eSports: A NEW ERA FOR THE SPORTS INDUSTRY AND A NEW IMPULSE FOR THE RESEARCH IN SPORTS (AND) ECONOMICS?

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Abstract

In recent years, electronic sports (*eSports*) have showed explosive growth, both in market value and number of participants. This paper discusses three issues associated with *eSports:* the structure and the economic dimension of the *eSports* industry; the relationship between *eSports* and traditional sports; and the current and future research devoted to *eSports.* We find that the roles of stakeholders in *eSports* industry are not as clearly defined and stable as in traditional sport. To assure stable growth, governance institutions and financial structures will be required to continuously adapt to changing conditions in the *eSports* industry. At the same time, the evidence provided in the paper supports previous evidence in the literature emphasizing the complementarity between *eSports* and traditional sports. Finally, the increasing availability of *eSports* data and some institutional peculiarities of the industry provide vast research opportunities not only in the field of sport economics but also in economics in general.

Key words: eSports, industry, audience, research

JEL classification: D12, L83, Z20.

I. INTRODUCTION

More than fifty years have passed since, in 1967, Ralph H. Baer invented the first video game console, "Brown Box", whose name was referring to the color of the wooden box of the console. But we had to wait until the late seventies and early eighties of the last century to reach the golden age of the arcade games (coin-operated entertainment machines). The arcade games have been considered the forerunners of what has subsequently come to be known as *eSports* – electronic sports (Lee and Schoenstedt, 2011). The nineties gave a strong impulse for *eSports.* The development of PCs (personal computers) and the evolution of the Internet through local area networks (LAN) technology changed the initial competition model from human versus machine to human versus human. Thus, that decade established the foundations for the explosive growth of *eSports.* But, despite the progress and success *eSports* has in our society, the interest generated by this phenomenon in the academic world is still limited, especially in sports economics.

There is no consensus about whether *eSports* must be considered a sport. In fact, *eSports* has not yet been officially recognized as a sport. It is generally agreed upon that *eSports* refers to an organized, computer-mediated and competitive gaming (Hamari and Sjöblom, 2017). Some academics consider that a wider definition of the sport concept allows considering *eSports* as sport (*e.g.,* Wagner, 2006; Jonasson and Thiborg, 2010).

However, *eSports* substantially differs from traditional sports in two aspects. First, are the differences in athletes' physicality. Jenny *et al.* (2017) point out that *eSports* involve movements using small groups of muscles (fine motor skills), whereas traditional sports require the use of large groups of muscles (gross motor skills). They conclude that *eSports* does not require the level of physicality associated with common definitions of sports. Second, sport is conceived as an area organized and regulated by institutions. One of the five criteria defined by the GAISF (Global Association of International Sports Federations)[2] states: "sport should not rely on equipment that is provided by a single supplier". Karhulahti (2017) discusses that *eSports* relies on commercial products owned and governed by private organizations. Moreover, the existence of many such organizations that struggle to achieve a hegemonic role is the greatest difficulty that *eSports* faces to achieve the institutional structure required to be officially recognized as a sport (Jenny *et al.,* 2017).

In addition to the considerations above, the widespread perception of the negative risks associated with the practice of *eSports* (addiction, violence, social

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[2] GAISF is an association composed of autonomous and independent international sports federations and other international sport and event related organizations.

isolation, reinforcement of sexism or stationary lifestyle) is also an impediment to accepting that *eSports* incorporate the valuable principles associated with traditional sports (Jonasson and Thiborg, 2010). Studies by Wagner (2006), Kretschmann (2010), Trepte, Reinecke and Juechems (2012) and Granic, Lobel and Engels (2014) underline the potential of *eSports* to contribute to developing players' social and personal skills. This outlook offers more complete, as well as more complex, perspective on *eSports.*

eSports have emerged as a growing economic and business sector associated with leisure and competition, which presents indisputable features (*sportification*) that are specifically associated with sport (Jonasson and Thiborg, 2010 and Heere, 2018). Moreover, this degree of association would explain the synergies that traditional sports are seeking for the creation and delivery of *eSports* products[3] or monetizing assets in the *eSports* sector[4] (Cunningham *et al.,* 2018). Therefore, approaches and tools applied to the sport management can be useful to understand the processes behind value creation and product delivery in the *eSports* industry. Seo (2013) proposes to consider *eSports* from an experiential perspective, along the lines of the experience economy model developed by Pine and Gilmore (1998) which implies understanding that *eSports* is more than just competing through computer games. It includes many other experiences and can even be a way of life, integrating real and virtual worlds (Martoncik, 2015 and Seo, 2016). This set of experiences is co-created through a value chain with multiple actors participating and consumers having a leading role in the final value that is ultimately obtained from the process (Seo and Jung, 2016).

From the operational marketing perspective, various empirical studies analyzed the differences and similarities between sports and *eSports* consumption (Lee and Schoenstedt, 2011 and Pizzo *et al.,* 2018). The results show differences in the importance level by some of the consumers' motivations. However, *eSports* and sport can be considered very similar from a consumption motivation perspective. This supports the idea that sports marketing approaches are useful to help *eSports* management (Pizzo *et al.,* 2018).

Like traditional sports, *eSports* generates data about individuals' and firms' (or institutions') behavior with similar characteristics to data generated by laboratory experiments. This information can be used to test hypothesis based on economic theories, not necessarily limited to sports economics (see, for example, Palacios-Huerta, 2014).

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[3] A clear example is the recent creation of *LaLiga eSport* by *La Liga Nacional de Fútbol Profesional* (a national sport association responsible for the administration of the two professional football leagues in Spain).

[4] The creation of professional *eSport* teams by football or basketball clubs is an example of this interest (*e.g.,* Valencia CF eSports or Thunder X3 Baskonia).

The paper focuses on three issues: the characteristics and the future of the *eSports* industry, the profile of *eSports* participants, with special attention to the relationship between *eSports* and traditional sports, and, finally, review of the sports economics literature related to *eSports* and some insights about the directions for the future research in this field.

The paper is organized as follows. Section II presents analysis of the recent worldwide evolution of the *eSports* industry and its future expectations. Section III addresses a review of the differences in the profile of *eSports* versus traditional sports participants, paying attention to the degree of complementarity of both activities, including some marketing issues related to *eSports* participants. Sections IV and V offer the review of the current sports economics research related to *eSports* and the consideration of some potential areas for the future research. The final section concludes.

II. *eSports* INDUSTRY: STRUCTURE AND PERSPECTIVES

The development of the *eSports* industry is relatively recent, but it has some features which require special consideration, when compared to the traditional sports industry. They have to do with its organization and the distinct role played by the different stakeholders, and also with the economic growth perspectives. Both aspects are considered in this section.

