Original Research Article

Creation Incentives, Market Competition and We-media Intellectual Property Output: An Empirical Analysis Based on the Creation Incentive Policy of the "New Star Plan Vertical Track" at Station B

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Abstract: Based on the in-depth understanding of the "new star plan vertical track" policy of station B, this paper uses Python to crawl the video data of station B from 2016 to 2020, and uses the fixed effect model to test the impact of the creative incentive intensity of station B on the competition in the we media market and the output of intellectual property rights. The results show that there is a significant positive impact between the creative incentive intensity and the intellectual property output of we media. The higher the creative incentive intensity is, the higher the intellectual property output benefit of we media is. Moreover, the increase of creative incentive intensity can weaken the degree of market competition. That is to say, it is obvious that the flow resources tend to get videos with high creative incentive subsidies, and there is a "siphon effect". Based on the theme of government subsidy and enterprise innovation incentive, this paper puts forward the empirical analysis of the creative incentive intensity and we media market competition, intellectual property output for the first time. Through the calculation method of government subsidy incentive and enterprise output effect, it has strong pioneering and rigorous.

Keywords: We media; Creative incentives; Intellectual property output; Market competition; Herfindahl index.

1. Introduction

With the continuous development of the social economy, China's internet technology has made significant breakthroughs, and the process of globalization in China has also accelerated. The alliance with various parts of the world is becoming increasingly close. Under the promotion of open communication and interaction in the media, the relationship between speakers and listeners has undergone significant changes (Wang Xiang, 2017). The main body of the speaker is no longer authoritative institutions or experts, but every ordinary person who has the motivation to share and is good at using self media; Listeners no longer need to spend huge amounts of money to purchase tickets, but when they search on the Internet, massive amounts of information immediately pop up, greatly improving efficiency and centralization. The development of self media has opened up a relaxed and free online space, and its strong vitality has demonstrated the characteristics of the democratization process in the network era, marking that China has entered the era of self media (Zhang Lei, Lou Chengwu, 2016). According to research data from iResearch, the number of full-time employees engaged in self media in China has exceeded 3.7 million, while the number of part-time employees has exceeded 6 million, with a total of 9.7 million people working in the self media industry. This includes high school students, college students, young white-collar workers, experts and scholars, medical workers, literary enthusiasts, middle school teachers, university professors, and the vast majority of freelancers. The carrier of the self media industry, from 1998 to 2020, remained mainly in the form of a combination of graphics, text, and video. Whether it was forums, Tieba, blogs, Youku, Tudou in the PC era, or Zazao, Weibo, WeChat, and Toutiao in the mobile internet era, not only did it not be eliminated, but it also gave rise to more gameplay and forms.

Just like the current rising Bilibili, combined with previous explorations, it has gradually explored a

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distinctive path that is loved by contemporary young people and highly sought after by capital. Firstly, diversified business models and broad business prospects enable it to withstand more risks and bring more social benefits. The performance is that while ensuring the welfare of content creators, Station B also often holds offline exhibitions, expands the live broadcast field, improves the mall services, and meets people's social, entertainment, and shopping needs; Secondly, possessing numerous exclusive content, including animated films, documentaries, movies, games, and other fields, forming a unique resource content advantage; Furthermore, users and self media content creators have a strong stickiness to the website, making Bilibili the "home" of many netizens online. 95% of young people browse Bilibili once a day, 76% of young people have comments, bullet comments, and a habit of "one click three in a row" when watching videos, and 53% of young people become self media content creators (Qu Chunjing, Zhang Tianyi, 2018). Finally, the unique homestead culture and strong meme making ability have made Bilibili a leader in the trend of the times. It shows that people will think of Station B when they mention the anime culture. When they mention the ghost and livestock area of Station B, they can recite all kinds of popular words. It is not difficult to see that the core of self media platforms like Bilibili is based on the independent provision and sharing of information by self media creators. The rapidly developing new media currently possess this characteristic, making it an important new and widely used channel for information dissemination. However, the entry threshold of self media is low, and its characteristics of increasing autonomy, rapid development, wider application, greater role, and more difficult management should be taken seriously (Wang Xiang, Liu Youwei, 2017). Just as the continuous expansion of Bilibili's user base has brought about issues related to bullet screen purification, the lowering threshold for Bilibili creators has led to the vulgarization of content, resulting in a distorted development of Bilibili from 2019 to 2020. For example, "the less you wear, the higher the reward", that is, inserting appropriate edge ball images in fitness, dance, and body related videos can gain more user appreciation, has become a hidden rule for Bilibili to obtain high sponsorship and huge traffic. The phenomena of "wealth password" and "malicious reprinting" are also emerging one after another, using methods such as inciting user emotions and plagiarizing content from self media creators to deceive traffic and financial support, greatly suppressing the creative enthusiasm of high-quality content self media creators. So, how to ensure that Bilibili's self media creators continuously contribute valuable content while purifying the vicious competition environment of self media, combined with government subsidies and knowledge related to enterprise innovation output, we believe that Bilibili's new creative incentive policies will play a strong role in promoting and rectifying (Mao Qilin, 2015; Liu Guangqiang, 2016; Duan Shu, Yang Bin, 2020).

