

# The Impact of The Government's Policy on The Stock Performance of The Chinese Game Industry

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## Abstract

Over the past few decades, the video game industry has increased from a small market to a vast industry. As the industry evolves, business models are growing to accommodate emerging technologies and innovations. There is a lot of research on the classification of the video game industry. However, the concept of classification in the video game industry in some countries is still vague and ambiguous. In this study, the paper introduces and classifies the classification system in the video game industry through the research paradigm based on the literature. The release of national policies has a negative impact on the existing game system. In the short term, there will be a negative shock which makes the performance of the stock will decline. For robust check consider the return of asset, leverage, size of firm, sales growth as the control variable, found that the result doesn't affect by these variables, the coefficient is not high. So, the main influence factor is the restrain policy. This study reminds China's domestic game industry that the development and system of the game industry is still not perfect, and gives the classification direction of the completion and development.

*JEL Classification:* D21, M51

**Keywords:** Segment, Stock Price, Policy, performance,

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## Introduction

September 11th 2019, the Chinese government announced the policy about reducing underage teenagers' game time. At the same time, when juveniles recharge for the game, authentication is required, and parental consent is required. The game content, release form, and other game-related aspects need government supervision and permission because teenagers are more likely to be addicted to games. Griffiths et al. (2012) has shown different factors about game addiction. The first is there are factors in video games that cause large-scale video games. The second one is about what negative aspects will lead to game addiction.

According to the report of Newzoo, the global gaming marketing was \$174.9 billion in 2020. The government policy affected such an enormous market because many people are students whose income sources are not stable. Especially in China, parents are the source of many minors' game charge funds. Therefore, to limit excessive consumption and game addiction, China has issued the latest policy targeting this phenomenon to regulate the development of the game industry. Controlling the use of video games by children and adolescents has been on the agenda of media legislators since

the 1990s. The approach of western democracies has primarily followed the direction of industry self-regulation, resulting in a different type of self-regulation. Differences in regulatory systems may lead to differences in rating decisions (Dogruel et al., 2013).

We found that after the government released a restrictive consumption policy, China's game market stock performance plummeted, yield data such as in the policy after the release, the same situation also appears in other random two hundred of different industries, including manufacturing, construction industry, financial industry) of the companies, but in a brief period after the industry's quick recovery. In the Chinese market, the game industry's corresponding mechanism and system development are imperfect compared with other sectors, and there are no measures to deal with policy risks. At the same time, it is also because this policy is not a policy to force production reduction but a recommended policy to regulate the development of the industry. However, it still has a significant impact on the Chinese game market. It can be concluded that the growth of China's game market is not sound, the system is not perfect, and the measures to deal with risks are insufficient.

This article discusses the impact of the government's policy on the stock performance of the Chinese game industry. Finally, the study found that after the Chinese government issued a new policy restricting underage consumption, the stock performance in China's domestic market suffered a negative impact in a short period. The result proved the development of China's game market and game system is not perfect. The risk resistance of the new restrictive policy is insufficient. This reminds China's domestic game industry that the development and system of the game industry is still not perfect, it gives the classification direction of the completion and development.

Van et al. (2010) directly pointed out that the game rating system in The Chinese market was underdeveloped or even very backward. Still, it did not classify the rating system in the Chinese game market, and there was no policy of mandatory restriction of consumption in the policy requirements at that time. In this article, we discuss the latest game policies and the latest data analysis and give suggestions on the development of the game market in terms of age and content classification.

Felini et al. (2014) referred to the Chinese market perfect classification system and the system and the reasons for these phenomena, but there is no particular discussion on the Chinese market. At that time, China's game market did not have as high

a market share as it does now. At the same time, it did not compare other industries but classified the psychology of game consumers and analyzed their consumption behaviors in detail. Therefore, this paper will compare the game market with other sectors from the macro level and give suggestions and views on the follow-up development.

The remainder of the paper is organized as follows. Section 2 is the literature review. Section 3 describes the data. Section 4 is the conclusion. Section 5 is conclusions and implication.