1. Stakeholders in the *eSports* Industry and the Economic Framework

The *eSports* industry involves different agents in order to supply its products and services. They can be classified as: Publishers (*e.g.,* on-line multiplayer games developers), Infrastructure Platforms Suppliers (*e.g.,* PC, consoles, interconnecting networks or servers), Teams/Players, Competitions Organizers, Broadcasters and Sponsors. Seo (2013) proposes to complete the chain value by incorporating final consumers. Unlike sports, *eSports* agents can play a multiplicity of roles in the industry. Riot Games is the publisher of League of Legends, but it also manages League of Legends Championship Series - LCS. The Russian telecommunications group Mail.ru Group has recently acquired ESforce for approximately 100 million dollars. ESforce owns two elite *eSports* teams (Virtus Pro and SK), and manages Dota2 and CS:GO *eSports* tournaments, a stadium (Yota Arena) for the eSports competitions in Moscow with a capacity of more than 1,000 seats, a merchandising platform specialized in *eSports,* and several *eSports* content production centers, as well as fourteen web pages

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specialized in eSports. The revenues of ESforce in 2017 were estimated at about 19 million dollars. These examples illustrate that role of agents in the *eSports* industry is not as clear, as in the sport industry, rather, it can create complex economic and relational framework.

eSports achieved great popularity in a very short period time. The *eSports* industry has not yet been able to consolidate a framework able to regulate economic relations among the agents involved. Unlike sports, which are organized in championships with independently owned teams, a single publisher controls each *eSports* game. A publisher organizes its own championships or licenses its use to an independent organizer. A championship organizer selects participating teams based on their performance and on some economic criteria (*entrance fee*). Audiovisual broadcasting rights are usually owned by the organizer. Thus, the *eSports* industry framework significantly differs from that in traditional sports. The role of publishers and organizers becomes more central, putting teams more in the background.

In the sports industry, revenues from media rights and ticket sales are important financial sources for teams, as well as advertising and sponsorship revenues. In the case of *eSports*, teams make money by winning tournaments. Also, the substantial share of their revenues comes from sponsorship and advertising (brand investment). Thus, brand investment is an important financial support, but this financial structure is very sensitive to strategies and priorities of sponsorship brands. This implies that less stable revenue streams make *eSports* teams less independent compared to their regular sports counterparts, even more so in cases where promotion and relegation system is in place.

One of the most relevant questions for the *eSports* industry is how to build durable governance structures that fit would the specific *eSports* features. They should assure the independent role of each agent and provide stable and autonomous financial structure to reduce risks and attract the investments and efforts necessary for a sustainable growth. The recent proposals developed by the two of the most important publishers could meet these conditions. In 2018, Riot Games announced the transitions of the North American League of Legends Championship Series to franchise format replacing existing promotion and relegation system. This means adopting a new competition format, different from that used up to now, and which will still be maintained in Europe until 2019. The new competition format establishes a revenue sharing system, guaranteeing minimum revenues for the teams. Blizzard Entertainment has also launched Overwatch League in 2018 using a franchise format. In this case, each franchise is tied to a major city and teams are assured a minimum amount of annual revenues plus additional amount from a revenue-sharing system based on the team's performance in the season.

Adopting structures from traditional sports (*e.g.,* NHL or NBA) can be a way to offer stability and clarify the role of the agents. But the continuous emergence of new games and formats in the *eSports* industry requires more flexible and adaptable structures than those in the traditional sports.

Other initiatives are creating global associations similar to those in traditional sports (*i.e.,* FIFA in the case of football). The World eSports Association (WESA) is an initiative by some *eSports* teams and organizers to create a discussion space for all stakeholders in the industry, aiming to create a framework that would support and amplify sustainable growth of the *eSports* industry. The official recognition of *eSports* as sport requires establishing institutions that define a specific regulatory framework. From this perspective, a more prominent role of public authorities can be helpful. The first initiative taken in Europe by the French government[5] could be a first step. However, *eSports* are developed in an on-line world and this can limit the application of government regulations.

2. The *eSports* Industry: Situation and Perspectives

There is no available official data on the *eSports* industry. This section relies on publicly available information produced by private organizations (associations and consulting companies), with the aim of summarizing recent evolution of the industry and its future perspectives.
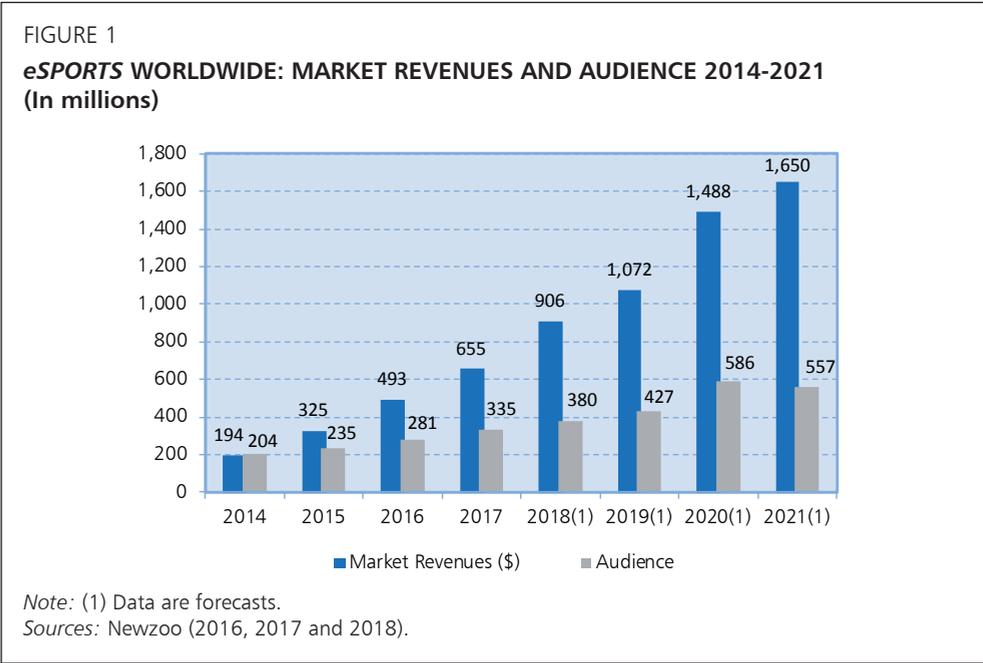
Figure 1 shows the worldwide data on revenues and audience in the *eSports* industry, based on the information provided by Newzoo (2016, 2017, 2018). Industry revenues increased by 500 million in the period from 2014 to 2017, and they are estimated to increase by almost 1,000 million during the period 2017-2021, reaching 1650 million in 2021. The main markets in 2016 were United States (32%), South Korea (30%) and China (17%). Germany was in the fourth place worldwide, leading European markets (11%). Spain was in the tenth place with estimated revenues of 1 million dollar.

The expected cumulative annual average revenue growth is estimated at 24.2% in the following years.[6] These forecasts are in line with those provided by PwC in its last report (PwC, 2018).[7] In that report, *eSports* is placed as the

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[5] Law n° 2016-1321, *'pour une République numérique',* Decree N° 2017-871 about *'l'organisation des compétitions de jeux vidéo'* and Decree N°2017-872 about *'statut des joueurs professionnels salariés de jeux vidéo compétitifs'.*

[6] This rate is higher than the 10.3% cumulative annual growth estimated for worldwide videogames industry in the same period (Newzoo, 2018).

[7] PwC consulting produces an annual report on sport industry since 2016. These reports collect the answers to a survey by professionals of the sport industry (470 professionals from 42 countries in the last report).

FIGURE 1

eSPORTS WORLDWIDE: MARKET REVENUES AND AUDIENCE 2014-2021 (In millions)

Note: (1) Data are forecasts.
Sources: Newzoo (2016, 2017 and 2018).

sport segment with the highest growth expectation, replacing football, which was the segment with the highest growth expectation in the previous report.

The audience grew by 130 million in the period from 2014 to 2017, and it is estimated to increase by 222 million during the period 2017-2021, reaching 557 million in 2021. The cumulative annual growth is expected to be 13.6%. It can be concluded that the *eSports* industry growth (recent and expected in following years) is mostly driven by growth in revenues rather than in audience. Therefore, a key element for the future of the industry is to be able to monetize the audience's interest in *eSports*.