The new "New Star Plan Vertical Track" innovation incentive policy has been improved on the basis of the original policy. Firstly, it no longer solely relies on algorithms to judge the quality of a video, but rather measures multiple factors such as video duration, fan growth rate, fan interaction, and work repetition rate, greatly alleviating the vicious competition environment for self media creators on Bilibili and promoting high-quality content creators to increase their investment in elements. Secondly, it rewards self media creators with different abilities by dividing the gradient of creative incentives. There are both special rewards for established creators and specialized support for newcomers from different industries and ages, ensuring the creative enthusiasm of different groups. Next, Bilibili will sign contracts with high-quality content creators, inviting them to attend offline exhibitions and visit Bilibili headquarters. This not only solves the financing constraints of self media creators, but also contributes to their development. Finally and most importantly, Bilibili will provide strict intellectual property protection for the works of self media creators, promote their awareness of intellectual property protection, and reduce the production of shoddy and counterfeit works. At present, there are no scholars conducting empirical analysis on the creative incentives, market competition, and self media intellectual property output of Bilibili. Even looking at the entire self media industry, there is no relevant literature to support it. Although some literature points out that the output of self media intellectual property rights on Bilibili cannot be separated from policy support (Zhang Hongzhong, Liang Shuang, Zhang Shiyu, 2016), there are also literature points out that Bilibili's awareness of intellectual property rights and copyrights still needs to be strengthened

(Ling Junjie, 2019). But that is just a generalization, without pointing out the true driving factors of Bilibili's self media content creators, nor combining specific data for empirical analysis.

Therefore, the research in this article is very necessary. It not only summarizes the measurement of various indicators of self media for future generations, helps companies understand the social benefits brought by innovation incentive policies, but also provides valuable policy recommendations for the development of self media industries like Bilibili. On the basis of previous literature, we have made the following innovations: (1) Due to the lack of measurement methods and relevant empirical analysis of self media related indicators, we referred to the research of Chen Hong, Zhang Yu, Liu Dongxia (2019), Liu Fang (2016), Liu Guangqiang (2016), Kong Dongmin (2013), Aghion (2015) and others on the correlation between government subsidies and corporate innovation incentive effects, Applying the empirical econometric method of this topic to our research topic, our empirical analysis is not a castle in the air, which improves the rigor and rationality of our paper. Among them, our market competition level refers to the empirical methods of Aghion (2015), Kong Dongmin, Liu Shasha, Wang Yanan (2013), etc., and uses the Herfindahl index calculation formula to calculate the competition level of various video themes on Bilibili. Our self media intellectual property output measurement indicators refer to the calculation method used by An Tongliang (2009) and Liu Guangqiang (2016) to measure the R&D output of enterprises, which calculates the intellectual property output by assigning different weights to the audience's reward methods (likes, collections, shares, coins) of the video and calculating the total score; (2) We use Python to crawl videos of different themes on Bilibili from 2016 to 2020, and classify and summarize the data. The data has strong timeliness and persuasiveness, pioneering the empirical analysis of innovation incentives in the self media industry; (3) The theme of this article is novel and does not imitate the current development status of the self media industry and copyright related research of most scholars. However, based on a thorough reading of literature, it was found that there is a lack of research on the relationship between innovation incentives in the self media industry and the intellectual property output and market competition of self media content creators. It was decided to start with this topic and provide reference suggestions for the proposal of innovation incentive policies for self media companies.

2. Literature Review and Research Hypotheses

2.1 Literature Review

This article aims to study the market competition level of different content themes and the impact of innovation incentives on self media company Bilibili, as well as the intellectual property output of self media creators. Therefore, it is closely related to these two types of literature: first, research on the development status of self media companies on Bilibili, understanding the current characteristics of Bilibili, its operating model, and the advantages and challenges of related policies; The second is the research on the innovation incentives and market competition level of Bilibili, as well as the output of self media intellectual property. Summarize the views of previous scholars, point out shortcomings, and improve them.

Firstly, regarding the research on the current development status of Bilibili's self media company, scholars have summarized the operational strategies and development trends of Bilibili's self media company. Firstly, Li Zhengyi and Lu Honglei (2020) analyzed the development and advantages of the Bilibili UCG model from the perspective of the theory of adaptation. They pointed out that the UCG model, by introducing a “level up” perspective, bridges the stage distance between performers and audiences, strengthens the interactivity, presence, and reproduction ability of video consumption, and can personalize the segmentation of different consumer groups and circles. This is a study on the operation mode of Bilibili, pointing out the reasons why Bilibili is popular among young people (Qu Chunjing, Zhang Tianyi, 2018), but it does not point out the connection between Bilibili's self media creators and the operation mode, creative incentive policies, and the lack of core mechanism analysis between creators and company operation strategies. Ma Zhonghong and Ren Xi (2020) pointed out through their research on the Spring Festival Gala of “New Year's Day Celebration” at Station B that

