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Venture capital financing in the eSports industry

Corina-Elena Niculaescu, Ivan Sangiorgi, Adrian R. Bell *

ICMA Centre, Henley Business School, UK

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ABSTRACT

We examine the drivers of venture capital financing raised by eSports companies, using the *Crunchbase* database containing information on private and public companies receiving any type of venture capital funding worldwide. We find that companies located in Asia-Pacific and Americas attract more funding than in Europe. Venture capital funds are more likely to fund late stage and older companies, than innovative early stage and younger firms. We also observe that the founders' previous experience plays a significant role in explaining the level of funding. Companies with at least one founder with previous eSport, managerial or start-up experience are more likely to get more funding by venture capital funds. Our research provides new evidence on how venture capital funding is allocated between late stage and early stage firms as well as between older and younger companies in the eSport-industry and in different markets.

1. Introduction[1]

Electronic Sports (eSports) are video games played competitively at a professional level in tournaments or leagues, with the goal of winning a title or prize money (NewZoo, 2020). The first eSports competition dates to 1972 although the phenomenon only started taking off in the late 2000 s. Today eSports has gathered 454 million viewers per year across the world, is expected to increase to roughly 646 million by 2023 and attracted high peaks of viewership during the national Covid-19 lockdowns in 2019 and 2020 (NewZoo, 2020; YouGov, 2020).

Overall revenues have grown from $130 Million in 2012 to $865 Million in 2018, with a projection of $1556 Million for 2023 (NewZoo, 2020). Prize pools have increased too, for instance, in 2019 for the Fortnite World Cup, one of the most popular eSports game, winners shared $30 million.[2] The International 10 was postponed to 2021 due to the coronavirus pandemic, but despite that the prize pool has already reached a record of $40 million, which is a 2401 % increase from the first International tournament in 2015.[3] New monetization opportunities are attracting the interest of traditional investors, among which venture capital funds (VC) are playing a key-role (Goldman Sachs, 2018). Indeed, the level of funding provided by investors to eSports firms has seen a strong growth globally with $4.5 billion invested in 2018, as well as 103.1% growth delivered between 2014 and 2018, and investors expect to see this steadily increasing (Deloitte, 2019).

The potential of eSports attracted the interest of large, global VC funds such as Accel or Sequoia, who invest in a wide array of industries and development stages ranging from seed to late stage. More interestingly, VCs who solely specialize in gaming or eSports

* Correspondence to: ICMA Centre, Henley Business School, University of Reading, RG6 6BA, UK.
E-mail address: a.r.bell@reading.ac.uk (A.R. Bell).

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[2] https://www.forbes.com/sites/mattperez/2019/07/26/fortnite-world-cup-by-the-numbers/?sh= 780b14d6be0c, accessed 25 January 2021.

[3] https://dota2.prizetrac.kr/international10, accessed 30 March 2021.

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also emerged. For instance, global fund London Venture Partners only operates in the gaming sector. In 2015 BITKRAFT Ventures was founded in Germany, who according to their white paper specialize in eSports and gaming investments for seed and early-stage companies.[4] French-based Trust Esport established in 2018 operates under the same philosophy, targeting eSports technologies.[5] Most recently in 2019 Luxemburg/UK venture fund Hiro Capital was founded with the purpose of investing in a combination of games, sports, and technology for companies in all stages of development.[6]

These features and the innovative nature of eSports attracted the attention of scholars across many areas of research. in the fields of business (Parshakov et al., 2020a), marketing (Seo, 2016), consumer behavior (Abbasi et al., 2020; Weiss and Schiele, 2013), psychology (Jang et al., 2020; Matuszewski et al., 2020; Poulus et al., 2020) and economics (Dagaev and Stoyan, 2020; Parshakov et al., 2020b; Ward and Harmon, 2019; Parshakov et al., 2018). One of the first introductions of eSports to the academic literature occurred in 2006 when Wagner (2006) provided a brief history of eSports and suggested that strategic skills developed by eSports professionals could be transferable to management theory. Another interesting topic of debate is whether eSports should be considered the same as a traditional sport. Some scholars found evidence showing that eSports could be considered a 'sport', but despite that it has many unique characteristics that make it different from sports in the traditional sense (Hutchins, 2008; Jonasson and Thiborg, 2010; Witkowski, 2012).

While an increasing stream of research was produced in order to better inform the investment decision-making process of VC funds (Block et al., 2019; Signori and Vismara, 2018; Cumming et al., 2016; Gompers et al., 2010; Kaplan et al., 2009), to the best of our knowledge there are currently no works in the entrepreneurial finance literature which study the eSport phenomenon. Little is understood about how eSports companies get funded. We aim to fill the gap by analysing the funding structure and investments of VC funds in eSports companies and the drivers of funding.

There are an increasing number of start-up companies entering the eSports industry. The field is varied, and it is not limited to competitive gaming. The eSports companies studied in this paper are involved in the following activities: online video streaming, organizing eSports events and tournaments, producing hardware or software tools, communication, media and news, eSports teams' clubs and betting. The main revenue streams on the market come from sponsorships (58 %), media rights (17 %), ticketing and merchandise (11 %), publisher fees for organizing tournaments (11 %) (NewZoo, 2020; Deloitte Sports Business Group, 2019; Goldman Sachs, 2018). Streaming only accounts for 2 %, but it is projected to grow by 30 % in 2023 (NewZoo, 2020). For instance, eSports clubs in our sample such as Fnatic, Team SoloMid gain revenues from sponsorships, advertising, streaming and merchandise; ESL and Belong.gg organize tournaments gaining revenues from ticketing and media rights. Other areas that generate revenues based on eSports have been identified, and they can be described as a "peripheral" ecosystem, since they generate revenues based on eSports, but their core area of activity is something else (Ukie, 2020). Some examples include companies that operate in eSports betting (e.g., Midnite), media publishing companies (e.g., Esports Business Solution), consultancy (e.g., Code Read Esports), gaming data analytics and skill improvement (e.g., Mobalytics, LVLUP Dojo), marketing or traditional sports associations (e.g. British eSports Association).

Our paper aims to identify the drivers behind financing of eSports-related companies and answer three research questions. First, how does VC funding[7] raised by eSport companies differ between early stage companies and late stage companies, and firm age? Second, how does VC funding vary by region? We aim to determine which companies are more likely to receive funding based on them being headquartered in Europe, Middle East, and Africa (EMEA), the American continents (Americas) or Asia-Pacific (APAC). Third, does founders' experience such as previous managerial, start-up and eSports experience become a key determinant of VC funding obtained by eSports companies?

We contribute to the entrepreneurial finance literature by providing the first evidence of the drivers of venture capital financing in the eSports industry. First, our paper shows that variation in funding is largely explained by fundamental characteristics of the start-ups and the eSports market rather than being simply a market trend phenomenon, which is an important contribution to entrepreneurial finance, mitigating concerns that the popularity of eSports is just a fad (Cunningham et al., 2018; Esports Insider, 2021). Our findings shed light on the characteristics of eSports companies and the funding dynamics and provide potential investors with novel information in an environment of adverse selection. We find that funding stage, company age and location explained 36 % of variation in funding raised by eSports companies. We show that late stage and older companies are more likely to receive VC funding than early stage and younger firms. Second, we contribute to the literature on the relationship between regional effects and VC funding (Hege et al., 2009; Berglund, 2011; Humphery-Jenner and Suchard, 2013; and Güçbilmez, 2014), by documenting significant differences in funding based on companies' geographical location. Compared to companies based in EMEA, those based in the Americas or APAC are more likely to receive funding, confirming that region is a key factor of VC funding for eSports firms. We also find a statistically significant positive time trend of the amount of funding received by companies. However, this time trend only explains a small percentage of the overall variation in funding with respect to firm age, financing stage and region. This finding highlights the role that key company characteristics and financing stage plays in explaining the increase VC funding raised by eSports firms. Lastly, we contribute to the entrepreneurial finance literature on the link between founders' experience and VC funding (Hsu, 2007; Nahata, 2019; Franke et al., 2008; Eggers and Song, 2014; Lafontaine and Shaw, 2016), and show that founders' business experience has a positive impact on the amount of funding received. We find that companies with a team of founders with both start-up and eSports

[4] https://www.bitkraft.vc/vision/#past, accessed 30 March 2021.
[5] https://www.trust-esport.com/en/, accessed 30 March 2021.
[6] https://hiro.capital/vision/, accessed 30 March 2021.
[7] Throughout this paper when we use the terms venture capitalists or venture capital, we refer not only to venture capital financing, but to business angels and crowdfunding as well.

industry experience are more likely to raise funding than companies with non-experienced founders.

Our results have empirical implications for both VC investors and eSports entrepreneurs looking to raise funding. By providing an analysis of the eSports market structure, our findings can inform the decision-making process of VC interested to include innovative eSports companies in their investment portfolio. Similarly, start-ups gain insight about the optimal market conditions and firm characteristics which can increase the possibility of obtaining VC funding.

The remainder of this paper is organized as follows. Section 2 summarizes existing literature. Section 3 describes our dataset and methodology. Section 4 presents our empirical results. Lastly, Section 4. NaN summarizes and highlights the importance of our findings.

2. Literature review and hypotheses development

Venture capitalists' investment decisions are a multi-stage process (Fried and Hisrich, 1994; Gompers et al., 2020) and drivers of funding are diverse in the entrepreneurial literature. Kaplan and Stromberg (2004) identify three categories of factors responsible for VCs' decisions: internal factors (e.g., management quality or valuation), external ones (e.g., market size and competitors) and difficulty of execution (e.g. business model or product).

Start-ups can be in early or late funding stages, depending on their development, and equity investments in those start-ups by different agents can drive innovation. The structure and drivers of early stage equity financing are explored in the entrepreneurial finance literature from many perspectives, including seed money raised from business angels (Maxwell et al., 2011; Croce et al., 2018), or crowdfunding (Rossi and Vismara, 2017; Mochkabadi and Volkmann, 2018; Wallmeroth, 2019).

Traditionally, venture capitalists prefer mid to late stage ventures (Drover et al., 2017), and tend to follow up their initial contributions with larger later stage investments (Hellmann and Thiele, 2015). Late stage funding can consist of VC funding (Petreski, 2006) or a combination of venture capital, business angels (Drover et al., 2017; Block et al., 2019) and more recently crowdfunding (Stevenson et al., 2018; Kaminski et al., 2019; Wang et al., 2019). According to Hellmann and Thiele (2015) regardless of initial collaborations, at later stages VCs tend to invest on their own or in syndication with other VCs and discard business angels.