The revenues of the *eSports* industry come from different sources: Marketing Support (sponsorship and advertising), Media Rights, Publishers Fees and Merchandising and Tickets. Table 1 summarizes the data provided by Newzoo reports on the estimated evolution of *eSports* revenues per stream.

Marketing support revenues are estimated to increase and remain the main source of the total revenues, 58.9% in 2018 (with a greater increase in advertising revenues). However, these revenues are not expected to have the greatest growth, and, therefore, they will lose weight over the total (its percentage is 60.8% in 2017). The highest growth is expected from media

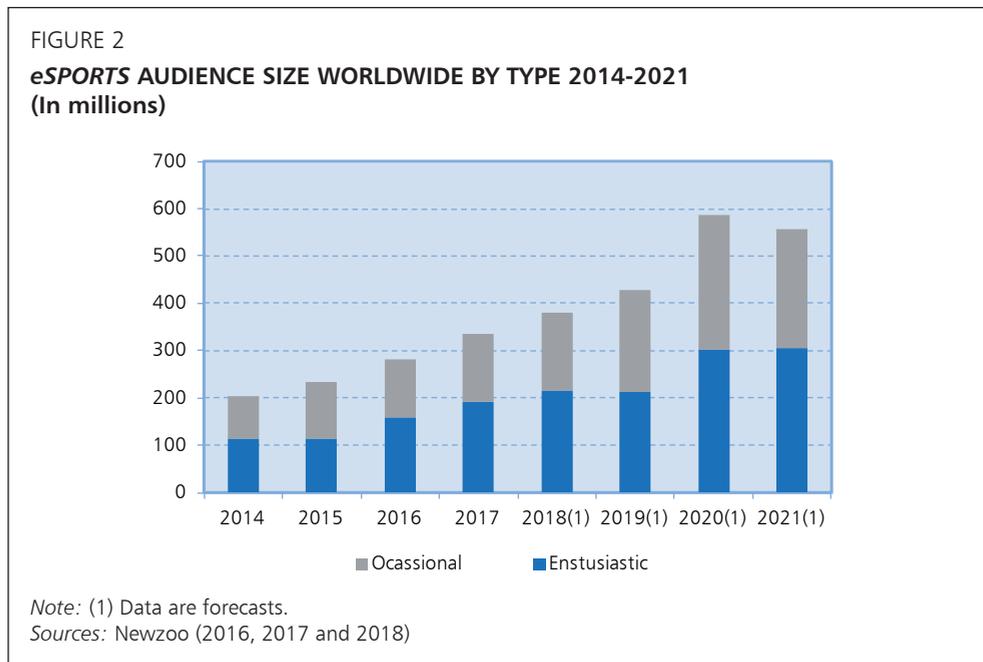| TABLE 1		
eSPORTS REVENUES PER STREAM **(In millions dollars)**		
	2017	*2018*
Brand Investment	421.6	533.2
Media Rights	92.5	160.7
Publishers Fees	115.8	116.3
Merchandising and Tickets	63.7	95.5
Total	693.6	905.7
Source: Newzoo (2017 and 2018).		

rights (73.7%), and merchandising and tickets (49.9%) Publishers' fees are expected to be maintained at an approximately constant level. *eSports* is not considered to be very profitable business for publishers in the short-term, and they are considered to be a long-term investment (Newzoo, 2017). Therefore, the interest of the media for *eSports* events and the involvement of the fans will be an important factor for the industry growth.

In fact, this interest could be explained by the observed change in the behavior of the younger generations. Industry reports suggest that a sizeable percentage of *eSports* followers are under the age of 35. For instance, PwC (2016) estimates this percentage at 68%. Being able to reach this age group is valuable for media, because it is becoming harder to reach younger generations (*i.e.,* millennials) through traditional media platforms (*i.e.,* TV). In fact, there is evidence that TV subscriptions in USA fell in 2017, while viewers continued to move to streaming and social platforms (Deloitte, 2018). Recently, two of the biggest streaming and social platforms (Youtube and Twitch) purchased exclusive rights to stream some of the most popular *eSports* tournaments.

The second largest growth rate for revenues comes from fans' spending in merchandising and tickets. Considering only the enthusiastic *eSports* audience (people who watch *eSports* more than once a month) and all revenue streams, Newzoo (2017) estimated that each *eSports* enthusiast, on average, spent 3.64 dollars per year in 2017. The annual average direct spending per fan on merchandising, tickets, or subscriptions was 0.33 dollars in 2017, which is below the average expenditure made by an enthusiastic fan of any of the most popular sports. For instance, according to UEFA data, a European football fan spent an average of 34.5 euros per match in 2017. Therefore, *eSports* has a space to increase this source of income in the future. This average annual spending is expected to grow up to 43% in the year 2020 (Newzoo, 2017).

In terms of audience, reports on the *eSports* industry usually differentiate enthusiastic audience and occasional audience (people who watch *eSports* less than once a month). Figure 2 shows estimated and forecasted data from Newzoo reports for both types of audience, where enthusiastic audience has had the higher growth ratio than occasionally audience) in the recent years. Additionally, the enthusiastic audience has a pronounced presence in Asian-Pacific markets (51% of the total audience in 2017), but a lower share in European markets (18%) and North-American markets (11%). However, the figures for Spain are remarkable. According to AEVI (2018), and based on data from Newzoo, the percentage of enthusiastic audience was 47.3% with a total audience of 5.5 million in 2017. The trends are expected to change in the period 2017-2021, when occasional audience is predicted to grow by70% and enthusiastic audience – by 60%.

FIGURE 2

eSPORTS AUDIENCE SIZE WORLDWIDE BY TYPE 2014-2021 (In millions)

Note: (1) Data are forecasts.
Sources: Newzoo (2016, 2017 and 2018)

This prognosis does not account for the total number of hours devoted to watch *eSports.* According to IHS Markit (2017), the annual growth of the worldwide number of hours is estimated at 9.8% in the period 2016-2021, which is lower than estimated increase of audience.

To summarize, the *eSports* industry forecasts are very optimistic about its future. However, the outcome will depend on two key aspects. First, establishing a framework that provides stability and allows attracting the efforts

and investments necessary for growth. Second, a more stable financial structure is required. The expected growth of the audience (fans' interest) has to be translated into a higher revenues, especially those coming from media rights and fans' spending.

III. *eSports* AUDIENCE: CHARACTERISTICS AND PARTICIPATION IN OTHER ACTIVITIES

At European level, there are no official statistics, defined as European statistics, in the field of physical activity and sports practice. Consequently, no official statistics for *eSports* exist. The available evidence comes from either industry reports (*e.g.,* Nielsen, 2017) or marketing studies, providing evidence on the motivations for participating in activities associated to *eSports* (Lee and Schoenstedt, 2011; Martoncik, 2015), including comparisons with participants in traditional sports (Pizzo *et al.,* 2018).

This section provides empirical evidence about the comparison of the profile of *eSports* participants and non-participants on several dimensions, and also about activities, motivations and opinions of those practising *eSports*, based on the information from a survey on physical activity and sports participation in Spain.

1. Comparison of the Profiles of eSports Participants and non Participants

García and Murillo (2018) characterize the profile of *eSports* participants using a sample of 11,018 individuals from the *Survey on Sporting Habits in Spain 2015* (EHD), produced by the Spanish Higher Sports Council. They use the information associated to the question about the interest in playing videogames related to sports as a proxy for *eSports* participation. They estimate a model consisting of two equations: whether an individual has interest in *eSports*, based on a 0-10 scale, where 0 means no interest, and an intensity equation for those who show some interest (scale greater than 0). This specification allows for different effects of the variables used to characterize the profile in the probability of being interested in *eSports* and in the intensity of this interest. Estimating the equations, the authors also look at men and women profiles separately. The results indicate that, apart from gender, variables like age, education, personal status (marital status plus composition of the household) and the size of the municipality, have a significant (and not equivalent) effect in both equations and for both males and females.