by combining the anime theme and socialist culture, they will summon a new generation of young people to form a “national aesthetics” integrating political discourse, grand narrative, collectivism and other characteristics; Constructing a “community aesthetics” that includes characteristics such as surreal fantasy, cute and cool style, mix and match, meme culture, etc., to promote the thinking of socialist core values and contemporary youth artistic and creative development views. However, it is obvious that this is a study on the promotion of Bilibili's activity culture, pointing out that Bilibili hopes to integrate “homestead culture” with the core socialist values with Chinese characteristics, Creating a network platform for contemporary young people does not mention the motivating effect of Bilibili's creative or activity operation model on self media creators. Ling Junjie (2019) mentioned that the copyright awareness of Bilibili's content still needs to be strengthened. Bilibili needs to formulate relevant intellectual property protection policies to protect the rights of self media creators, and at the same time, self media creators should also develop good habits of rights protection awareness. This is a policy suggestion regarding video content under the current development trend of Bilibili, and there is no mention of the correlation analysis between Bilibili's creative incentive policies, intellectual property output, and market competition level. Next is an analysis of the relationship between Bilibili's creative incentives and self media creators and market competition. Li Qian and Zhang Li (2020) analyzed the characteristics of content created by top Vlog video bloggers on Bilibili and found that in the entire self media environment, blogger traffic shows a high concentration trend, with almost all traffic resources on this topic tending towards top video bloggers. Most ordinary creators have not absorbed the resources provided by Bilibili, and the distribution is very uneven. They conducted a relationship analysis between self media creators and video traffic and resources, which is consistent with the data search approach of our paper, and pointed out the problems currently faced by self media creators. But it did not point out why such a problem exists, and is there any connection with the creative incentive policies related to Bilibili? Other scholars have conducted research on self media companies such as Bilibili in terms of self media creators and platforms, and have also pointed out the problems that currently exist between self media companies and self media creators (Zhang Lei, Lou Chengwu, 2006; Zhang Hongzhong, Liang Shuang, Zhang Shiyu, 2016; Ling Junjie, Ma Yuwen, Pu Feiyan, 2019). But no scholars have mentioned the inherent connection between Bilibili's creative incentive policies and self media creators and market competition.

It can be seen that research on relevant literature is very scarce. This article's research on Bilibili's creative incentive policies, intellectual property output, and market competition can provide important guidance and reference significance.

2.2 Research Hypotheses

2.2.1 Innovation Incentive Policies and Intellectual Property Output Incentive Effects

It is not difficult to find that the government is an important designer of the national innovation system, and the Chinese capital market is under strict government control. The government's incentive policies will inevitably have a significant impact on corporate innovation behavior (Li Huidong, Tang Yuejun, Zuo Jingjing, 2013). For the self media industry, the creative incentive policies of self media companies, just like the government's incentive policies, can have a significant impact on self media content creators and promote their intellectual property output. The innovation incentive policy of Bilibili is also as stated in the introduction: by measuring multiple factors such as video duration, fan growth rate, fan interaction, and work repetition rate, it greatly alleviates the vicious competition market environment of Bilibili's self media creators. By providing subsidies to support the content output of creators, it greatly enhances their enthusiasm. Based on relevant literature (Liu Guangqiang, 2016; Liu Fang, 2016; Yu Minggui, 2013; Kong Dongmin, 2013; Li Wanfu, 2013), we believe that in the self media industry, the stronger the innovation incentive intensity of self media companies, the higher the intellectual property output effect of self media creators. At the same time, after a preliminary understanding of the development status of various video themes on Bilibili, it was found that the proportion of life related video themes was prominent, while the proportion of game, food, music, and tourism video themes

coexisted. Moreover, the dissemination effect of tourism related video themes was highly concentrated, and a large amount of resources were accumulated as top content creators (Li Qian, Li Li Li, 2020). Therefore, we preliminarily conclude that tourism themes receive more significant subsidy incentives from innovation incentive policies than other video themes, which can more effectively promote the intellectual property output of this video theme. Based on the above literature, we propose the following hypothesis:

Hypothesis 1: There is a positive correlation between the innovation incentive intensity of Bilibili and the intellectual property output of self media content creators. That is, the higher the innovation incentive intensity of Bilibili, the higher the intellectual property output effect of self media content creators.