Funding raised in either stage can differ substantially (Cumming et al., 2019). Promising companies have a chance to become highly successful in later stages, as they receive follow-on financing rounds based on their performance (Wang and Zhou, 2004). For instance, Dahiya and Ray (2012) found that it is more efficient to assign greater resources to projects in a later stage of development, as making it to those stages is an indicator of high outputs in the earlier stages. On the other hand, when uncertainty is high (e.g. new, innovative industry) a skew towards early stages becomes efficient, allowing VCs to assess performance before continuing or increasing their investments in a later stage (Dahiya and Ray, 2012).

There is a stream of literature that explores the relationship between early and late stages. Crowdfunding and venture capital investments are positively related, suggesting that successful crowdfunding campaigns can have a positive impact on the perception of later stage investors on the new technology or market (Kaminski et al., 2019). Angels and venture capitalist are also related in their investment choices and funding sequences. Business angels and venture capitalists place great importance on revenue growth, business models and existing investors when choosing their investments (Block et al., 2019). Also, early stage involvement from business angels is associated with increased subsequent VC investments, and the combination of angels and VCs relates to higher funding amounts, increased follow-on rounds, as well as success (Croce et al., 2018).

Our study extends the findings from the general entrepreneurial finance research to the eSports industry. Even though more companies receive early stage funding, we posit that late stage amounts are significantly larger, and we formulate our first hypothesis.

Hypothesis 1. *Late stage eSports companies gain more funding than early stage eSports companies.*

VC funding also varies across different markets, as cultural and macro-economic factors drive financing as well (Jeng and Wells, 2000). Bertoni et al. (2015a) find that investment patterns in high-tech ventures differ significantly between Europe and U.S, as American VCs prefer younger and riskier investments. Also, European tech companies seek more external funding when the local availability of venture capital is high (Colombo et al., 2019). At the same time, VCs are usually clustered into cities known as 'VC hubs' and they display a strong inclination to keep their investments close to their headquarters (Cumming and Dai, 2010). Lutz et al. (2013) found that even in developed entrepreneurial ecosystems like Germany, the likelihood of raising funding decreases with the increase in geographical distance between investor and investee.

Performance also differs geographically with American VCs outperforming European ones and generally showing more sophistication due to efficient use of syndication, technical expertize, network connections and involvement of industry specialized VCs and corporate investors (Hege et al., 2009). Berglund (2011) adds to these findings, revealing that compared to Californian VCs, Scandinavian VCs have less technical experience and fewer network connections.

Furthermore, there are notable differences between American and Asian[8] VC markets as well. Humphery-Jenner and Suchard (2013) find that Chinese companies are backed by many foreign investors and the chances of a successful exit are maximized when a foreign VC teamed up with a local one. Moreover, in terms of exit strategies Chinese companies prefer M&As to IPOs because of the

[8] The discussion focuses more on China, as most research on foreign VCs focuses on this country and an overwhelming majority of APAC funding in our sample also corresponds to China.

difficult listing process on the Chinese markets (Humphery-Jenner and Suchard, 2013). Because of this same issues, small, profitable Chinese companies tend to list on ChiNext,[9] while large companies backed by foreign investors prefer to get listed on U.S exchanges (Güçbilmez, 2014).

As of 2020 the biggest eSports market is China with $385.1 million in revenues and 65 % of total venture capital infused in the industry at $2.3 Billion, followed by North America with $252.5 million revenues and 23 % of funding (NewZoo, 2020; Goldman Sachs, 2018). We contribute to the literature on the role that regional effects play in the VC funding by documenting that geographical patterns in VC funding distribution are also followed by eSports companies at the firm-level and develop the second hypothesis as follows:

Hypothesis 2. *We expect funding raised by eSports companies differs amongst regions, with start-ups in Asia receiving more funding than any other region followed by the US."*

Lastly, VC's decision-making process also take into account the characteristics of the founders. The human capital component has been found important in high-tech start-ups (Liu and Arthurs, 2019). Most notably, VCs place great value on the start-up's management team, and consider it one of the most important factors to look at when making decisions (Kaplan and Stromberg, 2004; Hellmann and Puri, 2002; Block et al., 2019; Gompers et al., 2020), as well as a predictor of success (Alemany and Villanueva, 2015). The importance of the management team is even more pronounced in early stage investments where past financial performance data for valuation is not readily available (Bernstein et al., 2017; Gompers et al., 2020).

Previous entrepreneurial experience of the founders positively relates to the chances of raising funding (Hsu, 2007; Nahata, 2019), as well as the business's success (Gompers et al., 2010; Cumming et al., 2016; Signori and Vismara, 2018). Overall, the entrepreneurial literature seems to agree on the positive prospects of serial experienced entrepreneurs regardless of whether they were successful or not in their previous experiences (Sarasvathy et al., 2011; Politis and Gabrielsson, 2009; Cope, 2011; Burke et al., 2018).[10] Nahata (2019) found that even when unsuccessful serial entrepreneurs are more likely to raise VC funding than those without start-up experience. Moreover, a few studies emphasize the importance of the learning component brought by experience. Both successful and unsuccessful endeavors, particularly in the same industry, increase the likelihood and amounts of future VC funding rounds (Franke et al., 2008; Eggers and Song, 2014; Lafontaine and Shaw, 2016).

Our findings build onto the existing literature regarding founders' background and experience. Our contribution emphasizes that the founders' experience is an important determinant of VC funding for the innovative eSports industry. Based on the body of literature presented above, we formulate the third hypothesis:

Hypothesis 3. *The eSports companies' founding team previous experience is positively related to the funding raised.*

3. Data and methodology

3.1. Sample selection and methodology

Our dataset consists of a cross-sectional sample of 251 individual companies with an eSports-oriented business model, sourced from the start-up financing platform Crunchbase from January 2012 to October 2019.[11] Only 136 companies have complete information on all the independent variables used in this paper to explain the variation in the level of funding by firm. The impact of these factors is assessed in different regression models. Hence the number of observations in regression results differ depending on the model specification used. The data is structured as a cross-section and not a panel, because the vast majority of companies in our sample only receive one round of funding.

We include only firms with the word 'eSport' in the company description and/or company industry category. This information was verified by looking up each company, checking their own websites or social media to determine the area of activity. We checked the effects of Crunchbase industry categories[12] in our regression analysis, but the results were not significant. This is a limitation of our study, as the sample is quite small and there are many different categories for eSports-related companies.

We use Crunchbase as a data source because it is an accurate representation of entrepreneurial activity. The use of Crunchbase for reputable academic research has been increasing since the platform's creation in 2007. For instance, it was used by researchers investigating equity crowdfunding (Yu et al., 2017; Signori and Vismara, 2018; Thies et al., 2018; Kaminski et al., 2019), business angels (Croce et al., 2018; Cumming et al., 2016; Morales-Alonso et al., 2019), accelerators/incubators (Bereitschaft, 2019; Cumming et al., 2017), a combination of venture capital and other types of funding (Wang et al., 2016; Herck Giaquinto and Bortoluzzo, 2020; Block and Sandner, 2009; Yang and Berger, 2017; Ferrati and Muffatto, 2021; Caviggioli et al., 2020), or predictors of start-up success (Ross et al., 2021; Futagami et al., 2021; Żbikowski and Antosiuk, 2021; Kwon et al., 2018; Ter Wal et al., 2016; Pisoni and Onetti, 2018).

[9] ChiNext is a board of the Shenzhen Stock Exchange, opened in 2009, similar to the American NASDAQ and aiming to attract fast growing or high-tech companies.

[10] MacMillan (1986) was the first scholar to describe entrepreneurs with past start-up experience as 'habitual entrepreneurs', also known as 'serial entrepreneurs.

[11] The first available observation dates back to February 2006. However, we have excluded all observations before January 2012 as only few observations per year are available before this date.

[12] For details on Crunchbase industries see: https://support.crunchbase.com/hc/en-us/articles/360043671353-How-are-industries-organized-

One disadvantage of Crunchbase and similar databases is the fact that the data is prone to self-selection bias (i.e., companies who opt to be displayed on these platforms are companies that received funding). Not all entrepreneurial ventures who apply for venture capital funding receive it. In qualitative interview-based research, academics found that around 2 % of investment proposals are accepted by VCs (Fried and Hisrich, 1994), or a median of 4 deals closed per year (Gompers et al., 2020), or even lower than 1 % (Petty and Gruber, 2011). A comparison between companies who received funding and those that did not would be ideal (i.e., using logistic regression model or Heckman correction), but this data is not available through Crunchbase. It can be argued that unlike other similar databases, Crunchbase also contains companies that do not declare receiving any funding round (Ferrati and Muffatto, 2020; Dalle et al., 2017). However, given the fact that the data is partially crowd-sourced,[13] we cannot determine with certainty whether the funding data is missing because the company did not receive funding, or simply because the information was not disclosed on the platform or removed for legal reasons.[14] Because of this drawback, we acknowledge that our results could be biased towards markets characterized by grater market disclosure of unsuccessful VC funding plans (e.g., US-based start-ups), as well as suffering from an over-representation of more successful start-ups. Despite this potential bias, our results regarding differences of funding by location are in line with literature expectations (Humphery-Jenner and Suchard, 2013; Güçbilmez, 2014; Hege et al., 2009; Berglund, 2011; Goldman Sachs, 2018; NewZoo, 2020). While we are aware of this drawback, potential solutions involve conducting surveys (Cosh et al., 2009) or interviews with professional investors to find out the percentage of rejected ventures, which is a different research trajectory and beyond the scope of this study.

Our dependent variable, total funding raised by companies measured in U.S dollars, and the main independent variables such as funding stage, location, company age, time when the funding was raised, and the identity of the founders are sourced from Crunchbase. VC investors are buying equity in the start-up, thus acquiring a permanent voting share. The dependent variable, total funding, was winsorised at 99 % level to account for possible outliers. For regression analysis, the natural logarithm of winsorized total funding is used to account for skewness.

The funding stage independent variables are constructed by considering different types of funding rounds and dividing them into five initial categories: seed, early-stage ventures, late-stage ventures, M&A, and IPO. Those categories were narrowed down based on the funding stage status provided on Crunchbase, as well as analysing individual funding rounds that companies received in order to better assess their development stage. As such, the seed stage was described by Crunchbase as a small round, including funding from individuals such as business angels, crowdfunding, friends, family, groups of angel investors. Amounts for funding rounds under the seed stage on Crunchbase range from $10,000 to $2 million.

The next stage identified was the early-stage ventures, corresponding to venture capital investments. Thus, financing rounds of venture series A and B are included in this stage, as they are small rounds, for young companies, ranging from $1 million to $30 million. Then, the late-stage ventures were identified as comprising venture series C, D and above, as well as private equity investments with amounts raised higher than $10 million. The M&A stage in our sample includes companies that have been acquired by others. Lastly, the IPO stage consists of companies that have gone public.