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García and Murillo (2018) also provide empirical evidence about to whether practising *eSports* is a complementary or substitutive activity to practising traditional sports. All the approaches they used indicate that there is some complementarity between these two activities. The proportion of those interested in *eSports* is higher among those who are interested in any activity related to traditional sports (practice, live attendance, audience, information) than in the whole population. The correlation coefficients between the variables associated to the level of interest in these activities and the interest in *eSports* are positive and significant, as it is the correlation between the errors terms,

TABLE 2				
DESCRIPTIVE STATISTICS OF SPORTS PRACTICE **(Percentage)**				
	Non video gamers		*Video gamers*	
	Full sample	*<=25 years*	*Full sample*	*<=25 years*
Sports practice	44.53	74.20	72.19	85.44
Frequency				
Daily	35.15	37.15	38.10	46.73
At least once a week	50.14	54.23	49.41	45.58
At least once a month	9.18	6.07	8.82	6.06
At least once a quarter	2.95	1.16	1.96	1.04
At least one a year	2.58	1.39	1.72	0.59
Type of practice				
Individual	67.06	53.65	46.48	28.97
Team	10.80	14.17	18.60	28.77
Both	22.14	32.18	34.93	42.27
Organized competition	13.48	18.43	24.86	37.61
Type of sport*				
Football (soccer)	11.23	19.59	36.63	58.92
Cycling	33.50	38.58	45.27	48.22
Swimming	35.34	40.12	42.51	44.10
Trekking	31.57	29.41	32.22	27.94
Running, jogging	27.05	38.10	34.60	40.04
Chess	7.88	9.17	15.70	18.21
Gymnastics (soft)	31.52	31.68	25.31	20.74
Gymnastics (intense)	27.28	41.16	31.24	33.75
Body-building, weightlifting	14.88	21.25	26.72	31.36

Note: *In the survey of the EHD, each individual practising sport at least once a year can choose more than one sport he/she practises more than once a year from a list of 41 sports. The sports reported in this table are among those with the higher proportions of participation with the exception of chess.
Source: Own elaboration.

when estimating a bivariate Probit model of being interested in traditional sports and *eSports*. Finally, adding a binary variable and a variable measuring the level of interest in any activity associated to *eSports* in the previous two-part model for the participation and the interest in *eSports* equations, in all cases these variables have a positive and significant effect in the probability of being interested in *eSports* and in the intensity of this interest.

Using the same data set, this paper extends the analysis by García and Murillo (2018) by looking at the relationship between the practice of sports and its frequency and whether there is an interest in playing sports video games, providing more evidence on the complementarity between these two activities. Additionally, the type of practice (individual and/or team), whether the individual participates in competitions or not, and the type of sport which is practised, are ched ar,on otivated nd 11tradional aracterized in terms of playing or not sports video games. Table 2 reports the descriptive statistics.

The first piece of evidence, which reinforces the complementarity between *eSports* and traditional sports, is that the proportion of those practising sports is higher among those who are video gamers (72.19%) than among those who are not (44.53%). These results remains qualitatively the same when considering those who are 25 years old or younger (85.44% and 74.20%, respectively), which is the population segment to which most of the *eSports* fans belong. On the other hand, the differences in terms of the frequency of practice do not seem to be significant, it does not matter very much whether the whole population or the youngest segment is considered, but, if any, video gamers seem to practise sport more frequently than non video gamers. These results hold when estimating a two-part model where sports participation and the frequency are modelled separately by means of a Probit model and ordered model, respectively, and including the intensity of the interest in sports video games as an explanatory variable.

Table 3 reports the marginal effects of the intensity of the interest in sports video games in the probability of practising sport and in the probabilities of the different frequencies, which appear in the survey, by gender. A unit increase in the intensity of *eSports* interest, on average, increases the probability of practising sports by 0.0137 and 0.0186 for males and females, respectively. On the other hand, the same increase in intensity has a positive effect on the probability of practising sports daily, but decreases all the probabilities corresponding to the other frequencies, for both males and females, although in the last case the effects are significant only at a 10% level.

From the evidence in Table 2, it can be observed that video gamers seem to practise team sports more frequently (71.04% of people 25 years or younger)

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TABLE 3

MARGINAL EFFECTS OF THE INTENSITY OF INTEREST IN SPORTS VIDEOGAMES FOR THE MODELS OF SPORTS PRACTICE AND FREQUENCY

	Males	*Females*
Probit (practice = 1)	421.6	533.2
Ordered Probit (Fequency)	115.8	116.3
Daily	0.0036	0.0035*
At least once a week	-0.0013	-0.0017*
At least once a month	-0.0013	-0.0009*
At least once a quarter	-0.0004	-0.0004*
At least one a year	-0.0005	-0.0005*

Note: *Significant at a 10% level but not at a 5% level.
Source: Own elaboration.

than non video gamers (46.35%), and they participate in competitions more frequently (37.61% and 18.43%, respectively). With respect to the type of sport, there are substantial differences between the two groups of individuals considered. The proportion of video gamers practising each sport included in Table 2 is higher than that for the other group, with the exception of both types of gymnastics and trekking, when considering the population of young people. It is also relevant that the proportion of those practising football is very large (above 50%) for those who are practising *eSports*, which emphasizes the abovementioned complementarity, even when considering football, the most popular sport in Spain.[8]

Table 4 provides another piece of evidence about the complementarity of traditional sports and *eSports*. In the case of sports video gamers, for 11.37% of them (15,10% among those who are 25 or younger) the first motivation to practise sport is because they like sport, whereas these percentages are 7.36% and 10,71%, respectively, for those are not interested in *eSports*. Fun and entertainment is the main motivation among video gamers, irrespective of their age.[9] Similarly, the evidence about the main motivation for non practising sports is providing an additional piece of evidence about the complementarity

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[8] It is interesting to point out the differences observed for these two groups with respect to the practice of chess, which is an activity which does not fit fully with the main elements of what a sport should be. Video gamers have a higher proportion of individuals playing chess.

[9] Although competition is not very much represented among the main motivations to practise sport, it is relevant to point out that this motivation is more present among video gamers, which is something indirectly related to one the key elements (professional competition) associated to the definition of *eSports*.

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TABLE 4

DISTRIBUTION OF THE MAIN MOTIVATIONS FOR SPORTS PRACTICE OR NON PRACTICE
(Percentage)

	Non video gamers		Video gamers	
	Participants	*<=25 years*	*Participants*	*<=25 years*
Motivation participation				
Fun, entertainment	28.66	37.87	38.60	46.66
Fitness	34.24	33.31	29.01	22.72
Like sport	7.36	10.71	11.37	15.10
Competition	0.83	1.26	0.99	1.96
	Full sample	*<=25 years*	*Full sample*	*<=25 years*
Motivation non participation				
Lack of facilities	3.91	9.78	6.38	9.34
Age	15.20	0.69	4.38	0.61
Lack of time	43.33	57.80	60.10	61.52
Lack of interest	17.00	17.15	11.05	11.74

Source: Own elaboration.

between the two activities. Although it is not the most important among the main motivation, the lack of interest is the main motivation for, approximately, 11% of the video gamers. This percentage reaches around 17% for those who are not interested in *eSports*.