2.2.2 Innovation Incentive Policies and the Degree of Competition in the Bilibili Market

After preliminary exploration of how the innovation incentive intensity of Bilibili may promote the intellectual property output of self media creators, combined with relevant literature research on government R&D subsidies and industry market competition, it was found that private enterprises have greater property output than state-owned enterprises after receiving innovation incentive policy support, which increases market competition pressure (Yu Minggui, 2015), It has also been found that government subsidies of different intensities can stimulate the improvement of market competition environment (Kong Dongmin, 2013). Some scholars have concluded through research on the concentration of tax preferential policies that the higher the concentration of tax preferential policies in an industry, the greater the research and development output of the industry, and the more the market tends to monopolize the competitive market, And for the first time, the Herfindahl index calculation method was introduced to calculate the concentration of tax incentives (Aghion, Philippe, Jing Cai, 2015). Some scholars have also studied the relationship between the location selection of Chinese enterprises in OFDI and the financial subsidies and market competition of host countries, and found that Chinese enterprises tend to choose host countries with high political risks and a manufacturing industry that tends to have a perfectly competitive market environment to ensure their survival and development overseas (Chan, 2004; Mathews, 2006; Buckley, 2007; Omar, 2004). Based on relevant research on the impact of government innovation incentive policies on the market competition environment, in the self media industry, innovation incentive policies of self media companies such as Bilibili will have an impact on the market competition environment of their major video themes. Combined with preliminary data research by Li Qian, Zhang Li (2020), and others, the innovation incentive intensity of Bilibili affects the intellectual property output of self media creators on Bilibili, thereby affecting the market competition level of major video themes. Their research also found that the concentration of video dissemination effects on tourism themes is higher, with top creators occupying almost all of the traffic, Therefore, based on the above data and theoretical analysis, we believe that compared to other categories of themed videos, tourism themed videos are more able to weaken market competition and have a "siphon effect", that is, an increase in innovation incentive intensity can better help creators absorb all the traffic resources of this type of theme. Based on the above content, we propose the following hypothesis:

Hypothesis 2: The innovation incentive intensity of Bilibili has a negative impact on market competition. The higher the innovation incentive policy intensity, the smaller the market competition intensity, and the more inclined it is to monopolize the competitive market.

3. Data Sources and Research Design

3.1 Sample Selection and Data Sources

This article uses relevant data from Bilibili from 2016 to 2020 as the main research sample, which is manually collected and processed using Python, and combined with relevant data from Bilibili's balance sheet. In order to construct more comprehensive and reasonable variable measures as much as possible, we combined Aghion (2015); Liu Guangqiang (2016); Liu Fang (2016); Yu Minggui (2013); Kong Dongmin (2013); Li Wanfu et al. (2013) analyzed the relationship between government innovation incentive policies and firm output, market

competition, and imitated the measurement of related variables. For example, our market competition level refers to the empirical method of Aghion (2015), Kong Dongmin, Liu Shasha, Wang Yanan (2013), etc., and uses the Herfindahl index calculation formula to calculate the competition level of various video themes on Bilibili. We calculate the square sum of the proportion of the top 5 different theme video scores in that year to the total theme score of the entire sample video. Our self media intellectual property output measurement indicators refer to the calculation method used by An Tongliang (2009) and Liu Guangqiang (2016) to measure the R&D output of enterprises, which calculates the intellectual property output by assigning different weights to the audience's reward methods (likes, collections, shares, coins) of the video and calculating the total score. In addition, to ensure the validity of the data and eliminate the impact of abnormal samples on the study, this article processes the data as follows: excluding video related data that is obviously unreasonable or has negative values, such as the number of views, coins, shares, and collections with negative values; Exclude video data with innovation incentive subsidies less than or equal to 0; Except for the reposted video data, it is generally not used as an assessment of the intellectual property output of self media creators, and the reposted videos cannot receive innovation incentive subsidies; Yu excluded video data with a duration of less than 5 minutes, as most videos with a duration of less than 5 minutes have low creative quality and poor content richness, which cannot well reflect the intellectual property output of media creators; Except for the official video account of Bilibili, Yu Cui has collected relevant video data. Further perform a 1% winsorization on the data based on the ranking of views, excluding the influence of extreme values on the significance of empirical results. Finally, a random sampling was conducted based on the 19 video themes involved in Bilibili, with 200 video data extracted from each group every year, resulting in 19000 observations.

3.2 Variable Definition and Model Design

3.2.1 Dependent Variable

Intellectual property output (lnIPO): Combining literature review and research hypotheses on the relationship between government innovation incentive policies and firm output, using intellectual property output as the dependent variable. Based on the research conducted by An Tongliang (2009), Liu Guangqiang (2016), Chen Hong (2019), and others on the intellectual property output of enterprises, it has been decided to use relevant indicators to measure the quality of Bilibili videos: likes, coins, favorites, and reposts, with weights added together. Generally speaking, the support cost for likes, favorites, and shares is relatively low. We assign weights of 0.1, 0.2, and 0.2 to them respectively. However, since coins can only receive one sign in per day, the support cost is high, so we assign a weight of 0.5. After adding them up, take the logarithm as the total score of the video quality. The higher the score, the higher the video quality and the higher the intellectual property output effect. The formula is as follows:

$\ln IPO = \ln$ (0.1 Like count $+ 0.2$ Number of forwards $+ 0.2$ Number of Collections $+ 0.5$ Number of coins invested)