Due to the limited number of observations for late-stage ventures, M&A and IPO companies, we simplify the categorization into early and late stages only, where the dummy variable Late Stage takes values 1 for late stage companies, and 0 for early stage. Companies in the early stage include the seed stage financing, gathering young companies that are in the early stages of development attracting mostly business angels, crowdfunding, or small amounts from VCs. Late stage companies comprise late-stage ventures, M&A, and IPO. We refer to this stage as late because it comprises of companies in their later stages of development that received VC institutional funding, or even successfully exited through and M&A or IPO.

In order to account for geographical location, we divide regions according to EuroVoc (Publications Office of the EU)[15] and create three binary variables: EMEA which includes all European countries, Africa and Middle East; Americas which consists of Canada, U.S and South and Central America; and APAC for companies located in China, South Korea, Japan, Australia and other Asian-Pacific countries. For the regression analysis we choose to use region dummy variables rather than country dummy variables in order to avoid model overspecification by including too many independent variables.

Then, we observe that similar to market reports on the eSports industry, funding in our sample increased over time. Therefore, we created a time index by computing the average year when a company received funding. The years were scored in an ascending order from 0 to 7, corresponding to years from 2012 to 2019. In this way, a score for time effects was obtained to ascertain the impact of this variable on total funding and control for the presence of a time trend in the level of funding.

Another key firm characteristic which drives the level of funding is company age. The variable Age is computed as the difference in days between company average funding date and foundation date, divided by 365 days. It is measured in years and takes values between 0 and 20.[16]

Furthermore, dummy variables are introduced to account for founders' industry experience. Based on previous findings in the literature, we construct three binary variables measuring whether founders have previous managerial, start-up, and industry-specific

[13] https://support.crunchbase.com/hc/en-us/articles/360009616013-Where-does-Crunchbase-get-their-data-, accessed 27/01/2022.

[14] This information has been verified with Crunchbase Support Center.

[15] Online thesaurus administered by the European Union Publications Office. It provides a geographical classification of European countries, as well as for all the other continents.

[16] Age is used as a continuous variable in the regression analysis. However, we also presented in different categories when discussing summary statistics according to whether the firm is a young start-up (2 years or younger), a maturing start-up (between 3 and 4 years) or an established start-up (5 years or older).

experience. This data was collected manually by retrieving the founders' names from Crunchbase, then looking up each individual founder on LinkedIn or other social media websites, such as Twitter, Facebook or the company's own website.

In the case of companies with multiple founders, the variables take on the value of one, if at least one of the founding members has experience, and 0 otherwise. Hence the dummies related to experience capture whether there is at least some experience in the founding team, rather than individual level for each member.

Miloud et al. (2012) proposed a valuation model for young, tech start-ups with little financial information available, by introducing qualitative metrics regarding the founding team. Following Miloud et al. (2012) methodology, a founder is considered to have managerial experience if she previously held one or more of the following positions: President, Vice-President, CEO, CFOM COO or CTO. In addition, a founder has start-up experience if she previously founded or co-founded another company. Finally, a founder has eSports experience if she previously held a job in the eSports industry, irrespectively of the seniority level of her position.

3.2. Data and Summary Statistics

Table 1 presents summary statistics for the total funding raised over time by companies in our sample. A clear ascending trend of funding in our sample is observed. The number of eSports companies that receive funding increased from only 2 in 2012 to a peak of 81 in 2018. From $69 Million in 2012, to $2 Billion in 2018, venture capital funding in this industry is now more than 30 times larger than the figure observed at the beginning of our sample period. Furthermore, in 2019 the mean funding seems to be the highest at $31 Million, while the median value does not reflect this pattern. Given the smaller number of observations in 2019, this difference is explained by the funding received by few companies - Huya.com and Douyu.tv - who received large financing amounts.

Table 2, Panel A illustrates the distribution of firm age in our sample. Although the age spans from 0 to 19 years, the average age is 2.3 and median is 1.6 showing that eSports companies in the sample are overwhelmingly young, with an average track record of only 2 years. This result is in line with firm age in high-tech industries (eg. Biotech, software, Internet etc.). For instance, Bertoni et al. (2015b) find that VC backed firms in Europe and US are young, under 20 years of age. Ning et al. (2014) analyse US VC-backed high-tech start-ups, with most sampled firms aged between 3 and 10 years. Table 2, Panel B shows that while young start-ups represent 61.5 % of the companies in our sample, in terms of funding these companies represent only the second highest category with $1.1 Billion raised in total and corresponding to 23.7 % of total funding. Start-up companies between 3 and 4 years of age represent the second most common age group at 24.4 % of observations. In terms of total funding, start-up companies (3–4 years) gather most of the funding at $3.1 Billion (61.9 % of total funding). The oldest, more established companies attract the least number of investments, but when analysing median amounts, they have the largest funding at $9.379 Million. Established companies are associated with later stages of investment, which according to the entrepreneurial literature inspire more confidence, and hence larger investments (Dahiya and Ray, 2012; Hellmann and Thiele, 2015; Drover et al., 2017).

The observed values are plausible, in line with literature findings (Cumming et al., 2019; Dahiya and Ray, 2012; Bertoni et al., 2015b). These results might be due to that fact that young eSports companies would have a harder time to secure funding, as they might not have a fully developed product or network yet. Maturing start-ups on the other hand tend to be more developed to gather the necessary VC funding. Older established companies should have a record of profitability and revenues,[17] making them easier to valuate for VC investors and more attractive. While older firms might not turn to the VC market for funding as much as young start-ups, when they do, they are more likely to get funding as reflected by the larger median value of funding raised by older companies.

As presented in Table 3 Panel A, the largest number of companies in our sample corresponds to the seed stage, followed by early stage venture capital, illustrating that most firms in this industry are relatively young and are just starting to raise venture capital financing to support their operations.

In terms of total amounts of funding, the largest amounts correspond to late stage ventures and IPOs, at $1.6 Billion and $1.5 Billion, respectively corresponding with findings from previous literature. Late stage investments are greater than early ones but less frequent, possibly suggesting increased confidence in the project and filtering of bad ventures over time by VC investors (Wang and Zhou, 2004; Dahiya and Ray, 2012; Hellmann and Thiele, 2015). Even though M&As and IPOs are both considered exit stage deals, total and average M&A amounts are smaller than IPO ones. A possible explanation for this observation is that 3 out of the 5 companies with IPOs in our sample are based in the APAC region, the market leader in terms of VC financing, whereas all M&A deals involve companies based in EMEA or the Americas (Table 3, Panel B).

In Table 3, Panel C a Pearson's correlation analysis between funding and funding stages is presented. These results show a positive and statistically significant correlation between funding and early stage ventures, late stage ventures, M&As, IPOs, and a negative relationship only between funding and seed stage.

Table 4 presents summary statistics for total funding raised by location. As expected, China and the U.S display the largest amounts of total VC funding by far. China accounts for $2.9 Billion of funding, followed by the U.S with $1.7 Billion. The result presented in Table 4 represents a plausible picture of the eSports funding geographical distribution with APAC being the market leader, as described in several industry reports (NewZoo, 2020; Deloitte, 2019; Goldman Sachs, 2018). The results are in line with academic research on regional variations of VC funding (Colombo et al., 2019; Hege et al., 2009), suggesting that the sample is not biased or over-representing American companies.

With just 14.3 % of the companies in the sample, APAC attracted over $3.1 Billion in funding, accounting for 56.5 % of total funding

[17] Crunchbase does not provide information about profits and revenues of eSports firms over time. This data limitation does not allow us to directly test whether profits and revenues drive the level of funding obtained by eSports companies, and instead use Age as an indirect proxy.

Table 1
Summary Statistics for Total Funding Raised by eSports Companies Over Time. This table presents summary statistics for total funding raised by eSports companies, categorized by years over the sample period January 2012 to October 2019. Total funding represents the total funding amounts raised by eSports companies from VCs. All values are expressed in millions of dollars (USD).

Year	Obs.	Total amounts	Mean	Median	Min	Max	Std. dev.
2012	2	69.200	34.600	34.600	0.172	69.000	48.700
2013	3	35.100	11.700	0.050	0.050	35.000	20.200
2014	9	95.900	10.700	0.250	0.027	87.000	28.700
2015	22	290.000	13.200	1.775	0.060	95.100	29.100
2016	38	214.000	5.632	0.634	0.013	100.000	16.700
2017	54	1200.000	22.300	2.187	0.025	540.000	79.900
2018	81	2270.000	28.000	2.500	0.010	1130.000	129.000
2019	42	1300.000	31.000	2.036	0.043	864.000	133.000
Total	251	5480.000	21.800	1.860	0.010	1130.000	99.100

Table 2
Total Funding Raised by Company Age. This table presents summary statistics for companies' age, and funding raised by company age. Total funding is expressed in millions of dollars (USD). Panel A presents summary statistics for companies' age as a continuous variable. In Panel A age is a continuous variable computed as the difference in days between company average funding date and foundation date, divided by 365 days. It is measured in years and takes values between 0 and 20 (see Section 3.1.). Panel B presents summary statistics for total funding expressed in millions of dollars (USD) grouped by the 3 age categories ranging from young start-ups (bellow 2 years), start-up (3–4 years) and older more established companies (higher than 5 years).

Panel A - Summary statistics for companies' age

	Obs	Mean	Median	Min	Max	Std. dev.
Age	221	2.341	1.581	0	19.085	2.636

Panel B - Summary statistics for total funding raised by age groups

	Obs	% of obs	Total amounts	% of total	Mean	Median	Std. dev.
Young Start-up (≤2 years)	136	61.538%	1190.000	23.705%	8.765	0.876	47.400
Start-up (3–4 years)	54	24.434%	3110.000	61.952%	57.700	2.700	195.000
Established (≥5 years)	31	14.027%	711.000	14.163%	22.900	9.379	29.500
Total	221	100.000%	5020.000	100.000%	22.700	1.800	105.000

raised. The majority of those amounts come from China, which makes up 96.4 % of the overall APAC funding. The second highest market, Americas represents 49.4% of the companies in our sample. The funding of Americas region comes mainly from the U.S (92.5 % of the regional total financing), followed by Canada and with almost no contributions from Central and South America. Those are reasonable observations, as it has been noted by many eSports analysts that North America has been one of the market leaders for a long time (Goldman Sachs, 2018). EMEA's funding comes predominantly from Western Europe accounting for 35.6 % of total funding in this region, followed by Eastern Europe (30.5 %), and Northern Europe (22.4 %). Venture capital funding for Africa and the Middle East is negligible in our sample, as they make up only 0.007 %, respectively 0.9 % of overall funding. The observed differences in funding amongst regions are confirmed in Panel B through paired t-tests' results, showing statistically significant differences in funding amongst all regions mentioned. Similarly, Panel C illustrates positive and significant correlations between funding, Americas and APAC, and a negative correlation between EMEA and funding.