Apart from sports practice, the EHD includes some other activities related to sports participation: attendance, audience and information. Table 5 shows that the proportion of those attending sports events is higher among video gamers than among non video gamers, when considering the youngest group (59.41% and 52.55%, respectively), and, even more clearly, for the full sample. This is additional evidence about the complementary between *eSports* and sports activities, not only through practice. The evidence from audience associated to sports (watching television, listening to the radio or using internet) and from being informed about sports is reinforcing the previous findings, for both, the full sample and the youngest group. In the case of audience, the proportion is 15.6 percentage points higher for video gamers and 23.6 points in the case of information. These differences are more significant when the full sample is considered. On the other hand, in terms of audience of a particular sport, the difference for football is not as important, both in relative and absolute terms, as it is for other sports, and the differences are less pronounced when comparing the two groups for the whole sample. Finally, the proportions are

higher for the video gamers, whenever internet, social media, mobile or tablets are involved, and also for the youngest group compared to the full sample.

2. Activities, Motivations and Marketing Aspects of *eSports* Participants

As mentioned above, most of the evidence about the profile of *eSports* participants comes from marketing surveys. In order to provide some evidence about specific marketing aspects associated to *eSports* audience in Spain, this

TABLE 5				
DESCRIPTIVE STATISTICS OF ACTIVITIES ASSOCIATED TO SPORTS **(Percentage)**				
	Non video gamers		*Video gamers*	
	Full sample	*<=25 years*	*Full sample*	*<=25 years*
Attendance	29.69	52.55	43.40	59.41
Audience*	74.83	75.84	89.10	91.54
Sport				
Football (soccer)	89.29	88.56	91.30	92.93
Basketball	42.27	30.81	51.49	51.46
Tennis	46.48	34.37	55.14	48.57
Athletics	20.63	15.59	25.18	18.58
Motorcycling	42.16	36.70	53.30	49.92
Cars	47.20	40.21	58.89	53.51
Media				
Television	99.33	99.04	99.00	98.63
Radio	15.59	12.37	23.58	22.96
Internet	8.88	17.54	26.57	35.40
Information*	55.83	49.43	73.78	73.03
Press (general information)	45.49	23.00	49.41	38.78
Press (sports)	30.46	20.66	49.12	47.03
Radio	32.44	13.67	35.18	21.84
Television	84.14	82.14	87.34	84.24
Internet	26.19	48.42	57.53	70.23
Social media	11.77	42.70	32.41	50.93
Mobile phone	14.68	35.08	38.45	53.04
Tablet	6.99	18.41	9.89	21.82

Note: *Individuals can choose more than one sport, or more than one type of media, when indicating the event they have attended or the media they use to be informed about sports.
Source: Own elaboration.

TABLE 6

DESCRIPTIVE STATISTICS OF ACTIVITIES ASSOCIATED TO ESPORTS (%), INTEREST (MEAN) AND EXPENDITURE IN SOME OTHER ACTIVITIES (€)

	Males	Females	Total
Activities related to eSports*			
Audience	86.85	83.53	85.20
Only audience	32.67	42.57	37.60
Audience and attendance	10.36	5.62	8.00
Audience and competition	26.69	19.28	23.00
Audience, attendance and competition	17.13	16.06	16.60
Attendance	29.88	28.11	29.00
Only attendance	1.20	5.62	3.40
Attendance and competition	1.20	0.80	1.00
Competition	55.78	46.18	51.00
Only competition	10.76	10.04	10.40
Interest in some activities			
Video games	3.83	3.88	3.86
Traditional sports	3.98	3.50	3.74
*eSports***	3.60	3.54	3.57
Monthly expenditure on some activities			
Attendance live events (culture, sport, …)	23.24	25.78	24.50
Video games	20.25	17.05	18.66
Practice sports activities	13.54	10.11	11.83
Leisure activities	72.41	57.37	64.92
eSports	8.08	9.29	8.68

Notes: *Individuals can choose more than one activity. This is why the percentages of audience, attendance and competition add more than 100.
**Video games of professional competitions.
Source: Own elaboration.

paper uses the information from the "eSports survey Spain", carried out by Nielsen in September 2016. The sample is composed of 500 individuals who have practiced at least one activity associated to *eSports* including: watching (television, online), attending (live) events and competing.[10]

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[10] A more complete analysis of this data set, including the estimation of some econometric models, can be found in the paper by J. García and C. Murillo, with title "eSports: perfil de los participantes (¿o deportistas?"), presented at the *VIII Congreso Iberoamericano de Economía del Deporte,* held in Ciudad Real (Spain) in June 2017. The paper is available on request.

Table 6 reports the proportion of *eSports* participants for each of the abovementioned activities. It is clear that, for both males and females, audience activities are the most frequent (above 80% in both cases), whereas live attendance is the less frequent. At this aggregate level, there is a significant difference by gender in terms of competition activities, with a higher proportion for males. Females present the higher proportions when considering the cases associated to practicing a single activity, except for competition for which the proportions are very similar.

Additional evidence supporting the complementarity between *eSports* and traditional sports is also provided in Table 6, when looking at the interest in some specific activities, measured as the mean value of an indicator of the degree of interest in a scale 1 to 5. The individuals included in the sample, those practicing an activity associated to *eSports*, have more interest in traditional sports than in *eSports*, defined as video games of professional competitions. This is particularly evident for males, but not for females. In any case, even for females, the interest in traditional sports is not significantly different than that in *eSports* (3.54). On the other hand, when looking at the monthly average expenditure on some activities, *eSports* expenditures are clearly below the averages for other activities including video games and practice of traditional sports activities. This gives an

TABLE 7			
MOTIVATIONS TO PRACTISE *eSPORTS*			
	Males	*Females*	*Total*
Top 5			
Fun, entertainment	80.48	79.12	79.80
Competitiveness	47.41	36.14	41.80
Event experience	24.30	22.89	23.60
Different experience of video games	22.31	22.49	22.40
To be a better player	27.49	15.26	21.40
Bottom 5			
To watch a team or a particular player	9.96	11.65	10.80
Drama	4.38	8.03	6.20
To participate in Fantasy eSports	5.58	6.02	5.80
To participate or watch cosplay	4.38	6.83	5.60
Betting	4.38	3.21	3.80

Note: Individuals can choose more than one motivation from a list of 22.
Source: Own elaboration.

idea of the extent of the potential growth in revenues in this industry, coming from the expenditure of *eSports* fans, as mentioned in the previous section.

Additionally, understanding the motivations of individuals for practicing *eSports* is relevant for defining marketing strategies designed for them. In that sense, Table 7 reports the proportion of individuals whose motivation to be associated to *eSports* is one in the list in this table, which includes those motivations with the higher and the smaller proportions from a list of 22 in the questionnaire. Clearly, fun and entertainment and, to a lesser extent, competitiveness are those with the higher proportions (above 75% for fun and entertainment) for both males and, in particular, females, but males seem to be more motivated by the competition than females. On the other hand, betting is the motivation less representative for both genders.

Finally, in the abovementioned survey, individuals are asked for the brands/products they recognize as more representative for advertising in *eSports*. In Table 8, the average of an indicator of how appropriate a brand is in a scale 1-5 is reported. From a list of 17 products, for both males and females, those products which are understood as more identified with *eSports* are the consoles for video games and, also, the technological products, which can be seen as very much associated to *eSports*, and energetic drinks. At the same time, liquors are clearly the products less identified with *eSports*, jointly with beer brands and outlets.