## **Literature Review and Hypotheses Development**

### **Game classification**

Game classification is a significant standard for the differentiation of a game, game classification system for user choice, government policy, market segmentation, and other aspects of the reference and basis. Game rating system mainly divides into the content classification, the game type: role play, free and open world, MOBA, strategy, and so on, the game elements: adventure, fighting, building, people, etc.) and games to distinguish between age, this is the distinction between two different ways, different countries, and regions for the difference between these two aspects have different ways and standards.

### **European and American game rating and classification**

There are several rating systems around the world designed specifically for video games, with similar measures. Jimenez et al. (2019) shown that the most popular is the Pan-European Games Information (PEGI), used in 30 European countries, and the Entertainment Software Rating Board (ESRB), used in the US Canada, and Mexico. Some countries also use the game rating system, which was adapted from the film rating system. We can know that the development of the video game industry in Western countries is relatively early. Hence, both content and age classification systems are perfect, and the game industry development is very advanced.

### **Chinese game rating and classification**

However, China's game rating system is not perfect or even backward. Such as Van et al. (2010) mentioned that China's 2007 release limits the number of hours played by people under 18. All the starting point is to protect minors from early exposure to other elements resulting in addiction. Therefore, the distinction between the two classification methods is not apparent in China.

**Hypothesis 1:** The government's policy that prohibits underage gaming will negatively impact the stock performance of the

game industry.

### **The impact of the new game rating system and classification policy**

The Chinese government issued a new age rating policy with more strict rules on the difference between adult and minor game tags. However, the grading system is still not complete. For each game maker in China and has an enormous impact on the world, the video game industry has significantly developed in the past few decades. In terms of annual income, it has become a vast industry compared to the film industry. Chou et al. (2003) did the research and showed that in 1999, the sales revenue of electronic games in the United States alone reached 7.4 billion dollars, while Williams (2002) said that the scale of the global electronic game industry exceeded 32 billion dollars. Since 2000, the electronic game industry has become the fastest-growing part of the entire entertainment industry. According to Galarneau et al. (2004), the global video game industry grew more than 9 percent in 2013 alone to \$76 billion. Experts estimate that the market size of video games will reach nearly \$86 billion in 2016. As the industry's competitive environment becomes increasingly fierce, enterprises need to develop and use existing resources to provide customers with better value. And this is where game classification and rating systems can come in, giving these companies a chance to establish themselves in this highly competitive industry. Development costs and rising production times force companies to find new categories and I.P.s to run their businesses.

In contrast, traditional game development companies need to innovate and reform themselves to adapt to future challenges. In the wake of China's new policy, various game makers and platforms, including P.C., console, and mobile, have announced varying content and production changes. Tencent, NetEase, Blizzard China, and other game companies have announced that they will limit minors' consumption and recharge activities, which will undoubtedly affect their profits.

**Hypothesis 2:** The government's policy that prohibits underage gaming will positively impact the stock performance of the game industry.

### **The Influence of National Policies on the Game Industry (positive and negative)**

Western countries perfect classification system element classification and age classification spawned different market classification. According to Felini et al. (2014), the motivations of other players to buy game types are strongly related to the

players themselves. The responsible people who purchase analytical games are more likely to buy creative and cognitive simulation games, and the behavior orientation is affected by entertainment and social motivations. People who purchase sports and strategy games are more extroverted, and their behavior pattern is dominant, and purchase motivation is mainly social. Different game players have different behavior orientations and purchase intentions. Therefore, game classification and classification are essential for game companies and the industry as a whole. On the one hand, the classification system will have an impact on the game industry. Still, a good classification policy can improve market segmentation, better meet customers' needs, improve the quality and pertinacity of game content on a large scale in specific fields, and increase sales.