Overall, in Asian countries there are a few very successful, fast-growing companies that drive most of the funding in the industry. Whereas, in North America and Europe funding amounts seem to be spread across a multitude of smaller companies. There are several reasons why there is a small number of Asian firms with respect to US and Europe, and that could explain why these start-ups tend to receive large amounts of funding. First, there are fewer eSports start-ups in APAC compared to Americas, leading to fewer options for VC investors. Second, Asian companies tend to have larger revenues, better track record and higher expected rates of success. Third, the types of investors involved in funding rounds are different across geographical location, with more corporate venture capital contributions in Asia compared to North America and Europe. Moreover, funding for eSports start-ups in Asian countries tends to be large but allocated to a small number of firms due to the greater government support and investments from corporations (i.e., corporate venture capital). Asian countries like South Korea and China were pioneers in the eSports industry, long before the market developed in the US or Europe, with more established companies. For instance, Chinese corporations Tencent and Baidu are some of the biggest eSports investors of all time, with over $6 Billion and respectively $4 Billion investments in eSports each (NewZoo, 2020). Promising companies receive funding and support from such investors, with the Asian market showing a focus on quality, profitability and building track records rather than quantity. Finally, another possible explanation is that the Crunchbase dataset does not cover the Asian eSports market as well as the American or European ones, hence resulting in a slightly smaller number of Asian start-ups in our sample and related sample bias.

Table 3
Total Funding Raised by Funding Stage and Region. This table presents summary statistics for total funding raised grouped by companies' funding stage and location. Values are expressed in millions of dollars (USD). Seed, early stage venture, late stage venture, M&A and IPO represent detailed funding stages taking the value 1 if a company is in that stage of funding and 0 otherwise. EMEA, Americas and APAC are all binary variables taking the value one if a company is located in that particular region, and zero otherwise. For performing correlations, the natural logarithm of total funding is used. Panel A presents summary statistics of total funding grouped by funding stage including. Panel B presents summary statistics for total funding raised in a particular funding stage, grouped by geographical regions. Panel C reports the Pearson's correlation matrix of natural logarithm of total funding, seed, early stage venture, late stage venture, M&A and IPO funding stages. *,** and *** represent significance at 10%, 5% and 1% levels.

Panel A - Summary statistics for total funding raised by funding stage

	Obs.	Total amounts	Mean	Median	Std. Dev
Seed	121	171.000	1.412	0.362	2.646
Early Stage Venture	43	959.000	22.300	12.500	40.400
Late Stage Venture	6	1600.000	267.000	70.800	432.000
M&A	14	291.000	20.800	3.815	32.200
IPO	5	1510.000	301.000	94.400	385.000
Total	189	4530.000	24.000	1.249	113.000

Panel B - Summary statistics for total funding raised by stage in each region

	Obs.			Total Amounts			Mean		
	EMEA	Americas	APAC	EMEA	Americas	APAC	EMEA	Americas	APAC
Seed	55	51	15	65.900	91.700	13.300	1.198	1.798	885.521
Early Stage Venture	9	22	12	65.100	424.000	470.000	7.228	19.300	39.100
Late Stage Venture	1	3	2	26.000	421.000	1160.000	26.000	140.000	579.000
M&A	5	8	1	105.000	185.000	0.110	21.100	23.100	0.110
IPO	-	2	3	-	98.900	1410.000	-	49.400	469.000
Total	70	86	33	262.000	1220.000	3050.000	3.748	14.200	92.300

Panel C - Pearson correlation matrix by funding stage

	Funding	Seed	Early Stage Venture	Late Stage Venture	M&A	IPO
Funding						
Seed	-0.633***					
Early Stage Venture	0.439***	-0.550***				
Late Stage Venture	0.243***	-0.225***	-0.085			
M&A	0.132*	-0.557***	-0.209**	-0.086		
IPO	0.261***	-0.198***	-0.074	-0.030	-0.075	

3.3. Econometric model

In this section we explain the variation of total funding obtained by eSports companies. Given the structure of our cross-sectional data, we employ an OLS (Ordinary Least Squares with robust standard errors) model to address our three hypotheses. Our results are quantitatively similar when using standard errors clustered by 31 countries. Therefore, Eq. 1 represents the core model specification used to explain the total funding raised by eSports companies:

$$\ln(TotalFunding_i) = \alpha + \beta_1 Time + \beta_2 Age_i + \beta_3 Age^2 + \beta_4 LateStage_i + \beta_5 Americas_i + \beta_6 APAC_i + y^{'}X + \varepsilon_i \quad (1)$$

where α is a constant term and ε is an i.i.d. error term. Ln (Total Funding), Time, Age, Late Stage, Americas and APAC are explained in Section 3.1. $y^{'}X$ represents a vector of control variables, including dummies for founders' experience and their interaction terms, described in more detail in Section 3.1. Time represents the average year when a company received funding. Age is a continuous variable measured in years computed as the difference in days between company average funding date and foundation date, divided by 365 days. Late stage is a dummy variable taking the value 0 if the eSports company is an early stage venture and 1 if it is a late stage venture. EMEA, Americas and APAC are dummy variables taking the value 1 if the eSports company is located in that region and 0 otherwise. Founders' experience are three dummy variables measuring whether founders have previous managerial, start-up, and industry-specific experience.

4. Results and discussion of results

4.1. Core Results

Table 5 presents regression results on the link between the variation of the total funding obtained by each eSport company and the core independent variables. Column (2) from Table 5 introduces the Age variable. The coefficient of Age is positively related to total funding and significant at 1%. One standard deviation increase in age leads to a 2.5% increase in funding raised.[18] The implication is

[18] The effect of a standard deviation change on the dependent variable (natural logarithm of total funding) was computed as *standard deviation * regression coefficient* (e.g. 0.325 * 0.078 = 0.025).

Table 4
Total Funding Raised by Region. This table reports summary statistics, t-tests and correlation matrix of funding grouped by companies' region. EMEA, Americas and APAC represent the main regions and they are further divided based on the regions and/or countries they contain according to EuroVoc regions. Funding is expressed in millions of dollars (USD). When performing t-tests and correlations, the natural logarithm of total funding was used. Panel A presents summary statistics of total funding raised by regions. Panel B presents mean differences in natural logarithm of total funding based on regions. Panel C reports the Pearson's correlation matrix of natural logarithm of total funding, EMEA, Americas and APAC. * ,* * and * ** represent significance at 10%, 5% and 1% levels.

Panel A - Summary statistics for total funding in different regions

		Obs.	% of Obs.		Total amounts	Percentage of totals		Mean	Median
			% of total	*% of region total*		*% of total funding*	*% of region funding*		
EMEA		91	36.255%		514	9.380%		6	1
	Northern Europe	10	3.984%	10.990%	115	2.099%	22.374%	12	2
	Western Europe	50	19.920%	54.950%	183	3.339%	35.603%	4	1
	Eastern Europe	12	4.781%	13.190%	157	2.865%	30.545%	13	0.462
	Southern Europe	12	4.781%	13.190%	9.341	0.170%	1.817%	1	0.354
	Africa	2	0.797%	2.200%	0.393	0.007%	0.077%	0.197	0.197
	Middle East	5	1.992%	5.490%	49.6	0.905%	9.650%	10	1
Americas		124	49.402%		1870	34.124%		15	3
	Canada	9	3.586%	89.520%	137	2.500%	7.326%	15	1
	U.S.A.	111	44.223%	3.230%	1730	31.569%	92.513%	16	3
	South & Central America	4	1.594%	29.030%	2.023	0.037%	0.108%	1	0.26
APAC		36	14.343%		3100	56.569%		86	2
	China	17	6.773%	47.220%	2990	54.562%	96.452%	176	15
	South Korea	3	1.195%	8.330%	84.2	1.536%	2.716%	28	36
	Japan	3	1.195%	8.330%	12.5	0.228%	0.403%	4	2
	Australia	4	1.594%	11.110%	9	0.167%	0.295%	2	2
	Other APAC countries	9	3.586%	25.000%	7	0.130%	0.230%	1	0.3
Total		251	100.000%		5480.00	100.000%		21.8	1.86

Panel B - Paired t-tests between average funding in different regions

Mean		Mean		t-value
EMEA	13.206	All	14.358	4.170***
Americas	14.258	All	13.638	-2.285**
APAC	14.695	All	13.817	-2.290**
EMEA	13.206	Americas	14.258	-3.830***
U.S.A.	14.382	China	16.114	-3.269***

Panel C – Pearson's correlation matrix by region

	Funding	EMEA	Americas	APAC
Funding				
EMEA	-0.258***			
Americas	0.144**	-0.794***		
APAC	0.145**	-0.267***	-0.374***	

that older eSports companies attract more funding than younger firms. This result confirms previous findings from the literature as we would expect older companies to be in later stages of funding as they are more profitable than younger firms, making them more desirable investments for VC funds (Dahiya and Ray, 2012; Hellmann and Thiele, 2015; Drover et al., 2017; Wang and Zhou, 2004).

Furthermore, in Table 5, column (3) we account for possible non-linear effects of age on total funding. Age squared is negative and significant. One standard deviation increase in age squared would make companies 0.05% less likely to receive funding. The non-linear age effect is plausible because increasingly older companies would require venture capital funding to a lesser extent, as they are more established and usually more profitable than younger firms. Also, the adjusted R-squared reported in column (3) is of 18.8%, suggesting that company age alone explains almost 20% of the observed variation in funding.

Subsequently, the fourth column presents regression results when time and age are considered together. The sign of the relationship between funding and the time variable remains positive. This result shows that the higher the average funding year for a firm, the higher their probability of receiving VC funding. This result confirms the existence of a positive trend in the level of funding received by eSports companies. However, the economic significance of this trend is small as Time explains only 1% of the variation in total funding.