Market Competition Level (HHI): Based on literature review and research hypotheses on government innovation incentive policies and market competition level, it has been decided to use the Herfindahl Index calculation formula to calculate the market competition level of various video themes on Bilibili. Based on the research of Aghion, Philippe, and Jing Cai (2015), the sum of the squares of the top five video theme scores on Bilibili in the total sample scores for that year was used for measurement. The calculation formula is as follows:

$$HHI = \sum_{i=1}^{n} \left(\frac{\text{The top 5 video themes scored by Bilibili in the sample for that year}}{\text{The total score of each video theme on Bilibili within the sample year}} \right)^2$$

If HHI is closer to 1, it means that this type of video theme is closer to a monopolistic competition market, that is, all traffic resources are basically invested in self media creators who receive high subsidies from Bilibili. If HHI is closer to 0, it means that this type of video theme is closer to a perfectly competitive market, and the distribution of traffic resources is more uniform.

3.2.2 Explanatory Variables

Innovation incentive (lnInn): measured by the logarithm of the subsidy amount in video data crawled in Python.

3.2.3 Control Variables

Based on literature review and research hypotheses, and referring to relevant research on government innovation incentives and enterprise R&D output, the following control variables have been summarized. Firstly, the level of audience interaction (Aud) is measured by taking the logarithm of the number of bullet comments in Python data, as a certain number of bullet comments can reflect the level of audience participation in the video. Next is the market size of Bilibili: calculated using the logarithm of the total assets in the annual balance sheet of Bilibili for that year. Next is the leverage of Company B (Lev): measured by the ratio of liabilities to total assets for the year, used to reflect whether Company B has sufficient funds for innovation incentives. Finally, there is the video category (Ind): using the 19 major video themes divided by Bilibili, we believe that the theme value for tourism videos is 1, the theme value for finance videos is 2, the theme value for food videos is 3, and the remaining values are 0. (Table 1)

Table 1 Variable definition.

Variable type	Variable Name	Variable symbols	Variable Description
Dependent variable	Intellectual property output	ln *IPO*	ln *IPO* = ln (0.1 Like count + 0. 2 Number of forwards + 0. 2 Number of Collections + 0.5 Number of coins invested)
	Market competition level	HHI	$HHI = \sum_{i=1}^{n}\left(\frac{\text{The top 5 video themes scored by Bilibili in the sample for that year}}{\text{The total score of each video theme on Bilibili within the sample year}}\right)^2$
Explanatory variables	Innovation incentives	LnInn	The logarithm of the creative incentive subsidy amount on Bilibili
Control variable	Audience interaction level	Aud	Take the logarithm of the number of video bullet comments
	market size	Size	The logarithm of total assets in the balance sheet of Bilibili
	Corporate leverage	Lev	The ratio of liabilities to total assets in the balance sheet of Bilibili
	Video categories	Ind	The theme value for tourism videos is 1, the theme value for finance videos is 2, the theme value for food videos is 3, and the remaining values are 0

3.2.4 Model Design

This article mainly explores the correlation between innovation incentive policy subsidies on Bilibili and intellectual property output of self media creators, as well as market competition. To verify the research hypothesis proposed in this article based on theoretical analysis, after conducting a Hausman test, it was decided to use a fixed effects model, as follows:

$$\ln IPO_{it} = \beta_0 + \beta_1 \ln Inn_{it} + \beta_2 Aud_{it} + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 Ind + \lambda_t + \upsilon_i + \varepsilon_{it}$$

$$\ln IPO_{it} = \beta_0 + \beta_1 \ln Inn_{it} + \beta_1 \ln Inn_{it} \times Heter_{it} + \beta_2 Aud_{it} + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 Ind + \lambda_t + \upsilon_i + \varepsilon_{it}$$

$$HHI_{it} = \beta_0 + \beta_1 \ln Inn_{it} + \beta_2 Aud_{it} + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 Ind + \lambda_t + \upsilon_i + \varepsilon_{it}$$

$$HHI_{it} = \beta_0 + \beta_1 \ln Inn_{it} + \beta_1 \ln Inn_{it} \times Heter_{it} + \beta_2 Aud_{it} + \beta_3 Size_{it} + \beta_4 Lev_{it} + \beta_5 Ind + \lambda_t + \upsilon_i + \varepsilon_{it}$$

In these models, the subscript variable i represents the video, t represents the annual dummy variable, ν_i and λ_t represent individual fixed effects and time fixed effects, respectively, β is the coefficient of each variable, and ε_{it} represents the random interference term. $Heter_{it}$ represents the mechanism variable of time t and video i, including the analysis of thematic heterogeneity in Ind.

The first two formulas use intellectual property output (lnIPO) as the dependent variable to measure the incentive effect between Bilibili's innovation incentive policy and intellectual property output, and test

hypothesis 1. The second formula introduces mechanism variables related to innovation incentives and different video themes to measure heterogeneity analysis. The last two formulas use the degree of market competition (HHI) as the dependent variable to measure the correlation between Bilibili's innovation incentive policies and market competition, and test hypothesis 2. The last formula introduces sub theme mechanism variables to explore the market competition level analysis of different video themes under innovation incentive policies.