### **Data and Methodology**

#### **Model 1 Business segmentation profit model**

A business model is nothing more than a company's architecture and network of partners that create, market, and deliver value and relationship capital for one or several market segments or customers to generate profitable and sustainable revenue streams (Dubosson, 2002). The game industry's business model fits this model perfectly. Market segmentation and targeted development will carry out for factor enthusiasts of different ages in different countries and regions. The subsequent publicity of derivatives will carry out to achieve sustainable profits. This model is highly applicable to the game industry, and it is also valuable for most game companies

#### **Model 2 Two levels of business model**

Schallmo et al. (2010) proposed two levels of business models, Generic and Specific. It includes five sub-levels; abstract sub-level, industry sub-level, corporate sub-level, business unit, and product or service sub-level. The age classification is more consistent with the general type. Regardless of countries and regions, there are relatively fixed standards. But content categories are more tailored to specific categories, and different elements and content are more tailored to particular users and topics.

### **Description**

Receipt data is needed to prove the above hypothesis. The most direct evidence of policy impact is whether a company's share price fluctuates to investigate the differences between China and other countries and the reaction of the underdeveloped game rating system to the new policy and the response of countries

with a complete rating system to the procedure.

The data will base on various data of Chinese game companies from 2018 to 2020, including stock price, leverage ratio, sales growth, and total assets. All the data comes from CSMAR.

$$R_{it} = \alpha_i + \beta_i R_{im} + \varepsilon_{it} \quad (1)$$

This Formula  $R_{it}$  is the actual return rate of stock I in period T, the market's yield at time T;  $\varepsilon_{it}$  is the random disturbance term.

The least-square estimation method is used to regression the above equation and  $\alpha_i$   $\beta_i$  is estimated from the data of parameter estimation period, and it is assumed that  $\alpha_i$  and  $\beta_i$  remain constant in the event period so that we can get the excess return and cumulative excess return in the event period

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{im} \quad (2)$$

This Formula  $AR_{it}$  is calculated event period stock I in period

t excess yields,  $R_{it}$  for the event issue shares in actual

earnings in the period of the t,  $R_{im}$  is the event period t

periods of circulation index (the market yield). To market model

to estimate the parameter values,  $CAR_{it}$  for event period I

accumulated excess returns in the period of the t.  $AAR_{it}$  is the

average excess return during the event period T and  $CAR_t$  is

the cumulative average excess return during the event period, T.

The influence of the policy on stock price is evaluated by calculating the excess return in a period after the procedure is issued

In practice, companies adjust the level of debt outstanding in response to changes in the value of their businesses (Goldstein, 2001). Efficient market theory suggests that the cost of an issue will adjust rapidly to reflect the set of relevant information available (Donald et al., 1972).

Due to the Chinese imperfect game system and development,

In 2019, the Chinese game industry and other industries as a sample. The main results of the topic are shown in the table below before the analysis is carried out. Robustness testing

most domestic manufacturers in China involve mobile games.

At the same time, overseas, they are mainly mainframe and terminal games. We will select experimental data in the policy issued on the day of the change of stock price (compared to the previous day's closing price) and policy after the release of stock price changes, consider the stock price changes because the foreign stock market and the company for the reaction of the new policy will take time, so the share price changes and the changes are more reasonable.

## Result and Discussions

### Main Results

Table 2: Main results

In this table, through regression calculation, p-value and Coefficient are observed to determine whether there is a linear relationship between variables and whether the linear relationship is strong. The table also includes the correlation change before and after policy release, which is also the calculation of core variables. Other variables were controlled to decide whether or not they were affected by other variables. The superscripts \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

Variable	Return
<i>did</i>	0.001** [2.986]
<i>treat</i>	-0.004 [-0.520]
<i>post</i>	0.003*** [3.923]
<i>roa</i>	0.062*** [6.857]
<i>involume</i>	0.006*** [41.901]
<i>growth</i>	0.000* [1.991]
<i>lev</i>	0.005** [2.983]
<i>lnsize</i>	-0.002 [-0.784]
<i>cons</i>	-0.052 [-1.045]

analyzes the uncertainty of models and tests whether estimated effects of interest are sensitive to changes in model specifications. According to Formula (1) and Formula (2),

this table analyzes the stock price and return rate after issuing the policy. By calculating the normal return rate and abnormal return rate during the time window, enterprises and industries are controlled to remain unchanged. The time of policy release is used as the core variable to estimate the stock price and return rate. In terms of share price performance, this policy has a negative impact on specific industries in the short term.