TABLE 8			
INDICATOR OF HOW APPROPRIATE A BRAND IS FOR ADVERTISING *eSPORTS* (MEAN)			
	Males	*Females*	*Total*
Top 3			
Video games consoles	4.10	4.00	4.05
Technology	4.09	3.96	4.03
Energetic drinks	4.06	3.95	4.00
Bottom 3			
Outlets	3.29	3.29	3.29
Beer	3.25	3.32	3.29
Liquors	2.82	2.93	2.88
Source: Own elaboration.			

IV. SPORTS ECONOMICS AND *eSports*: EXISTING RESEARCH

For an economist, sporting competitions represent human laboratory with controlled, repeated experiments under the same rules, and often with the same individuals. This setting creates a favorable environment for answering empirical questions, not only directly related to sport, but also questions related, for instance, to labor and behavioral economics. Similar to traditional sports, detailed data on *eSports* teams' performance and monetary incentives become more and more available with time, driving the research around *eSports*.

The popularity of *eSports* tournaments has been steadily increasing over the last decade. In 2017, about 4,000 tournaments took place around the globe with a total prize pool amounting to 120 million dollars.[11] Each tournament has clear structure, observable monetary prizes, and match outcomes. This enables a researcher to test empirically whether contests are efficient mechanisms for eliciting effort (Preston and Szymanski, 2003). The models proposed by Lazear and Rosen (1981) and Rosen (1986) predict that prizes must be highly skewed towards top ranking contestants to maximize effort level by every participant.

Using data on monetary prizes of *eSports* tournaments, Coates and Parshakov (2016) find that tournaments' reward schemes are designed so that the relationship between prize and player/team's tournament rank is convex. It means that each subsequent move up the tournament ranking brings sharper increase to team/player's rewards. Coates and Parshakov's results indicate that tournament organizers aim to maximize participants' effort by structuring reward schemes according to the Lazear and Rosen (1981) and Rosen (1986) predictions.

One of the wellresearched questions in traditional sports addresses the importance of country-level factors in defining teams' or individual athletes' success. This literature suggests countries' economic conditions, human resources characteristics, political institutions, and geographical conditions in influence countries' sporting performance (see, for example, Bernard and Busse, 2004; Johnson and Ali, 2004; Noland and Stahler, 2016).

Parshakov and Zavertiaeva (2018) point out several important differences of *eSports* from traditional sports. First, *eSports* do not require outstanding physical form from athletes, nor do they require specific climate conditions or expensive infrastructure. Thus, costs of participation in *eSports* competitions are lower than in traditional sports, and competing in different games is possible for the same athlete. Second, due to the novelty of *eSports* competitions,

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[11] According to the data from https://www.esportsearnings.com

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governments have not yet intervened in the development of national teams. Taking both points into account, one can hypothesize that country-level fixed effects are small to non-existent in the *eSports* setting. Surprisingly, using data on money won by individual players each year, Parshakov and Zavertiaeva (2015) find that country-level fixed effects are substantial and similar to those in traditional sports.

To further explore the matter, Parshakov, and Zavertiaeva (2018) aggregate prize money won by gamers at the country-level and look at some particular country-level factors that may explain participants' success in *eSports* competitions. They use characteristics affecting national athletes/teams performance in traditional sports (GDP per capita, gross capital formation, population, life expectancy, dummies for post-Soviet countries and post-planned economies) along with factors specific to *eSports* – percentage of Internet users and high-technology export share in manufactured export – which proxy coverage and popularity of *eSports*, respectively.

The study employs two models – a selection model which determines whether a country won any prize money, and an outcome model which determines the amount of money won. The results show that GDP per capita does not affect the probability with which a country participates in *eSports* competitions, which conforms with low entry costs, but it also positively affects the amount of money won by participating countries. The coefficient on the country population variable is positive and statistically significant in the selection model but statistically indistinguishable from zero in the outcome model. This finding may indicate that *eSports* talents are not uniformly distributed across the world. Surprisingly, residents of post-Soviet and post-planned economies are more likely to participate in *eSports*. As for *eSports*-specific factors, a higher number of Internet users in the country increases participation in tournaments but does not affect the amount of money won. High-technology export share does not have significant effect in either model specification.

Another empirical question that could be studied in the context of *eSports* is the effect of team diversity on performance. The past few decades are characterized by a substantial increase in movement of people across borders. Therefore, workplaces around the globe have become increasingly diverse, which raises a question about whether diversity improves or worsens performance. The evidence from "regular sports" is mixed. Timmerman (2000) finds that age diversity and racial diversity is negatively associated with US basketball teams' performance, but unrelated to US baseball teams' performance. The author suggests that diversity should have more impact on basketball performance since it has more interaction between players during the game that baseball. However, replicating the study for Japanese baseball teams, Sakuda (2012) finds negative

relationship between national diversity and team performance, but no significant results for age diversity. Kahane, Longley and Simmons (2013) find that NHL teams employing a higher proportion of European players performed better. However, the teams perform better when their European players come from the same country, rather than from many European countries. Using data from the Bundesliga, BenNer *et al.* (2017) find that football team performance and player performance are negatively affected by diversity among offensive players and positively by diversity among defensive players. These effects are strengthened by longer tenure of the two groups of players.

In addition to extensive data availability, studying effects of team diversity on the performance in the context of *eSports* has another advantage. The nature of *eSports* relies on communication in a computerized environment which closely resembles work environment in modern companies. Parshakov, Coates and Zavertiaeva (2018) consider effects of culture, language and skill diversity on teams' performance in *eSports* tournaments. Their results suggest that cultural diversity aids teams' performance, while language and experience diversity have an adverse effect. These findings imply that different kinds of diversity have different effects on team performance.

V. SPORTS ECONOMICS AND *eSports*: FUTURE RESEARCH DIRECTIONS

The existing studies about *eSports* are scarce, but the possibility to quantify performance of teams and individual players within teams shows great potential for increased understanding of the relationship between monetary incentives and effort provision. Moreover, there are some very specific features of *eSports* that deserve attention from researchers. First, *eSports* is a unique case where both promotion and relegation, and franchise league design were at place at different times. Second, a betting market is more embedded in *eSports* compared to "traditional sports". Finally, the previous feature, combined with the computerized nature of *eSports* competitions, affects incentives and practices of cheating. This section discusses institutional setting of these issues in more detail, to assess the relevance of these topics for future research.

1. Organization of Competition

Historically, most North American sports leagues are closed, which means that the same teams, called franchises, exist in the league year after year with occasional league expansion and relocation of existing teams, but without any

team movement between leagues at different levels. An alternative system of league organization, used outside of North America, is an open model based on promotion and relegation. A team's performance over the whole season defines whether it will be promoted to a higher division or relegated to a lower one. The difference in league structure implies that teams might make different strategic decisions under different systems of league organization. The model developed by Szymanski, and Valletti (2010) predicts that teams operating under the promotion and relegation system have more incentives to invest in effort, but less incentives to promote competitive balance.

The *eSports* setting provides a unique environment to test these predictions. The League of Legends Championship Series (LCS) consists of two leagues with an identical number of teams, as well as tournament and prize structures. Twenty teams compete in two separate tournaments in Europe (EU LCS) and North America (NA LCS), with ten teams per continent. Each season is divided into two splits, spring and summer, and concludes with a play-off tournament between the top six teams from each region. Both leagues had a promotion and relegation system, where the bottom team in each league competed with the top teams from the Challenger Series for spots in the next LCS split. In 2017, the North American league officially announced that it would switch to the closed franchise model starting in the 2018 season.[12] The European league decided to follow, starting in the 2019 season.[13] These transitions from promotion and relegation to closed leagues will provide researchers with an opportunity to study outcomes in the same leagues under two different systems of league organization.