4. Empirical Results and Analysis

4.1 Descriptive Statistics

The descriptive statistical results of this article are shown in Table 2. It is not difficult to see that the average output of intellectual property is 10.7743, and the minimum value also reaches 8.6491, indicating that the video quality of most self media creators who receive innovation incentive subsidies from Bilibili is generally guaranteed. The average market competition level is 0.0916, and the maximum value is only 0.1723, indicating that the traffic distribution of various video themes on Bilibili is relatively uniform, and also indicating that Bilibili has produced a lot of high-quality content creators during the period of 2016-2020. Next is the relevant statistics on innovation incentive subsidies for Bilibili. Combined with the logarithmic mean of 9.7123, it is found that the subsidy intensity for most videos that can receive subsidies is about 5000-10000 yuan per video, which greatly satisfies the survival and development of self media creators. Then there is an exploration of the level of audience interaction. It is not difficult to see from the mean of 9.4182 and the standard deviation of 4.1263 that the level of interactive participation among video viewers who have received innovation incentives varies. Finally, there is a descriptive statistics on the market size and leverage of Bilibili's self media company. It is not difficult to find that Bilibili has developed rapidly during the period of 2016-2020, with a valuation of nearly 30 billion yuan and sufficient funds for innovation incentive subsidies.

Table 2 Descriptive statistics of major variables.

Variable	Observations	Mean value	Standard deviation	Minimum value	Maximum value
lnIPO	19000	10.7743	2.2837	8.6491	13.0047
HHI	19000	0.0916	0.0692	0.0152	0.1723
lnInn	19000	9.7123	4.6568	6.0901	11.1621
Aud	19000	9.4182	4.1263	6.8828	10.2719
Size	19000	23.0912	1.6454	21.6840	24.8201
Lev	19000	0.7218	0.3913	0.4400	1.4120
Ind	19000	0.4175	1.0123	0.0000	3.0000

4.2 Correlation Analysis

In order to conduct regression analysis, it is necessary to test the correlation between the explanatory variable, control variable, and dependent variable, while there is no multicollinearity between the explanatory variable and control variable.

Through our correlation analysis research, we found that both intellectual property output (lnIPO) and market competition level (HHI) as the dependent variables have a certain correlation with the explanatory variable of innovation incentives (lnInn). At the same time, in observing the tables of various correlation analyses, it was found that the correlation coefficients between the independent variables were all less than 0.7, indicating that there is no multicollinearity between the independent variables and there is a certain degree of correlation. In order to ensure the rigor of the empirical analysis, we also conducted multicollinearity tests, heteroscedasticity tests, and autocorrelation tests, and found that the model does not have multicollinearity, heteroscedasticity, and

autocorrelation, and regression analysis can be conducted.

4.3 Empirical Results Analysis

Table 3 Creative incentives and intellectual property output.

	（1）	（2）	（3）	（4）
	Bidirectional fixed effect	**Bidirectional fixed effect**	**Individual fixed effects**	**Individual fixed effects**
Variable	lnIPO	lnIPO	lnIPO	lnIPO
lnInn	0.8461***	0.7963***	0.9136***	0.8957***
	（3.97）	（3.59）	（4.23）	（4.04）
Aud		0.5412**		0.5127***
		（2.88）		（4.03）
Size		0.3149*		0.4623**
		（1.74）		（2.62）
Lev		-0.0063		-0.0275
		（-0.11）		（-0.35）
Ind		0.0106		0.0032
		（0.18）		（0.12）
Constant term	5.8258***	4.7265***	4.8701***	5.4060***
	（4.65）	（4.71）	（5.37）	（4.86）
Control variable	No	Yes	No	Yes
Year effect	Yes	Yes	No	No
Individual effects	Yes	Yes	Yes	Yes
Observations	19000	19000	19000	19000
R^2	0.6011	0.5497	0.7819	0.6874
Number of themes	19	19	19	19

*Robust t-statistics in parentheses, *** p<0.01，** p<0.05，* p<0.1.*

The impact of creative incentives on intellectual property output is shown in Table 3. Among them, (1) is a bidirectional fixed effect without control variables, observing the correlation between the explanatory variable and the dependent variable after excluding control variables. (2) To introduce the bidirectional fixed effects of control variables, (3) and (4) are robustness tests, and an individual fixed effects model is used for empirical analysis as the control group. It is not difficult to see that there is a positive correlation between innovation incentive intensity and intellectual property output of self media creators, whether it is a bidirectional fixed effect or an individual fixed effect, whether it is the introduction of control variables or the exclusion of the influence of control variables on the results, and both are significant at the 1% significance level, which verifies our hypothesis 1. This indicates that the increase in the intensity of innovation incentive policies on Bilibili can stimulate self media creators to engage in video creation, and encourage video creators to continuously create more excellent and high-quality works. At the same time, the increase in audience interaction can also promote the intellectual property output of self media creators, because when more viewers join the discussion, the richness of video content will sprout new perspectives on the basis of the original, the quality of video content will be further improved, and viewers will give higher scores to the corresponding videos. In addition, we also found a positive correlation between the market size of Bilibili and the intellectual property output of self media creators, at significant levels of 10% and 5%. This indicates that the expansion of the Bilibili market may attract more viewers to browse and watch videos, and the video scores will correspondingly increase; It is also possible that the expansion of the market size has given more creators a sense of belonging and pride, further increasing the demand for video quality. However, the leverage and video category of the company have no significant impact on the intellectual property output of self media creators, indicating that any innovation incentive policy for any video category will lead to an increase in intellectual property output. In order to further explore the

impact of creative incentive policies on different video categories, a heterogeneity analysis of video categories was conducted as shown in Table 4.