The next step in our analysis is to test our first hypothesis that late stage firms attract more funding than early stage companies. Column (5) presents results using late stage alone. It appears that companies in late stage receive 2.7% more funding than companies in early stage. Later stage eSports firms are more likely to be funding recipients, most probably due to supply issues than demand, as early-stage firms are starved of funds due to lack of a track record, being in a relatively new industry which is perceived as unknown and risky without a strong track record of its own and moral hazard exposure. However, these supply issues could also disincentivise firms demand for funding at early-stages and incentivise demand at later stages when chances to be successful funding recipients are

Table 5
Regression Results of Total Funding Raised and Core Independent Variables. This table presents results for OLS regressions with robust standard errors (reported in brackets). The dependent variable used is natural logarithm of winsorized total funding (see Section 3.1.). Time is a continuous variable computed as average year when a company received funding, and it takes values between 0 and 7 corresponding to years from 2012 to 2019. Age is measured in years, computed as the difference in days between company average funding date and foundation date, divided by 365 days. Age-squared is also measured in years. Late Stage is a dummy variable taking the value 1 if a company is in that stage and 0 if it is in the Early Stage. Early stage is used as reference category. EMEA, Americas and APAC are all binary variables taking the value 1 if a company is located in that region, and 0 otherwise. EMEA is used as reference category. Columns (1) through (8) introduce the main variables one at a time, while column (9) presents the core model, containing all main variables. * ,* * and * ** represent significance at 10%, 5% and 1% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Time	0.204			0.167*		0.224***		0.132	0.188**
	(0.127)			(0.093)		(0.086)		(0.093)	(0.088)
Age		0.325***	0.809***	0.793***		0.675***		0.781***	0.685***
		(0.078)	(0.148)	(0.148)		(0.149)		(0.123)	(0.134)
Age-squared			-0.038***	-0.0369***		-0.036***		-0.037***	-0.0368***
			(0.012)	(0.012)		(0.012)		(0.010)	(0.010)
Late Stage					2.668***	2.191***			1.866***
					(0.554)	(0.564)			(0.516)
Americas							1.517***	1.448***	1.318***
							(0.344)	(0.308)	(0.302)
APAC							2.204***	1.982***	1.720***
							(0.612)	(0.580)	(0.531)
Constant	12.82***	13.31***	12.71***	11.75***	13.64***	11.33***	12.97***	10.98***	10.69***
	(0.782)	(0.223)	(0.243)	(0.565)	(0.174)	(0.0.532)	-0.233	(0.603)	(0.581)
Observations	166	166	166	166	166	166	166	166	166
Adjusted R-squared	0.013	0.126	0.188	0.195	0.156	0.282	0.118	0.296	0.360

higher. Column (9) shows that this result holds when controlling for age, time, and regions. This finding is in line with literature findings that late stage investments from VCs tend to be larger than the funding obtained by early stage firms (Kaminski et al., 2019; Dahiya and Ray, 2012; Hellmann and Thiele, 2015; Wang and Zhou, 2004; Drover et al., 2017) and supports our first hypothesis.

Following this, the second hypothesis of the impact of regions on funding is analysed. Table 5, columns (7) and (8) present regression results using regions and time as independent variable. Column (7) shows that compared to EMEA, companies headquartered in the Americas raise 1.5 % more funding. eSports companies situated in the APAC region receive 2.2 % more funding than EMEA. The statistically significant differences amongst regions confirm what was observed by other researchers (Berglund, 2011; Schwienbacher, 2005), as well as our own expectations and validate Hypothesis 2. Our results point to the key role played by access to funding in determining the leadership of APAC and Americas in the eSports industry.

Finally, Table 5 column (9) presents results of our core model combining time, age, funding stage and region. The adjusted R-squared is 36%, suggesting that those variables explain a great portion of the variability in total funding raised by eSports companies. The direction and significance of our core results hold, thus enabling us to confirm the relevance of our independent variables as main drivers of venture capital financing in the eSports industry. The overall economic impact of age is positive and equal to 9.2% increase in funding per one standard deviation increase in age. Late stage companies attract 1.9 % more funding compared to early stage firms. Also, compared to EMEA, Americas and APAC companies receive more funding by 1.3 % and 1.7 % respectively.

In Table 6, we study which factors explain more of the variation in funding levels and report results of the Owen decomposition for the adjusted R-squared.[19] Company age explains 28.5% of the model's R-squared, followed by late stage at 27.9 %, and the geographical regions together explain around 26 %. It is interesting to note that the time variable is not the most important driver, explaining only 5 % of the model's R-squared. This result confirms that the trend in total funding relates to factors representing fundamental characteristics of the eSports firms (age and funding stage), and features of the market (region).

4.2. Founders' experience and total funding raised by esports companies

Table 7, Panel A show statistics for the relationship between founder's experience and total funding raised by eSports firms. Only 62 companies have founders with any eSports experience, corresponding to a total amount of $1.35 billion in received funding. Firms with at least start-up experience obtain the largest amounts of funding corresponding to 79.1 % of total funding. Companies with founders experienced in both the eSports market and start-ups represent only 5 % of the sample and raise the most funding, followed by companies with founders just experienced in start-ups. Founders with start-up experience can provide access to fundraising networks and raise more funding. eSports experience equips founders with a skillset to operate the business efficiently and generate revenues, attracting the interest of VCs funds (Block et al., 2019; Dahiya and Ray, 2012).

Table 8, columns (1) to (3) present regression results for our model including Time and separate dummies for each type of

[19] The Owen Decomposition determines how much each independent variable used in a regression model contributes to the R-squared of that regression (Huettner and Sunder, 2012). The method is used with OLS linear regression, and Huettner and Sunder (2012) illustrate the Owen decomposition method using data on wages from the German Socio-Economic Panel as an example.

Table 6
Owen Decomposition For Core Model. This table represents an Owen decomposition for the core model presented in column (9) from Table 5. The results indicate how much each variable contributed to the regression's R-squared (*Sharpley % R2*). * ,* * and * ** represent significance at 10%, 5% and 1% levels.

Regressor	Coefficients	Std.Err.	Shapley %R2
Time	0.188 * *	0.088	4.989
Age	0.685 * **	0.134	28.537
Age-squared	-0.037 * **	0.010	12.410
Late Stage	1.866 * **	0.516	27.994
Americas	1.318 * **	0.302	14.196
APAC	1.720 * **	0.531	11.875
Intercept	10.693	0.581	
Observations	166		
Overall R2	0.387		
Root MSE	1.871		
F-stat. Model	17.067 * **		
Log Likelihood	-335.920		

Table 7
Descriptive Statistics for Total Funding by Founders' Previous Experience. This table reports summary statistics, t-tests and correlation matrix of total funding grouped by founders' experience. Values are expressed in millions of dollars (USD). At least eSports experience, at least managerial experience and at least start-up experience are dummy variables that equal 1 if a company's founders have at least that type of experience, and 0 if they don't. Only eSports, Only Managerial, Only start-up and None are dummy variables that equal 1 if a company's founders have only that type of experience and 0 otherwise. Panel A presents summary statistics for total funding by different combinations of founders' experience. Panel B presents paired t-tests on mean differences in funding based on at least eSports, managerial or start-up experience. Panel C reports the Pearson's correlation matrix of natural logarithm of total funding, at least eSports experience, at least managerial experience and at least start-up experience. * ,* * and * ** represent significance at 10%, 5% and 1% levels.

Panel A - Summary statistics for total funding raised by founders' experience

	Obs	% of obs	Total amounts	% of total	Mean	Median
At least eSports experience	62	29.952%	1350.000	28.970%	21.800	5.350
At least managerial experience	120	57.971%	3000.000	64.378%	25.000	3.158
At least start-up experience	116	56.039%	3690.000	79.185%	31.800	3.033
Only eSports	11	5.314%	96.000	2.060%	8.727	0.644
Only Managerial	24	11.594%	461.000	9.893%	19.200	2.596
Only Start-up	21	10.145%	921.000	19.764%	43.900	0.695
eSports & Managerial	11	5.314%	189.000	4.056%	17.100	2.500
eSports & Start-up	10	4.831%	425.000	9.120%	42.500	16.000
Managerial & Start-up	55	26.570%	1700.000	36.481%	31.000	2.500
eSports & Managerial & Start-up	30	14.493%	643.000	13.798%	21.400	6.225
None	45	21.739%	220.000	4.721%	4.881	0.359
Total	207	100.000%	4660.000	100.000%	22.500	2.000

Panel B - Paired t-tests between different types of experience

	Mean	t-value
At least eSports	15.245	-3.438 * **
At least managerial	14.910	-3.681 * **
At least start-up	14.899	-3.445 * **

Panel C - Pearson correlation matrix by founders' experience

	Funding	At least eSports	At least managerial	At least start-up
At least eSports	0.236 * **			
At least managerial	0.202 * **	0.138 * **		
At least start-up	0.198 * **	0.143 * **	0.318 * **	

experience. The estimated coefficient for having at least eSports experience is positive and suggests that companies with founders having this type of background raised more VC funding, compared to those companies without previous eSports experience. This result is in line with other academics' findings, confirming that previous experience in the relevant industry constitutes an advantage when raising funding (Lafontaine and Shaw, 2016; Eggers and Song, 2014; Sarasvathy et al., 2011; Franke et al., 2008). Companies with founders who have at least managerial experience would also experience increase funding by 1.1 %, in line with a vast body of literature on the effect that managerial experience has on funding obtained by firms (Kaplan et al. (2009), Bernstein et al. (2017) and Gompers et al. (2020). Similar results are found for experience with start-ups, as companies founded by serial entrepreneurs attract 1 % more funding compared to those who are not.

Table 8, column (9) represents results for the core model augmented with the binary variables for the three types of experience. Our findings about the impact of age, funding stage and region on the total funding are confirmed. The coefficient of the binary variable capturing eSports experience is positive and significant at 10 % with an economic impact equal to 0.7 %.