2. Betting in eSports

The *eSports* betting market is enormous and rapidly growing. One of the latest reports by Grove (2017a) estimates the amount of money wagered on major *eSports* events in 2015 at 5.5 billion dollars and projects it to grow to almost 13 billion dollars by 2020. By comparison, the estimate of money wagered on National Football League and college football games through the 2015 season amounts to $95 billion with about 93 billion dollars (or 98%) of betting through illegal channels.[14] The market might expand even faster after the U.S. Supreme Court decision on May 14, 2018[15] to overturn the 1992 federal

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[12] https://www.lolesports.com/enUS/articles/evolution-of-the-na-lcs

[13] https://eu.lolesports.com/en/future-of-the-eulcs

[14] https://www.forbes.com/sites/darrenheitner/2015/09/09/93-billion-will-be-illegally-wagered-on-n-and-college-football/ad8c61a78810

[15] https://www.jdsupra.com/legalnews/the-supreme-court-may-14-2018-12047/

law that effectively banned commercial sports betting in most U.S. states. Now, states are allowed to establish their own sports-betting laws, so the volume of *eSports* betting is expected to explode even more.[16]

eSports betting is similar to traditional sports betting. Holden, Rodenberg and Kaburakis (2017b) lists three main categories of *eSports* wagering: eSportsbook wagering, fantasy *eSports*, and betting using in-game items. The first two categories are very similar to popular forms of traditional sports betting, while the last one is specific to *eSports*. eSportsbook wagering just means that people place bets on the outcomes of *eSports* events, for example, the LoL World Championship, instead of traditional sporting events, such as NHL or NBA games. Fantasy *eSports* allows participants to create their own virtual team of *eSports* players participating in a specific event, or a series of events, usually given a predetermined team salary cap. The virtual team receives points based on the performance of the real-life players. The virtual team that accumulates the highest scores wins the fantasy competition. eSportsbook wagering and fantasy *eSports* constitute the main components of "the cash" gambling market.

One of the peculiarities of the *eSports* wagering market is that participants can bet not only cash, but also some virtual items called skins. Skins allow changing appearance (but not functionality) of a player's in-game avatar, weapons, or equipment. Grove (2016b) compares their function to that of a casino chip. Players can deposit skins at a betting website and gamble using their deposited skins. They can not only place bets on any *eSports* outcomes, but also play traditional casino games such as blackjack and roulette, or a group of players can pool their skins and choose the winner by the means of lottery. Winners are paid in additional skins which they can use in a game, trade for other skins, or exchange for cash on third-party sites.

Out of 5.5 billion dollars total *eSports* wagering market in 2016, cash betting constituted only 649 million dollars or about 12% (Grove, 2016a); skin gambling accounted for the rest 88%. eSportsbook betting represents the main part of the cash gambling market – around 92%, with fantasy *eSports* amounting to 3% and head-to-head competitions to 5%. Head-to-head competitions imply that players bet on the outcomes of matches they participate in. According to Holden, Rodenberg and Kaburakis (2017b), there are four games that receive 92% of all current cash bets: League of Legends (38%), Counter Strike: Global Offensive (29%), Dota 2 (18%) and Starcraft 2 (7%).

The market for skin gambling is distributed across several dominant products (Grove, 2016b). eSportsbook betting is the largest segment, amounting to

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[16] https://www.engadget.com/2018/05/31/esports-betting-gambling-legal-supreme-court-sportsbooks/

about 45% of all skins bets. The second most popular type of skin betting is jackpot-style games (26%), essentially lotteries, where players receive tickets based on the value of their deposited skins. Roulette-style and coin-flip games constitute 14% and 6% of all skins bets, respectively. The rest is a mixture of many smaller games such as blackjack, mystery boxes, slot machines, raffles, etc.

Despite the fact that skin betting accounts for about 88% of the *eSports* total wagering market, it primarily occurs within the player community of one game – Counter-Strike: Global Offensive (Grove, 2016b). The game was developed by Valve Corporation, which also owns the Steam marketplace, a digital distribution platform that provides technology allowing third-parties to enable trading, buying and selling skins. Even though Valve itself condemns gambling practices, and Steam does not have a system for turning skins into real world currency,[17] gambling with virtual items is acceptable under US laws and third-party websites create fluidity between virtual items and real currency, making skin betting ethically and legally questionable. The main controversy lies in the lack of age screening procedures that propels unregulated underage gambling.

In 2016 two lawsuits were led against Valve[18] resulting in cease and desist orders to websites using Steam accounts for commercial purposes (Holden, Kaburakis and Rodenberg, 2017a). In March 2018, to further combat the misuse of Steam accounts, Valve imposed a seven-day ban on trading new items.[19] Now, after acquiring a new skin (via trading or buying from the marketplace), players will have to wait seven days before being able to trade it again. The ban is supposed to impede the use for skins for gambling purposes, since the websites enabling gambling highly rely on the ability to trade each item very frequently.

With the market rapidly growing, there is a scarcity of research addressing *eSports* and gambling. The existing literature is mostly focused on legal and regulatory issues, especially on legal ramifications of classifying *eSports* as sport in U.S. (Owens, 2016; Holden, Kaburakis and Rodenberg, 2017a). Macey and Hamari (2018a) investigate the relationship between *eSports* spectating and gambling. Using data from international online survey they find that consumption of *eSports* has small to moderate association with gambling via the Internet, but not with offline gambling.

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[17] http://www.digitalspy.com/gaming/news/a801327/valve-publicly-condemns-csgo-betting-sites/

[18] McLeod, *et. al* v. Valve Corporation and Reed v. Valve corporation.

[19] http://blog.counter-strike.net/index.php/2018/03/20308/

Further, Macey and Hamari (2018b) analyze participation rates and demographic characteristics of *eSports* spectators who gamble. The results indicate that individuals involved in *eSports*-related gambling activities are mostly young males, often underage. Participation rates were estimated at 67%, with rates of problematic and potentially problematic gambling at 50.34%. Even though the results of Macey and Hamari (2018a, b) rely on self-selected online survey data, which makes the generalizations difficult, these two studies highlight two important issues with *eSports*-related gambling. First, they provide evidence that underage gambling often takes place. Second, they underline convergence of gambling and the consumption of *eSports* via skin gambling and loot boxes.

Loot boxes are virtual items that players can buy with real or in-game currency, and which can be redeemed for a random selection of further virtual items, ranging from purely cosmetic items for a game character to game-changing equipment such as weapons or armor. One can equate loot boxes to gambling, because when a player opens a loot box, the items inside might not be what the player wants or they could be useless for a particular character. This could entice the player to spend more money to buy more loot boxes until he or she hits the jackpot.