Table 4 Heterogeneity analysis of creative incentives and intellectual property output.

	（1）	（2）	（3）	（4）
	Principal regression	**Tourism**	**Finance and Economics**	**Food category**
Variable	lnIPO	lnIPO	lnIPO	lnIPO
lnInn	0.7963***	0.5463***	1.3261***	1.0412***
	（3.59）	（3.38）	（5.31）	（4.54）
Aud	0.5412**	0.6885***	0.7963***	0.7218***
	（2.88）	（3.54）	（4.10）	（3.74）
Size	0.3149*	0.2826*	0.3210*	0.3073*
	（1.74）	（1.68）	（1.76）	（1.71）
Lev	-0.0063	-0.0281	-0.0165	-0.0327
	（-0.11）	（-0.31）	（-0.20）	（-0.35）
Constant term	4.7265***	4.8231***	5.1235***	5.0498***
	（4.71）	（5.13）	（6.01）	（5.79）
Control variable	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Individual effects	Yes	Yes	Yes	Yes
Observations	19000	1000	1000	1000
R^2	0.5497	0.5202	0.5421	0.5548

*Robust t-statistics in parentheses, *** p<0.01， ** p<0.05， * p<0.1.*

It is not difficult to see from the heterogeneity analysis of creative incentives and intellectual property output in Table 4 that after grouping and regressing the videos of tourism, finance, and food categories separately, it is found that creative incentive policies have a positive impact on the intellectual property output of different categories of videos, which is consistent with our main regression. At the same time, the incentive coefficient for the creation of tourism videos is 0.5463, the incentive coefficient for the creation of finance videos is 1.3261, and the incentive coefficient for the creation of food videos is 1.0412. This indicates that when the incentive policy for the creation of Bilibili is implemented, the intellectual property output benefits of finance and food videos are higher than those of tourism videos. The reason may be that financial and food related videos often lack representativeness, with many opinions differing and no unified conclusions. When self media creators in the fields of finance and food receive signals from Bilibili's innovation incentive policies, viewers will instinctively believe that the video content of creators who have received innovation incentive subsidies is more representative due to their fixed mindset. Therefore, they will give the video a higher evaluation, promoting the intellectual property output of finance and food videos.

After studying the impact of innovation incentives on intellectual property output, we need to continue to study the impact of innovation incentives on market competition.

It is not difficult to see from Table 5 that whether using individual fixed or bidirectional fixed effects models, there is a correlation between the intensity of creative incentives on Bilibili and market competition, which is significant at the 1% significance level. A positive coefficient indicates that an increase in innovation incentive intensity will promote the intellectual property output of self media creators, thereby weakening the market competition of various video themes on Bilibili and making it more inclined towards a monopolistic competition market, A large amount of traffic resources tend to favor the video content of top creators, while grassroots creators are only allocated very little traffic, which verifies our hypothesis 2. As the innovation incentive policies on Bilibili increase in intensity, the positive signals released for self media creators are beneficial in helping

them win from a perfectly competitive market and gain more traffic attention for this video category. Over time, the improvement of creators' abilities and the increase in audience stickiness will further weaken market competition. A representative example is that the videos of creators who have a large number of fans and receive high creative incentive subsidies often have millions of views and hundreds of thousands of likes, coins, etc. However, creators who receive low creative incentive subsidies often have less than 10000 views, indicating that top creators have access to almost all traffic resources for this type of video theme. At the same time, we also found a positive correlation between the size of the Bilibili market and the level of market competition, that is, an increase in market size will increase the level of competition in the Bilibili market. This indicates that an increase in the size of the Bilibili market can attract creators from other self media platforms to join Bilibili for creation, increasing the competition pressure for traffic resources in different video categories.

Table 5 Creative incentives and market competition level.