### Additional Results

**Table 3: Event study CAR**

In this table, we conducted event analysis on the data, observed changes in excess return before and after, and speculated and estimated the event's impact through CAR, including whether the observation was positive or negative. The superscripts \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

Event window	Game Industry		Non-game Industry	
	CAR	t value	CAR	t value
(-30,0)	0.0062***	6.1671	0.0070***	17.034
(-25,0)	0.0099***	9.0533	0.00973***	21.5575
(-20,0)	0.0134***	10.7583	0.0124***	24.232
(-15,0)	0.0127***	8.1575	0.01158***	18.6365
(-10,0)	0.0160***	8.081	0.0148***	18.8388
(-5,0)	0.01856***	7.93	0.0178***	18.7469
(0,0)	-0.0033	-0.7658	-0.0037***	-2.7253
(5,0)	0.0053**	2.147	0.0009	1.0445
(10,0)	0.0006	0.3376	-0.0003	-0.5225
(15,0)	-0.0035**	-2.3409	-0.0031***	-5.6456
(20,0)	-0.0026*	-1.8995	-0.0033***	-6.7086
(25,0)	-0.0012	-0.9276	-0.0025***	-5.7235
(30,0)	-0.0016	-1.4016	-0.0032***	-8.0837

In this part, we use CAR to calculate and estimate, compare game stocks and non-game stocks, and finally draw the conclusion. First, the market divides into different markets, and the change of game stocks and non-game stocks is analyzed before and after the policy release. The results showed that non-game stocks did not fluctuate significantly after the policy was released, while game stocks were significantly impacted.

### Robustness Checks

**Table 4 : Alternative ROA/ROE**

In this table, we will replace variables to test whether other variables impact our results. Different from the original, we replace ROA with ROE in this table to observe whether ROE impacts stock performance.

Stock return	Coef.
<i>size</i>	-3.31424 (-1.04)
<i>leverage</i>	-31.5935 (-1.1)
<i>roe</i>	40.61619 (1.6)
<i>Sales growth</i>	18.53153 (1.39)
<i>cons</i>	44.74264* 2.02

In this part of the test, we replaced the variables, mainly to observe whether other variables have the same influence on the stock performance to avoid stock price changes caused

by other factors affecting our judgment on the original characteristics. Avoid the interference caused by different variables and prevent the results of multi-line influence. In this test, we used ROE instead of ROA to observe whether ROE would impact our original observation objects. As can be seen from the table, ROE is not strongly correlated with the stock price, so we can conclude that ROE has less impact on stock performance than ROA or has no effect, so the result is relatively ideal.

### Conclusions

By using the event study method, this paper empirically discusses the impact of the new policy on the stock price of China's game industry. Finally, we can find that the new policy has a negative effect on the stock price of the game industry but has no impact on other sectors. The trend of excess returns is clear, with the game market performing worse after the policy announcement while the non-game market is largely unaffected. The analysis of the reaction of different markets to this policy shows that the policy has a very immediate impact on the specific field of games. The abnormal income of game-related industries has decreased significantly. Thus, China's game market and grading system are not perfect, leading to the new policy issued in the short term will have a negative impact, affecting the stock performance. The effect of short-term consumption restrictions will fade quickly after the event is over. Restrictive policies do cause a severe negative impact in the short term. Still, in the long run, they will improve and promote the development of the game system in the domestic market from the side, and the short-term negative impact is an inevitable price. The policy caused a shock to the game industry in the short term, with stock prices and profits falling, but it did not last long. From a long-term, non-data level, the policy is advantageous to improving the system of Chinese games, including the minor consumption system and the age grading system. The game elements will be needed to improve the future of development, production, and more standardized procedures and the subject system. At the same time of protecting the minor physical and mental health can promote standardization and industrialization of the Chinese game market.