Table 8

Regression Results on Total Funding Raised and Founders' Previous Experience. This table presents results for OLS regressions with robust standard errors (reported in brackets). Other variable definitions and measurements are explained in notes to Table 5. At least eSports experience, At least managerial experience and At least start-up experience are all binary variables taking the value 1 if the company's founders have at least that type of experience and 0 otherwise. No experience is used as reference category in columns (4) and (9). The interaction term with no experience in either eSports, management or entrepreneurship is used as reference category in column (10). Columns (1) to (3) introduce the founders' experience variables alongside time. Column (4) puts together the experience variables. Columns (5) to (6) introduce the core model from Table 5 together with the experience indicators. Column (8) presents the core model using only common observations of the main and experience variables. Column (9) presents the core model alongside the experience indicators. Column (10) presents the core model and interaction terms between the experience indicators. * ,* * and * ** represent significance at 10%, 5% and 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time	0.195*	0.208*	0.203*	0.168	0.168*	0.182*	0.186*	0.198**	0.154	0.150
	(0.115)	(0.113)	(0.118)	(0.11)	(0.0967)	(0.0979)	(0.0982)	(0.0969)	(0.0983)	(0.102)
Age					0.933***	0.910***	0.926***	0.933***	0.916***	0.887***
					(0.158)	(0.162)	(0.158)	(0.159)	(0.158)	(0.157)
Age-squared					-0.0672***	-0.0609***	-0.0605***	-0.0634***	-0.0632***	-0.0588***
					(0.0116)	(0.0122)	(0.0118)	(0.0116)	(0.0120)	(0.0114)
Late Stage					1.726***	1.428***	1.553***	1.628***	1.546***	1.531***
					(0.528)	(0.532)	(0.535)	(0.516)	(0.546)	(0.538)
Americas					1.256***	1.261***	1.205***	1.316***	1.149***	1.192***
					(0.330)	(0.335)	(0.338)	(0.333)	(0.336)	(0.334)
APAC					1.365**	1.441**	1.195*	1.348**	1.299*	1.399**
					(0.671)	(0.685)	(0.663)	(0.675)	(0.665)	(0.648)
Only Start-up										0.424
										(0.608)
Only Managerial										1.221**
										(0.550)
Managerial & Start-up										1.017**
										(0.445)
Only eSport										0.975*
										(0.582)
eSport & Start-up										3.327***
										(0.757)
eSport & Managerial										0.559
										(0.609)
eSport & Managerial & Start-up										1.273*
										(0.735)
At least eSports	1.096 ***			0.941 ***	0.782*				0.691*	
	(0.340)			(0.335)	(0.416)				(0.403)	
At least managerial		1.102***		0.793**		0.566			0.315	
		(0.318)		(0.329)		(0.350)			(0.357)	
At least start-up			1.003***	0.643**			0.642*		0.485	
			(0.311)	(0.324)			(0.331)		(0.340)	
Constant	12.92***	12.53***	12.64***	12.37***	10.49***	10.34***	10.29***	10.48***	10.27***	10.08***
	(0.689)	(0.688)	(0.753)	(0.692)	(0.629)	(0.606)	(0.625)	(0.623)	(0.621)	(0.668)
Observations	136	136	136	136	136	136	136	136	136	136
Adjusted R-squared	0.063	0.072	0.063	0.119	0.380	0.374	0.378	0.365	0.389	0.419

Having founders with at least managerial experience or at least start-up experience, does not have a statistically significant impact on company's funding. This result might be due to the fact that managerial experience is possessed by founders of 60% of the companies in our sample, making managerial experience a uniform and expected characteristic of founders which does not determine the level of funding raised by eSports companies.

Column (10) in Table 8 presents results for the core model specification with interaction terms for the types of experience. The adjusted R-squared of 41.9 % indicates that almost half of the observed variation in funding can be explained by the core independent variables and founders' personal characteristics. The most interesting result comes from combining eSports and start-up experience. Companies with founders who possess eSports and start-up experience raise 3.3 % more funding. Serial entrepreneurs can perform better in their next ventures (Hsu, 2007; Nahata, 2019), and experience of the industry is positively related to the likelihood of receiving VC funding (Eggers and Song, 2014; Franke et al., 2008; Lafontaine and Shaw, 2016). Experience in all three domains also yields a 1.3 % increase in funding. However, only 30 companies in our sample have founders with all types of experience. Overall, these findings support Hypothesis 3 and highlight the role that founders' experience play for eSport funding by showing that companies founded by experienced teams have a higher chance of raising VC funding.

4.3. Robustness checks

We perform a series of robustness checks to verify the validity of our main findings. First, we perform all calculations and regression analyses using average funding per company instead of total funding as dependent variable. Average funding for a company is computed as the arithmetic average of every amount of funding raised by the company at any date from any investor. The result obtained were significant and the relationship between the dependent variable and independent variables was the same as in our main analysis. As explained in Section 3.1 most of the companies in our sample received only one funding round, hence it was expected for total and average funding to be similar. Second, we perform all calculations using robust standard errors clustered by company country, and our results hold as discussed in Section 4.1. Third, we conduct a variance inflation factor (VIF) analysis to test for multicollinearity in our models and found no evidence of multicollinearity. If a predictor has large VIF values, then it might be collinear with other predictors in the models. Denis (2020) states that VIF values between 5 and 10 could indicate multicollinearity, while Hair and Babin (2018) state that VIF values smaller than 10 are acceptable. In our analysis all VIF values lie between 1 and 5, hence no evidence of multicollinearity is found. Moreover, we have run our model with age and investment stage together and separately, and the core results hold, still capturing different effects.

Third, we replicate our results using three different time periods: funding received between 2015 and 2019, because observations between 2012 and 2015 were much fewer than those in the second part of our sample period; funding received between 2012 and 2018; and lastly between 2015 and 2018, as data was collected towards the end of 2019, thus we suspect that not all transactions which occurred during 2019 had been uploaded on Crunchbase. For each different time period the analysis was conducted once using total funding as dependent variable and then using average funding as dependent variable.

Fourth, we apply different computation methods for constructing the age and time variables. Age is computed as the difference between current date and foundation date, or last funding date minus foundation date. The time variable is also computed as a score of the year corresponding to the last funding date instead of average date and results are again robust. This occurs because most companies in our sample have only one funding round, hence the average and last dates coincide for most of the dataset. We also attempted to use dummy variables corresponding to each year, which also illustrated the increased funding amounts in recent years. However, the time variable that we employ in the main model specification (1) more accurately captures the average financing trend in observed in the eSports market with respect to yearly dummies.

Fifth, we replicate our results excluding 19 observations corresponding to companies at M&A or IPO stage. We recognize that M&As and IPOs are a measure of start-up success (Pisoni and Onetti, 2018; Croce et al., 2018), and they represent a different kind of investment than venture capital. Since our sample is quite small, we include these types of funding in our analysis as part of the late stage (Section 3.1). However, when replicating our results without the companies at M&A and IPO stages, our results held.

Sixth, we control for the effect of founders' gender and education background on total funding and find no statistically significant effect. Only 10% of the founding teams had at least one female member, indicating that this industry is potentially skewed towards male founding teams.

Lastly, we controlled for the effect of the number of investors and founders in our analysis on total funding. However, the number of investors proved redundant because of its high correlation with funding. Similarly, the number of founders was highly correlated with the experience variables and leading to multicollinearity. For all the checks described here, results are quantitatively similar to the main regression results of our analysis.

5. Conclusions

In this paper we investigate what drives VC financing in the eSports industry. By using a dataset of funding raised by eSport companies from Crunchbase, we shed light on how VC financing raised differs between early and late stage companies, by age, regions, and founders' experience. VCs' investment decisions are part of a complex process widely analysed in the literature (Gompers et al., 2020; Kaplan and Stromberg, 2004; Fried and Hisrich, 1994). Our paper contributes to the entrepreneurial finance literature by providing the first empirical evidence of the VC funding raised by eSports companies and the factors that explain its variation.

By using multivariate regressions, we show that eSports firms in later stages of funding raise more VC financing than firms in early stages, which has also been illustrated in the general entrepreneurial literature (Dahiya and Ray, 2012; Hellmann and Thiele, 2015),

with Gompers et al. (2020) finding that company stage plays an important role in the decision-making process. We also confirm that the APAC region, China in particular, is a market leader (NewZoo, 2020; Deloitte, 2019), and being headquartered in this region increases a company's chances of raising financing.

Lastly, the importance of founders' experience for VC investments is confirmed. We find that companies with founders who have previous experience in founding start-ups (Hsu, 2007; Nahata, 2019; Signori and Vismara, 2018; Cumming et al., 2016) or in the eSports industry (Franke et al., 2008; Eggers and Song, 2014; Lafontaine and Shaw, 2016) are more likely to receive greater VC financing. Our analysis shows that variation in funding is largely explained by fundamental characteristics of the start-ups themselves and the eSports market rather than being simply a market trend phenomenon.

Our findings have important implications for entrepreneurs who want to raise financing for their eSports start-ups. First, companies who are more established would benefit from approaching VCs with an interest in late stage investments, as these companies could raise more funding than early stage and younger companies. Early stage funding raised in our sample is not as high as later stages, albeit being more frequent. Therefore, early stage eSports companies should not be discouraged to seek VC funding.

Our analysis of the eSports market structure also has implications for investors who are interested in entering an innovative new industry. Therefore, those VC funds who want to invest in eSports should look at young, early stage companies, located in North America and APAC. Seeing as early stage funding amounts observed in our sample are small yet numerous, this could be a relatively inexpensive way to enter a new industry with increased upside potential. The smaller funding amounts observed for European companies in our sample can possibly indicate the opportunity for future development in this market, while it reaches the same level as its counterparts from APAC and Americas. Global eSports interest has soared due to the Covid-19 pandemic (NewZoo, 2020; YouGov, 2020), and the increased attention could lead to growth international, as well as in the European market. Our findings show that venture capital financing in the eSports industry follows similar patterns to the venture capital industry, with important implications for investors. In line with our results for eSports firms, funding rounds for later stage companies in high-tech industries are less frequent than seed or early stage and provide larger amounts of capital due to lower perceived risks to investors (Bertoni et al., 2015b; Drover et al., 2017; Hellmann and Thiele, 2015; Dahiya and Ray, 2012; Block and Sandner, 2009). Studies on high-tech VC-backed start-ups show that companies in the US received the largest amounts of funding, outperforming other markets (Hege et al., 2009; Berglund, 2011; Bertoni et al., 2015a). While we show that US start-ups attract more funding than EMEA ones, Asian start-ups attract more funding in absolute that any other region, representing a unique feature of the eSports market. Moreover, anecdotal evidence from media reports shows that the eSports industry is preconceptionally perceived as risky by investors, as it is relatively new and lacking a strong track record, adding to the adverse selection problems in the venture capital environment. However, our findings provide evidence that eSports companies receive funding in a similar way to high-tech start-ups, and thus they are not necessarily more or less risky.

Another important implication for entrepreneurs is the role played by founders' and co-founders' skills. Experience working in the eSports industry, or as serial entrepreneurs increase the amount of funding received by companies. Therefore, entrepreneurs should closely consider experience when choosing their business partners, to maximize the chances of funding. Additionally, entrepreneurs should signal this experience to potential investors as a positive feature of the companies, particularly for young firms who do not yet have a stream of revenues to elicit high valuations or confidence from VCs.

Finally, we recognize some of the limitations of our dataset. Therefore, further research could explore venture capital financing in the eSports market by accessing more detailed company characteristics once available. For instance, the large discrepancy between male and female founding teams is an important issue for the eSports industry, and the VC ecosystem. Therefore, further research could benefit from exploring gender diversity in VC-backed eSports companies. Another potential research path would be to analyse individual markets in greater detail to inform investors and policy makers of potential barriers which might limit the growth of eSports industry in some regions.