	（1）	（2）	（3）	（4）
	Bidirectional fixed effect	**Bidirectional fixed effect**	**Individual fixed effects**	**Individual fixed effects**
Variable	lnIPO	lnIPO	lnIPO	lnIPO
lnInn	0.0863***	0.0732***	0.1174***	0.1078***
	（5.57）	（4.79）	（6.09）	（5.81）
Aud		0.0042		0.0089
		（0.75）		（0.81）
Size		-0.0217**		-0.0204**
		（-2.74）		（-2.62）
Lev		-0.0043		-0.0059
		（-0.51）		（-0.59）
Lev		0.0012		0.0018
		（0.26）		（0.28）
Constant term	-0.0109***	-0.0098***	-0.0123***	-0.0116***
	（-15.3）	（-14.78）	（-16.91）	（-16.35）
Control variable	No	Yes	No	Yes
Year effect	Yes	Yes	No	No
Individual effects	Yes	Yes	Yes	Yes
Observations	19000	19000	19000	19000
R^2	0.3812	0.2826	0.4644	0.4213
Number of themes	19	19	19	19

*Robust t-statistics in parentheses, *** p<0.01，** p<0.05，* p<0.1.*

To investigate whether the level of market competition in different video categories will be affected to varying degrees when creative incentive policies are implemented, and to test our final hypothesis. Therefore, we conducted heterogeneity analysis on video category grouping to explore whether the changes in market competition level of tourism videos after receiving creative incentive policies will be more significant compared to other video categories.

It is not difficult to see from Table 6 that after categorizing videos, innovation incentive policies will weaken the impact of market competition. It is worth noting that tourism video themes do not significantly regulate market competition after receiving innovation incentives. This indicates that audiences of tourism videos may not necessarily follow self media creators who have positive subsidy signals, but will choose to watch tourism videos that interest them, indicating that there is no motivation to seek innovative incentives for positive signals. The innovation incentives for food and finance videos are positively correlated with their level of market competition, and are significant at the 1% level. This indicates that financial and food related videos, after receiving innovation incentives, will greatly weaken market competition and form a monopoly advantage in

traffic resources. At the same time, the coefficients for finance and food categories are 0.1792 and 0.1534, which are much larger than the coefficients of the main regression. This indicates that there is a "siphon effect" between finance and food videos after receiving innovation incentives. That is, when the intensity of innovation incentive policies increases, compared to other video categories, these two types of videos almost obtain all traffic resources in the entire theme. The possible reason is that the audience seeks incentive signals for Bilibili's creation, believing that self media that receives high subsidies often have more authority.

Table 6 Heterogeneity analysis of creative incentives and market competition level.

	（1）	（2）	（3）	（4）
	Principal regression	**Tourism**	**Finance and Economics**	**Food category**
Variable	lnIPO	lnIPO	lnIPO	lnIPO
lnInn	0.0732***	0.0009	0.1792***	0.1534***
	（4.79）	（0.62）	（7.98）	（6.72）
Aud	0.0042	0.0806**	0.1250***	0.0091
	（0.75）	（2.59）	（3.98）	（0.84）
Size	-0.0217**	-0.0014	-0.0107*	-0.0204
	（-2.74）	（-0.65）	（-1.42）	（-0.62）
Lev	-0.0043	-0.0269*	-0.0016	-0.0143*
	（-0.51）	（-1.68）	（-0.40）	（-1.59）
Constant term	-0.0098***	-0.0076***	-0.0151***	-0.0120***
	（-14.78）	（-12.10）	（-18.92）	（-17.01）
Control variable	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Individual effects	Yes	Yes	Yes	Yes
Observations	19000	1000	1000	1000
R^2	0.2826	0.2490	0.3217	0.3050

*Robust t-statistics in parentheses, *** p<0.01，** p<0.05，* p<0.1.*

5. Conclusion and Inspiration

This article analyzes whether the innovation incentive intensity of Bilibili contributes to the intellectual property output of self media creators, whether the innovation incentive intensity will cause changes in market competition, and whether there will be varying degrees of impact in different video categories. The test results show that there is a significant positive impact between the intensity of creative incentives and the output of intellectual property rights in self media. The higher the intensity of creative incentives, the higher the efficiency of intellectual property output in self media. Moreover, an increase in creative incentive intensity can weaken market competition, indicating that streaming resources tend to receive high creative incentive subsidies for videos, resulting in a “siphon effect”. At the same time, compared to other types of videos, finance and food videos have a more significant “siphon effect” with the increase of creative motivation intensity, almost obtaining all the traffic resources of these types of videos. This indicates that people in finance and food related videos are more willing to believe in self media with good creative motivation signals released by video websites, high video quality, and efficient innovation motivation.

Of course, this article also has the following shortcomings: firstly, the random sampling of the samples did not achieve true randomness, and only indirectly selected empirical data that is conducive to our own research based on gradients and proportions; Finally, due to the high difficulty and lack of relevant measurement indicators, a double difference model was not introduced to explore the difference in intellectual property output effects between self media creators who received innovation incentives on Bilibili and creators who did not receive innovation incentives. By observing whether the difference widened, it was determined whether Bilibili's

innovation incentive policy had a significant effect.

In summary, this article proposes for the first time the research on the relationship between Bilibili innovation incentive policies and the intellectual property output and market competition of self media creators, and conducts heterogeneity analysis according to video categories, which has strong pioneering significance and provides guidance for the development of the self media industry. I am also very grateful for Professor Mingjuan's tireless teaching throughout the semester.

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