This paper provides a market survey and theoretical basis for game industry practitioners. It proves that under the current environment of China's game industry, the risk offset

measures for the new policy are not perfect, and the ability to recover from the restrictive approach is poor. Therefore, the market division and market planning still need to be improved. It can be concluded from the comparison of CAR that when other market industries are affected by similar policies, they can return to the original relevant level at a fast speed. Still, the game industry is affected by a long period and cannot resist risks. However, according to market research, the game industry is developing at a breakneck speed, with the size and market growing steadily every year. A large part of the comparison data is for the financial and manufacturing industries, which are relatively well developed and structured compared to the game industry and can quickly offset the adverse effects of restrictive consumption policies. At the same time, it notes that the restrictive approach is not a restriction on the entire game industry and market but minors. However, the game industry has been negatively affected for a period of time. Thus it can be concluded that the classification and grading system of China's game industry and market development is not perfect.

The limitation of this study mainly lies in that it only compares and explains the Chinese market. The selected control group is random, so the market structure of the control group may be incomplete. At the same time, there may be the influence of foreign game companies highly related to the Chinese game market in the study of this incident. The lack of comparison of foreign markets may result in the particularity and limitations of the Chinese market.

### References

- I. Apperley, T.H., 2006. Genre and game studies: Toward a critical approach to video game genres. *Simulation and Gaming* 37, 623.
- II. Amit, R. and Zott, C., 2001. Value creation in E-business, *Strategic Management Journal* 67, 493–520.
- III. Casadesus Masanell, R. and J. E. Ricart, 2010. From strategy to business models and onto tactics, *Long Range Planning* 23, 195–215.
- IV. Chou, Y., 2003. G-commerce in east Asia. *Journal Of Interactive Advertising* 4, 47–53.

- V. D. Griffiths, M., J. Kuss, D., and L. King, D., 2012. Video game addiction: past, present, and future. *Current Psychiatry Reviews* 8, 308–318.
- VI. Dogruel, L., and Joeckel, S., 2013. Video game rating systems in the U.S. and Europe. *International Communication Gazette* 75, 672–692.
- VII. Dubosson–Torbay, M., Osterwalder, A., and Pigneur, Y., 2002. E-business model design, classification, and measurements. *Thunderbird International Business Review* 44, 5–13.
- VIII. Felini, D., 2014. Beyond today's video game rating systems. *Games And Culture* 10, 106–122.
- IX. Galarneau, L., 2014. 2014 Global gaming stats: Who's playing what, and why? *Big Fish Blog*
- X. Goldstein, R., Ju, N., and Leland, H., 2001. An EBIT based model of dynamic capital structure. *The Journal of Business* 74, 483–512.
- XI. Jimenez, N., San–Martin, S., Camarero, C., and San Jose Cabezudo, R., 2019. What kind of video gamer are you? *Journal Of Consumer Marketing* 36, 218–227.
- XII. Lin, H., and Sun, C. T., 2007. Cash trade within the magic circle: Free to play game challenges and massively multiplayer online game player responses. In *Proceedings of Digital Games Research Association* 335–343.
- XIII. McDonald, J. G., and Fisher, A. K., 1972. New issue stock price behavior. *The Journal of Finance* 27, 97–102.
- XIV. Postigo, H., 2008. Video game appropriation through modifications attitudes concerning intellectual property among modders and fans. *Convergence: The International Journal of Research into New Media Technologies* 14, 59–74.
- XV. Schallmo, D., and Brecht, L., 2010. Business model innovation in business-to-business markets procedure and examples. In *Proceedings of the 3rd ISPIM Innovation Symposium Managing the Art of Innovation: Turning Concepts into Reality*. Quebec City, Canada, 12th–15th.
- XVI. Srinivasan, A., and Venkatraman, N., 2010. Indirect network effects and platform dominance in the video game industry: A network perspective. *Engineering Management, IEEE Transactions on* 57, 661–673.
- XVII. Van Rooij, A., Meerkerk, G., Schoenmakers, T., Griffiths, M., and van de Mheen, D., 2010. Video game addiction and social responsibility. *Addiction Research and Theory* 18, 489–493.
- XVIII. Williams, D., 2002. Structure and competition in the U.S. home video game industry. *International Journal On Media Management* 4, 41–54.
- XIX. Williams, J.P., 2009. Community, frame of reference, and boundary: Three sociological concepts and their relevance for virtual worlds research. *Qualitative Sociology Review*, 5–17.