the previous literature on the respective topics in terms of the amount of data used.

Second, if available, esports data should be more precise with fewer mistakes due to a lower chance of human error occurring. For instance, the aforementioned match demos are created programmatically, do not require any human intervention, and can be used to extract results, or player actions and statistics. In contrast, sports data gathering often involves much manual labor or requires specialized, expensive tracking tools, which vary in reliability and can produce a considerable number of errors (Pifer, 2024).

Third, partially related to the first point, according to Hinnant (2013), the role esports play in the 21st century reflects the role sports played in the 20th century. Hinnant argues that video games and esports encompass values that are relevant to life in the digital age and that esports thus offer an environment to adopt relevant values, such as insistent individualism, digital culture, or large variance in choices and ideals. For instance, liquipedia.net, a commonly used esports archiving website, is a volunteer-run wiki, a model that has become very common for information archiving (Kalinichenko et al., 2024). Similarly, both in-game and out-of-game esports markets tend to operate 24 hours a day, 7 days a week, supported by a variety of digital systems. These markets are globally accessible, allowing all participants from different regions to participate at any time. Due to the relatively low physical demands, minimal upfront investment, and low transaction costs, players have the flexibility to allocate their time more freely, which makes it easier for them to switch between different esports titles or participate in multiple of them simultaneously (akin to many parts of the current labor market). The inherent digital and global nature of esports enables a more dynamic form of participation that is less constrained by traditional barriers found in physical sports or past labor markets.

As Shengjie (2019) and Xenopoulos et al. (2020) noted, esports data are often readily available. Besides the aforementioned Liquipedia, there are many other archiving sites, such as hltv.org or esportsearnings.com, and various developers, and many sites and

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game publishers provide public APIs[1]. To work with CS demos, researchers can use, for instance, awpy, a free and open source Python CS demo parsing and analytics library (Xenopoulos et al., 2022). There are also available esports research datasets, such as SC2EGSet, an open-access dataset comprising data from 17,895 StarCraft demos (Białecki et al., 2023), or ESTA, a CS dataset comprising data from 1,558 demos (Xenopoulos & Silva, 2022). There are also video game datasets that are freely available on Kaggle or Github[2]. Additionally, unlike traditional sports, where access to game footage may be restricted or require expensive subscriptions, esports events are frequently streamed on platforms such as Twitch, YouTube, and others. Therefore, high-quality recordings of major (and even minor) events are very often freely accessible online.

Discussion and conclusion

This study builds on Bar-Eli et al. (2020) and argues that esports serve as excellent laboratories for studying economic behavior. While traditional sports have long been utilized in behavioral economics and sports economics for testing economic theory, esports offers certain advantages that may give them even greater potential than traditional sports.

Esports offers a unique combination of advantages. First, its digital infrastructure inherently produces massive, and often publicly accessible datasets, some of which are unique to esports, such as match demos or aim trainer logs, that far exceed the granularity and scale available in traditional sports research for no monetary costs. Second, the automation and precision of data capture minimize measurement error and reduce research costs. Third, the global and decentralized nature of esports markets reflects key characteristics of contemporary digital economies, providing a natural setting for testing modern economic theories.

The bibliometric analysis confirms that esports research has grown substantially across disciplines over the past two decades, but the field of economics research on esports remains sparse. However, since only WoS was used for the bibliometric analysis, the overall counts may be skewed, as newer journals, which may be more likely to publish esports research, might not have had enough time to accrue enough prestige to appear in WoS. Similarly, non-English journals might more frequently publish esports research if esports is more established in some non-English-speaking countries (e.g., Brazil, South Korea, or China), resulting in potential biases.

Given the similarities between sports and esports, taking advantage of the benefits of esports should be straightforward. Despite this, it seems like relatively few economic

[1] See, for instance, a community github signpost for esports APIs at https://github.com/Strift/awesome-esports.

[2] See, for instance, a community github signpost for gaming datasetr at https://github.com/leomaurodesenv/game-datasets.

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studies take advantage of these features, which represents a missed opportunity for economists to conduct experimental-quality analyses using naturalistic data. Tools such as *awpy* and datasets such as *SC2EGSet* and *ESTA* are publicly available and ready for application in economics research, lowering the entry barrier significantly.

Moreover, switching attention towards esports might, in certain situations, reduce costs significantly, which might make some research easier to fund. Future research should, therefore, consider taking advantage of the rich and unique data that esports provide.

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