

# Evaluating the Success of *eSports* From Its Characteristics: Does the Construction of *Network Matter*?



## INTRODUCTION

### WHAT IS ESPORTS

- A form of **sport competition** using **video game**
- Organized **multiplayer** video game competitions
- Particularly between **professional players** individually or as teams

### CHARACTERISTICS OF ESPORTS:

#### ♦SPORTING ESSENCE



eSports is evaluated from the perspective of traditional sporting activities in half as we accept eSports as a sport here.

#### ♦DEPENDENCE ON THE NETWORK



Network is required to conduct competitive multi-player tournaments for all the games.

#### Importance:

- Growing Recognition



It has been recognized by the **International Olympic Committee (IOC)** that competitive eSports can be viewed as a sporting activity.

- Unstoppable Prevalence



By **2023**, there are expected to be almost **300 million frequent viewers** of eSports worldwide, a vast increase from the **173 million** in **2018**.

- Potential Economy



It is estimated that global eSports market revenue will reach **1.79 billion** U.S. dollars in **2022**.

## DATA

### DEPENDENT VARIABLE

#### ♦TOTAL PRIZE MONEY

A country-level indicator of the success of eSports. This variable describes the total amount of prize money that one country earned during one specific year.

### INDEPENDENT VARIABLES:

- ♦**POPULATION**: the population of each country, retrieved from the United Nations

- ♦**GDP**: Gross Domestic Product (GDP) of each country by year, retrieved from the International Monetary Fund (IMF) website

- ♦**GDP PER CAPITA**: GDP per capita, extracted from the IMF website.

- ♦**FIXED-BROAD BAND SUBSCRIPTION RATE**: fixed-broadband subscriptions per 100 inhabitants, retrieved from the project of the international Telecommunication Union (ITU).An indicator of the network construction. As we acknowledge the important role LAN technology plays in providing stable network.

- ♦**NUMBER OF SERVERS PER MILLION PEOPLE**: describes the quality of the network infrastructure.

## METHODOLOGY

- ♦Generalized Least Square Regression Analysis:

$$\text{prize\_money\_total}_i = \beta_0 + \beta_1 \text{population}_i + \beta_2 \text{gdp\_million}_i + \beta_3 \text{gdp\_per}_i + \beta_4 \text{fixed\_bb\_sub\_rate}_i + \beta_5 \text{num\_srv\_per\_mil}_i + u_i + \varepsilon_i$$

( $u_i$  is the between-country error;

$\varepsilon_i$  within-country error;

subscript i represents different countries; subscript t represents time)

- ♦Panel data analysis

- ♦Adopt a random effect model as suggested by Hausman Test results

## RESULTS & FINDINGS

Random-effects GLS regression  
Group variable: country\_num

R-sq:  
within = 0.3079  
between = 0.7206  
overall = 0.6099

corr(u\_i, X) = 0 (assumed)

Number of obs = 243  
Number of groups = 65

Obs per group:  
min = 1  
avg = 3.7  
max = 5  
Wald chi2(5) = 2408.93  
Prob > chi2 = 0.0000

(Std. Err. adjusted for 65 clusters in country\_num)

prize_money_to~l	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
population	.0051563	.000655	7.87	0.000	.0038724	.0064401
gdp_million	.5032099	.0795512	6.33	0.000	.3472925	.6591273
gdp_per	-34.29568	15.00628	-2.29	0.022	-63.70746	-4.883913
fied_bb_sub_rate	88973.63	3663.04	2.43	0.015	17174.19	160773.1
num_srv_per_mil	46.49026	19.44793	2.39	0.017	8.373022	84.60751
_cons	-1157505	450499.9	-2.57	0.010	-2040469	-274541.8
sigma_u	970308.54					
sigma_e	1090884.2					
rho	.44170148				(fraction of variance due to u_i)	

## GENERAL RESULTS:

- ♦A statistically significant model: F-test result for the model is 0.
- ♦A relatively high R-squared: 60.99% of the variations in dependent variables can be explained by independent variables.
- ♦All variables statistically significant at the 5% significance level.

## DETAILED EXPLANATIONS:

- ♦For eSport's Sporting Essence:

♦eSports do have common properties with traditional sports. Population and GDP (the two socioeconomic variables) are critical factors determining the success of eSports. Both positively related to the total prize money.

- ♦For eSport's Dependence on Network:

♦The fixed-broadband cover rate and the number of servers per million people matter, which facilitate the Information Availability and lower Limit to Access the Internet, more professional eSports players are likely to engage in eSports easier.

## OTHER EXPLANATIONS:

- ♦GDP per capita is actually negatively related to total prize money.
- ♦One possible reason that accounts for this is the existence of outliers. The correlation between GDP per capita and the total prize money is 0.0749, which is relatively small.
- ♦Empirical evidence tells us that there do exist some developed countries that show little interest in eSports, Switzerland for example.



## CONCLUSIONS

- ♦eSports has properties that are similar to traditional sports. Both of them can be affected dramatically by the population of the country, and the total wealth of the country .

- ♦The atmosphere of culture may affect the development of eSports. People in some countries may still regard eSports as typical video games and thus show little interest in developing it even though they have the ability.

- ♦The effect of network construction on the performance of eSports is beneficial.

## CRITIQUE

- ♦The longitudinal of the data is not enough, for only 50 countries measured in 5 years.
- ♦Many assumptions are based on empirical results or past experiences which lack scientific supports.

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