In 2017, the Entertainment Software Rating Board (ESRB), which rates games for age appropriateness and factors like violence or sexuality, issued a statement saying that ESRB does not consider loot boxes to be gambling,[20] rather loot boxes are similar in principle collectible card games: players do not always get what they want but they always get something. The Entertainment Software Association, which represents game companies, stated that loot boxes "are a voluntary feature in certain video games that provide players with another way to obtain virtual items that can be used to enhance their in-game experiences" and that "they are not gambling".[21]

Despite these statements, in November 2017, Rep. Chris Lee of Hawaii proposed legislation that would prohibit the sale of games containing loot boxes to minors (House Bill 2686) and require game publishers to publicly disclose the odds of obtaining specific items from randomized loot boxes in their games (House Bill 2727).[22] If passed, the bills will not going to be the first legislation concerning the loot box practices. In 2017, Belgium's gambling authority decided that purchasable loot boxes constitute gambling[23] since they

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[20] https://kotaku.com/esrb-says-it-doesnt-see-loot-boxes-as-gambling-1819363091

[21] https://www.cnbc.com/2017/11/22/state-legislators-call-eas-game-a-star-wars-themed-online-casino-preying-on-kids-vow-action.html

[22] https://arstechnica.com/gaming/2018/02/no-video-game-loot-boxes-for-buyers-under-21-says-proposed-hawaii-bills/

[23] https://www.engadget.com/2017/11/22/belgium-moves-to-ban-star-wars-battlefront-2-style-loot-boxes/

mix "money and addiction". In April 2018, video game loot boxes declared illegal under Belgium gambling laws. If video game publishers fail to comply, they can face a fine of 800,000 euros and up to five years in prison.

So far, the existing research on *eSports*-related gambling activities identified participants, specific practices and issues of this newly emergent and rapidly growing market. Yet there a lot of work remains to be done in this area.

3. Cheating in eSports Contests

Preston, and Szymanski (2003) identify three main categories of cheating practices in sport. The first is sabotage, which corresponds to any activity which reduces the performance of rivals, such as illegally restraining or assaulting competitors, or provoking illegal responses from competitors. The second is doping, which is defined as the ingestion of illicit substances or use of illicit methods to enhance athletes' performance. The third is match-fixing, the situation when one team makes side payments to the opposite team to make less effort or to referee to make biased decisions, or situations when players or officials can gain monetary benefit from gambling on the outcome of a competition.

Cheating and sabotage takes a slightly different form in *eSports*. Due to the computerized environment of competitions, teams are able to use software cheats in order to increase their chances to win or conduct online attacks to slow and disable an opponent. The gaming industry contains market for cheaters. They can purchase all kinds of digital tools to get around game rules. For example, they can buy modified code which allows gamers' characters to acquire special powers that would give them an unfair advantage over opponents. In 2018, a cybersecurity company Irdeto (2018) conducted an online survey of 5911 online gamers from six countries including China, Germany, Japan, South Korea, UK and US. The results of this *Global Gaming Survey Report* indicate that 60% of online gamers reported their multiplayer gaming experience to be negatively impacted by other players cheating on multiple occasions.

Doping is also a significant problem in *eSports*. After the 2015 doping scandal, when a professional Counter-Strike player admitted in interview that he and his teammates used Adderall while competing in a major *eSports* event, the Electronic Sports League (ESL) – the largest organizer of *eSports* tournaments – released a list of banned substances and announced the introduction of random drug-testing at their events (Holden, Rodenberg and Kaburakis, 2017b). But the

general concerns about doping in *eSports* still remain because, apart from ESL, which specializes in League of Legends and Counter-Strike tournaments, there is no independent regulatory body for *eSports*.

There have been several match-fixing incidents at all levels of *eSports* competitions, including top-level tournaments. In 2013, a player and the manager of AHQ Korea – one of the top League of Legends teams, were found guilty of match-fixing.[24] They placed heavy bets against their own team and attempted to throw matches. After the match-fixing scandal in 2014, involving two professional Counter-Strike teams (iBuyPower and NetCodeGuides), Valve announced that 21 Counter-Strike players who were accused of willingly participating in match-fixing in competitive matches were permanently banned from the professional gaming events sponsored by Valve.[25]

The eSports Integrity Coalition (ESIC) was established in 2015[26] to combat the unethical described above. The ESIC created documents covering each category of cheating practices: Code of Conduct regulates incentives to win, Anti-Corruption Code deals with match-fixing, and Anti-Doping Policy defines the list of prohibited substances, describes procedures of testing players and specifies sanctions for anti-doping violations.

Aiming to protect the integrity of *eSports*, the ESIC partnered with a plethora of sportsbooks, betting sites, and local state gaming authorities to police integrity in *eSports*. For example, if one of the betting sites detects suspicious betting patterns it will report to the ESIC which, in turn, will investigate potential match-fixing with assistance from local gaming authorities. According to the Interpol (2018), there were 39 significant alerts about possible match-fixing to ESIC in 2017.

Overall, all "regular sports" cheating practices can be found in *eSports*, but there are some elements specific to *eSports* that can exacerbate the issue. First, the unregulated skins gambling market makes transactions between parties in *eSports* easier, encouraging cheating. Second, the computerized environment of *eSports* allows easy communication between team players and other parties (for example, owners of illegal betting sites), increasing opportunity for collusion. Third, the fact that videogames are essentially programming code introduces completely new tools for cheating, such as modifying the code to gain an unfair advantage. "Regular sports" does not have any experience in policing these types of unethical behavior. Combating cheating seems like a big challenge

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[24] https://www.polygon.com/2014/3/18/5522192

[25] https://kotaku.com/pro-teams-implicated-in-huge-counter-strike-match- xin-1680514379

[26] https://www.esportsintegrity.com/about-us/what-we-do/

ahead for the industry. The issue might be approached from the supply side, by increasing the cost of hacking the code and controlling websites selling cheating tools, or from the demand side by reducing players' incentives to cheat. Finally, all efforts promoting integrity in *eSports* are decentralized and mainly depend on the willingness of a particular tournament organizer to participate. Since the *eSports* industry and its betting market are growing explosively all the issues pointed above will require multidisciplinary research.

VI. CONCLUSIONS

In the last three decades we have been observing an exponential growth in the *eSports* industry, the industry of "organized video games competitions" (Jenny *et al.,* 2017). Today, this industry is well-established both in terms of economic size and participants, and it has promising perspectives taking into account the demographic composition of its audience and its dynamic development (new games, technological improvements etc.).

This paper focuses on three aspects associated with this "new" industry: the structure, the organization and the size of the industry; the characterization of the audience; and the overview of the current research on topic and discussion of the possible directions for the future research. The main findings and conclusions can be summarized as follows:

- The *eSports* industry has more complex structure in comparison to traditional sports, because different agents can play multiple roles. The evidence about the industry revenues and the audience following (the fans who follow *eSports* in different ways) is very promising with a cumulative estimated annual growth rate for the period 2017-21 of 23% and 13.6%, respectively. But the consolidation of this trend relies on building a robust framework to govern both the industry, and financial and economic relationships within it.

- *eSports* and traditional sports participation are complementary, according to different pieces of evidence provided in the paper, supporting previous findings in the literature. The paper also provides some evidence on the profile and opinions of *eSports* participants, which can be useful in the design of marketing strategies in this industry. In particular, *eSports* participants practise team sports more frequently and the participation in organized competitions is higher than for non video gamers. Additionally, the main motivation for practising *eSports* is fun and entertainment, whereas consoles for video games and technological

goods are the products which are seen as much representative for advertising in *eSports*.

■ The availability of detailed data on individual/team performance allows researchers to use *eSports* setting to study questions related not only to sports economics but also to labor and behavioral economics. Moreover, *eSports* has specific features – computerized nature of the competitions and heavy embeddedness of betting market in the industry – that deserve special attention of researchers.

All in all, the recent evolution of the *eSports* industry is opening the new era in the sports industry. *eSports* will be considered as a new sport, with complementary relationship to the traditional sports, which opens vast opportunities for all stakeholders in the sports industry. At the same time, research based on *eSports* has a potential to contribute, not only, to relevant issues in sports economics, but also in economics, in general.

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