Author Statement

The paper has not been published previously and is not under consideration for publication elsewhere. We further wish to confirm that there are no known conflicts of interest associated with this submission.

Data availability

The authors do not have permission to share data.

References

Abbasi, A.Z., Nisar, S., Rehman, U., Ting, D.H., 2020. Impact of HEXACO personality factors on consumer video game engagement: a study on eSports. Front Psychol. 11, 1831. https://doi.org/10.3389/fpsyg.2020.01831.

Alemany, L. & Villanueva, J. , (2015). Early-Stage Investors' Criteria and New Venture Financial Performance: Are They Related? Universitat Ramon Llull.

Bereitschaft, B., 2019. Are walkable places tech incubators? Evidence from Nebraska's 'Silicon Prairie'. Reg. Stud., Reg. Sci. 6, 339–356. https://doi.org/10.1080/21681376.2019.1620631.

Berglund, H., 2011. Early stage venture capital investing: comparing California and Scandinavia. Ventur. Cap. 13, 119–145. https://doi.org/10.1080/13691066.2011.558366.

Bernstein, S., Korteweg, A., Laws, K., 2017. Attracting early-stage investors: evidence from a randomized field experiment. J. Financ. 72, 509–538.

Bertoni, F., Colombo, M.G., Quas, A., 2015a. The patterns of venture capital investment in Europe. Small Bus. Econ. 45, 543–560. https://doi.org/10.1007/s11187-015-9662-0.

Bertoni, F., Croce, A., Guerini, M., 2015b. Venture capital and the investment curve of young high-tech companies. J. Corp. Financ. 35, 159–176. https://doi.org/10.1016/j.jcorpfin.2015.08.012.
Block, Fisch, C., Vismara, S., Andres, R., 2019. Private equity investment criteria: an experimental conjoint analysis of venture capital, business angels, and family offices. J. Corp. Financ. 58, 329–352. https://doi.org/10.1016/j.jcorpfin.2019.05.009.
Block, J.H., Sandner, P.G., 2009. What is the effect of the financial crisis on venture capital financing? Empirical evidence from US internet start-ups. Ventur. Cap. 11 https://doi.org/10.2139/ssrn.1373723.
Burke, A., Millán, J.M., Román, C., van Stel, A., 2018. Exploring the impact of different types of prior entrepreneurial experience on employer firm performance. J. Bus. Res. 90, 107–122. https://doi.org/10.1016/j.jbusres.2018.05.004.
Caviggioli, F., Colombelli, A., De Marco, A., Paolucci, E., 2020. How venture capitalists evaluate young innovative company patent portfolios: empirical evidence from Europe. Int. J. Entrep. Behav. Res. 26, 695–721. https://doi.org/10.1108/ijebr-10-2018-0692.
Colombo, M.G., D'Adda, D., Quas, A., 2019. The geography of venture capital and entrepreneurial ventures' demand for external equity. Res. Policy 48, 1150–1170. https://doi.org/10.1016/j.respol.2018.12.004.
Cope, J., 2011. Entrepreneurial learning from failure: an interpretative phenomenological analysis. J. Bus. Ventur. 26, 604–623. https://doi.org/10.1016/j.jbusvent.2010.06.002.
Cosh, A., Cumming, D., Hughes, A., 2009. Outside enterpreneurial capital. Econ. J. 119, 1494–1533. https://doi.org/10.1111/j.1468-0297.2009.02270.x.
Croce, A., Guerini, M., Ughetto, E., 2018. Angel financing and the performance of high-tech start-ups. J. Small Bus. Manag. 56, 208–228. https://doi.org/10.1111/jsbm.12250.
Cumming, D., Dai, N., 2010. Local bias in venture capital investments. J. Empir. Financ. 17, 362–380. https://doi.org/10.1016/j.jempfin.2009.11.001.
Cumming, D., Walz, U., Werth, J.C., 2016. Entrepreneurial spawning: experience, education, and exit. Financ. Rev. 51, 507–525.
Cumming, D., Werth, J.C., Zhang, Y., 2017. Governance in entrepreneurial ecosystems: venture capitalists vs. technology parks. Small Bus. Econ. 52, 455–484. https://doi.org/10.1007/s11187-017-9955-6.
Cumming, D., Deloof, M., Manigart, S., Wright, M., 2019. New directions in entrepreneurial finance. J. Bank. Financ. 100, 252–260. https://doi.org/10.1016/j.jbankfin.2019.02.008.
Cunningham, G.B., Fairley, S., Ferkins, L., Kerwin, S., Lock, D., Shaw, S., Wicker, P., 2018. eSport: construct specifications and implications for sport management. Sport Manag. Rev. 21, 1–6. https://doi.org/10.1016/j.smr.2017.11.002.
Dagaev, D., Stoyan, E., 2020. Parimutuel betting on the eSports duels: evidence of the reverse favourite-longshot bias. J. Econ. Psychol. **81**. https://doi.org/10.1016/j.joep.2020.102305.
Dahiya, S., Ray, K., 2012. Staged investments in entrepreneurial financing. J. Corp. Financ. 18, 1193–1216. https://doi.org/10.1016/j.jcorpfin.2012.07.002.
Dahiya, S., Ray, K., 2012. Staged investments in entrepreneurial financing. J. Corp. Financ. 18, 1193–1216. https://doi.org/10.1016/j.jcorpfin.2012.07.002.
Dalle, J.-M., Besten, M. d & Menon, C. , (Year). Using Crunchbase for economic and managerial research. In: OECD Science, Technology and Industry Working Papers 2017/08, 2017.
Deloitte, 2019. The rise of esports investments. URL: ⟨https://www2.deloitte.com/content/dam/Deloitte/us/Documents/finance/drfa-rise-of-esports-investments.pdf⟩.
Deloitte Sports Business Group, 2019. Let's play! The European eSports market. URL: ⟨https://www2.deloitte.com/content/dam/insights/us/articles/de22694-lets-play/DI_Lets-play.pdf⟩.
Denis, D.J., 2020. Univariate, Bivariate, and Multivariate Statistics using R: Quantitative Tools for Data Analysis and Data Science. Wiley.
Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., Dushnitsky, G., 2017. A review and road map of entrepreneurial equity financing research: venture capital, corporate venture capital, angel investment, crowdfunding, and accelerators. J. Manag. 43, 1820–1853. https://doi.org/10.1177/0149206317690584.
Eggers, J.P., Song, L., 2014. Dealing with failure: serial entrepreneurs and the costs of changing industries between ventures. Acad. Manag. J. 58 https://doi.org/10.5465/amj.2014.0050.
Esports Insider. 2021. Traditional sports personalities investing in esports — a fad or long term play? URL: ⟨https://esportsinsider.com/2021/11/traditional-sports-personalities-investing-in-esports-a-fad-or-long-term-play⟩.
Ferrati, F., Muffatto, M., 2020. Using crunchbase for research in entrepreneurship: data content and structure. In: Au-Yong-Oliveira, M., Costa, C. (Eds.), Proceedings of the 19th European Conference on Research Methodology for Business and Management Studies. University of Aveiro, Portugal.
Ferrati, F., Muffatto, M., 2021. Reviewing equity investors' funding criteria: a comprehensive classification and research agenda. Ventur. Cap. 23, 157–178. https://doi.org/10.1080/13691066.2021.1883211.
Franke, N., Gruber, M., Harhoff, D., Henkel, J., 2008. Venture capitalists' evaluations of start–up teams trade–offs, knock–out criteria, and the impact of VC experience. Entrep. Theory Pract. 32, 459–483. https://doi.org/10.1111/j.1540-6520.2008.00236.x.
Fried, V.H., Hisrich, R.D., 1994. Toward a model of venture capital investment decision making. Financ. Manag. 23, 28–37. https://doi.org/10.2307/3665619.
Futagami, K., Fukazawa, Y., Kapoor, N., Kito, T., 2021. Pairwise acquisition prediction with SHAP value interpretation. J. Financ. Data Sci. 7, 22–44. https://doi.org/10.1016/j.jfds.2021.02.001.
Goldman Sachs. 2018. eSports From Wild West to Mainstream. Equity Research.
Gompers, P., Kovner, A., Lerner, J., Scharfstein, D., 2010. Performance persistence in entrepreneurship. J. Financ. Econ. 96, 18–32. https://doi.org/10.1016/j.jfineco.2009.11.001.
Gompers, P., Gornall, W., Kaplan, S.N., Strebulaev, I., 2020. How do venture capitalists make decisions. J. Financ. Econ. 135, 169–190. https://doi.org/10.1016/j.jfineco.2019.06.011.
Güçbilmez, U., 2014. Why do some Chinese technology firms avoid ChiNext and go public in the US. Int. Rev. Financ. Anal. 36, 179–194. https://doi.org/10.1016/j.irfa.2014.02.010.
Hair, J.F., Babin, B.J., 2018. *Multivariate Data Analysis*. Cengage.
Hege, U., Palomino, F., Schwienbacher, A., 2009. Venture capital performance: the disparity between Europe and the United States. Finance 30, 7–50.
Hellmann, T., Puri, M., 2002. Venture capital and the professionalization of start-up firms: empirical evidence. J. Financ. 57, 169–197.
Hellmann, T., Thiele, V., 2015. Friends or foes? The interrelationship between angel and venture capital markets. J. Financ. Econ. 115, 639–653. https://doi.org/10.1016/j.jfineco.2014.10.009.
Herck Giaquinto, L., Bortoluzzo, A.B., 2020. Angel investors, seed-stage investors and founders influence on FinTech funding: an emerging market context. Macroecon. Financ. Emerg. Mark. Econ. 13, 276–294. https://doi.org/10.1080/17520843.2020.1737169.
Hsu, D.H., 2007. Experienced entrepreneurial founders, organizational capital, and venture capital funding. Res. Policy 36, 722–741. https://doi.org/10.1016/j.respol.2007.02.022.
Huettner, F., Sunder, M., 2012. Axiomatic arguments for decomposing goodness of fit according to Shapley and Owen values. Electron. J. Stat. 6, 1239–1250. https://doi.org/10.1214/12-ejs710.
Humphery-Jenner, M., Suchard, J.-A., 2013. Foreign VCs and venture success: Evidence from China. J. Corp. Financ. 21, 16–35. https://doi.org/10.1016/j.jcorpfin.2013.01.003.
Hutchins, B., 2008. Signs of meta-change in second modernity: the growth of e-sport and the World Cyber Games. N. Media Soc. 10, 851–869. https://doi.org/10.1177/1461444808096248.
Jang, W.W., Kim, K.A., Byon, K.K., 2020. Social atmospherics, affective response, and behavioral intention associated with esports events. Front. Psychol. 11, 1671. https://doi.org/10.3389/fpsyg.2020.01671.
Jeng, L.A., Wells, P.C., 2000. The determinants of venture capital funding:evidence across countries. J. Corp. Financ. 6, 241–289.
Jonasson, K., Thiborg, J., 2010. Electronic sport and its impact on future sport. Sport Soc. 13, 287–299. https://doi.org/10.1080/17430430903522996.
Kaminski, J., Hopp, C., Tykvova, T., 2019. New technology assessment in entrepreneurial financing – does crowdfunding predict venture capital investments? Technol. Forecast. Soc. Change 139, 287–302.

Kaplan, S.N., Stromberg, P., 2004. Characteristics, contracts, and actions: evidence from venture capitalist analyses. J. Financ. 59, 2177–2210.
Kaplan, S.N., Sensoy, B.A., Stromberg, P., 2009. Should investors bet on the jockey or the horse? Evidence from the evolution of firms from early business plans to public companies. J. Financ. 61, 75–115.
Kwon, O., Lim, S., Lee, D.H., 2018. Acquiring startups in the energy sector: a study of firm value and environmental policy. Bus. Strategy Environ. 27, 1376–1384. https://doi.org/10.1002/bse.2187.
Lafontaine, F., Shaw, K., 2016. Serial entrepreneurship: learning by doing. J. Labor Econ. 34, S217–S254. https://doi.org/10.1086/683820.
Liu, K., Arthurs, J., 2019. How does dependence on key employees matter for initial public offerings of U.S. high-tech firms? J. Bus. Res. 102, 74–82. https://doi.org/10.1016/j.jbusres.2019.05.013.
Lutz, E., Bender, M., Achleitner, A.-K., Kaserer, C., 2013. Importance of spatial proximity between venture capital investors and investees in Germany. J. Bus. Res. 66, 2346–2354. https://doi.org/10.1016/j.jbusres.2012.04.016.
MacMillan, I.C., 1986. To really learn about entrepreneurship, let's study habitual entrepreneurs. J. Bus. Ventur. 1, 241–243.
Matuszewski, P., Dobrowolski, P., Zawadzki, B., 2020. The association between personality traits and eSports performance. Front. Psychol. 11, 1490. https://doi.org/10.3389/fpsyg.2020.01490.
Maxwell, A.L., Jeffrey, S.A., Levesque, M., 2011. Business angel early stage decision making. J. Bus. Ventur. 26, 212–225. https://doi.org/10.1016/j.jbusvent.2009.09.002.
Miloud, T., Aspelund, A., Cabrol, M., 2012. Startup valuation by venture capitalists: an empirical study. Ventur. Cap. 14, 151–174. https://doi.org/10.1080/13691066.2012.667907.
Mochkabadi, K., Volkmann, C.K., 2018. Equity crowdfunding: a systematic review of the literature. Small Bus. Econ. 54, 75–118. https://doi.org/10.1007/s11187-018-0081-x.
Morales-Alonso, G., Vila, G.A., Lemus-Aguilar, I., Hidalgo, A., 2019. Data retrieval from online social media networks for defining business angels' profile. J. Enterprising Communities: People Places Glob. Econ. 14, 57–75. https://doi.org/10.1108/jec-10-2019-0095.
Nahata, R. (2019). Success Is Good but Failure Is Not So Bad Either: Serial Entrepreneurs and Venture Capital Contracting. Journal of Corporate Finance, forthcoming.
NewZoo. (2020). Global Esports market report 2020. Global Esports Market Report URL: ⟨https://newzoo.com/insights/trend-reports/newzoo-global-esports-market-report-2020-light-version/⟩ [07/12/2020].
Ning, Y., Wang, W., Yu, B., 2014. The driving forces of venture capital investments. Small Bus. Econ. 44, 315–344. https://doi.org/10.1007/s11187-014-9591-3.
Parshakov, P., Paklina, S., Coates, D. & Chadov, A. (2020b). Does video games' popularity affect unemployment rate? Evidence from macro-level analysis. Journal of Economic Studies, ahead-of-print. ⟨10.1108/jes-07–2019-0339⟩.
Parshakov, P., Coates, D., Zavertiaeva, M., 2018. Is diversity good or bad? Evidence from eSports teams analysis. Appl. Econ. 50, 5064–5075. https://doi.org/10.1080/00036846.2018.1470315.
Parshakov, P., Naidenova, I., Barajas, A., 2020a. Spillover effect in promotion: evidence from video game publishers and eSports tournaments. J. Bus. Res. 118, 262–270. https://doi.org/10.1016/j.jbusres.2020.06.036.
Petreski, M.2006. The Role of Venture Capital in Financing Small Businesses. Journal of Eentrepreneurship and Finance, forthcoming.
Petty, J.S., Gruber, M., 2011. "In pursuit of the real deal". J. Bus. Ventur. 26, 172–188. https://doi.org/10.1016/j.jbusvent.2009.07.002.
Pisoni, A., Onetti, A., 2018. When startups exit: comparing strategies in Europe and the USA. J. Bus. Strategy 39, 26–33. https://doi.org/10.1108/jbs-02-2017-0022.
Politis, D., Gabrielsson, J., 2009. Entrepreneurs' attitudes towards failure. Int. J. Entrep. Behav. Res. 15, 364–383. https://doi.org/10.1108/13552550910967921.
Poulus, D., Coulter, T.J., Trotter, M.G., Polman, R., 2020. Stress and coping in esports and the influence of mental toughness. Front. Psychol. 11, 628. https://doi.org/10.3389/fpsyg.2020.00628.
Publications Office of the EU EU Vocabularies 7206 Europe. European Union: Publications Office of the EU.
Ross, G., Das, S., Sciro, D., Raza, H., 2021. CapitalVX: a machine learning model for startup selection and exit prediction. J. Financ. Data Sci. 7, 94–114. https://doi.org/10.1016/j.jfds.2021.04.001.
Rossi, A., Vismara, S., 2017. What do crowdfunding platforms do? A comparison between investment-based platforms in Europe. Eurasia Bus. Rev. 8, 93–118. https://doi.org/10.1007/s40821-017-0092-6.
Sarasvathy, S.D., Menon, A.R., Kuechle, G., 2011. Failing firms and successful entrepreneurs: serial entrepreneurship as a temporal portfolio. Small Bus. Econ. 40, 417–434. https://doi.org/10.1007/s11187-011-9412-x.
Schwienbacher, A. (Year). An Empirical Analysis of Venture Capital Exits in Europe and the United States. In: EFA 2002 Berlin Meetings Discussion Paper, 2005.
Seo, Y., 2016. Professionalized consumption and identity transformations in the field of eSports. J. Bus. Res. 69, 264–272. https://doi.org/10.1016/j.jbusres.2015.07.039.
Signori, A., Vismara, S., 2018. Does success bring success? The post-offering lives of equity-crowdfunded firms. J. Corp. Financ. 50, 575–591. https://doi.org/10.1016/j.jcorpfin.2017.10.018.
Stevenson, R.M., Kuratko, D.F., Eutsler, J., 2018. Unleashing main street entrepreneurship: crowdfunding, venture capital, and the democratization of new venture investments. Small Bus. Econ. 52, 375–393. https://doi.org/10.1007/s11187-018-0097-2.
Ter Wal, A.L., Alexy, O., Block, J., Sandner, P.G., 2016. The best of both worlds: the benefits of open-specialized and closed-diverse syndication networks for new ventures' success. Adm. Sci. Q 61, 393–432. https://doi.org/10.1177/0001839216637849.
Thies, F., Huber, A., Bock, C., Benlian, A., Kraus, S., 2018. Following the crowd—does crowdfunding affect venture capitalists' selection of entrepreneurial ventures? J. Small Bus. Manag. 57, 1378–1398. https://doi.org/10.1111/jsbm.12447.
Ukie. 2020. The value of esports in the UK. URL: ⟨https://ukie.org.uk/value-of-esports-in-UK-2020⟩ [17/01/2021].
Wagner, M.2006. On the Scientific Relevance of eSports. In: Proceedings of the 2006 International Conference on Internet Computing & Conference on Computer Games Development. Las Vegas, Nevada, U.S.
Wallmeroth, J., 2019. Investor behavior in equity crowdfunding. Ventur. Cap. 21, 273–300. https://doi.org/10.1080/13691066.2018.1457475.
Wang, S., Zhou, H., 2004. Staged financing in venture capital: moral hazard and risks. J. Corp. Financ. 10, 131–155. https://doi.org/10.1016/S0929-1199(02)00045-7.
Wang, W., Mahmood, A., Sismeiro, C., Vulkan, N., 2019. The evolution of equity crowdfunding: Insights from co-investments of angels and the crowd. Res. Policy 48. https://doi.org/10.1016/j.respol.2019.01.003.
Wang, Z., Zhou, Y., Tang, J., Luo, J.-D., 2016. The prediction of venture capital co-investment based on structural balance theory. IEEE Trans. Knowl. Data Eng. 28, 537–550. https://doi.org/10.1109/tkde.2015.2477304.
Ward, M.R., Harmon, A.D., 2019. ESport superstars. J. Sports Econ. 20, 987–1013. https://doi.org/10.1177/1527002519859417.
Weiss, T., Schiele, S., 2013. Virtual worlds in competitive contexts: analyzing eSports consumer needs. Electron. Mark. https://doi.org/10.1007/s12525-013-0127-5.
Witkowski, E., 2012. On the digital playing field. Games Cult. 7, 349–374. https://doi.org/10.1177/1555412012454222.
Yang, S., Berger, R., 2017. Relation between start-ups' online social media presence and fundraising. J. Sci. Technol. Policy Manag. 8, 161–180. https://doi.org/10.1108/jstpm-09-2016-0022.
YouGov. 2020. Gaming and esports: the next generation. URL: ⟨https://yougov.co.uk/topics/technology/articles-reports/2020/11/18/gamers-play-more-during-covid⟩ [17/01/2021].
Yu, S., Johnson, S., Lai, C., Cricelli, A., Fleming, L., 2017. Crowdfunding and regional entrepreneurial investment: an application of the CrowdBerkeley database. Res. Policy 46, 1723–1737. https://doi.org/10.1016/j.respol.2017.07.008.
Żbikowski, K., Antosiuk, P., 2021. A machine learning, bias-free approach for predicting business success using Crunchbase data. Inf. Process. Manag. 58 https://doi.org/10.1016/j.ipm.2021.1025.