

The Impact of Internet Finance and Diversified Financing Models on the Development of the Sports Industry

Yijiahui Che*

Northwest University of Political Science and Law Xi'an 710122, Shaanxi Province, China

*Corresponding author: Yijiahui Che, cyjh0401@outlook.com

Copyright: © 2024 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: With the growth of the sports industry, the demand for financing has been increasing, while traditional financing channels are facing limitations. The emergence of Internet finance has provided new opportunities for the sports sector. This paper focuses on the diversified financing pathways for the sports industry, supported by internet finance, exploring its impact through theoretical analysis, constructing a regression model for empirical research, and conducting case analysis. The study finds that the development scale of Internet finance and the crowdfunding financing model significantly influence the income of the sports industry. Accordingly, the paper offers relevant policy and application suggestions, aiming to provide a reference for optimizing financing within the sports industry through Internet finance.

Keywords: Online finance; Sports industry; Diversified financing paths; Influence

Online publication: December 30, 2024

1. Literature review

In recent years, the sports industry has experienced significant global growth and has become an important driver of economic development^[1]. In China, the sports industry continues to expand, encompassing various fields such as sports event management, sports goods manufacturing and sales, fitness and leisure services, and sports training^[2,3]. However, the limitations of traditional financing channels have hindered the further development of the sports industry. As a result, some promising sports projects and enterprises face challenges in executing business plans or expanding their scale due to a lack of funding^[4,5].

Internet supply chain finance provides more flexible and precise financing services for enterprises within the sports industry supply chain, centered around core entities in the industrial chain. This helps optimize the stability and competitiveness of the supply chain^[6,7].

As China's economy develops, the sports industry has historically been dependent on government funding due to the lack of market participation by other investors. This reliance on public funds has limited the growth

of the sector ^[8]. Moreover, the sports industry in China faces a significant funding shortfall. Therefore, to promote the rapid and healthy development of the industry, a comprehensive and diversified investment and financing system must be established ^[9].

Furthermore, given the underdeveloped use of emerging financial instruments and technologies in China's sports industry, there is a need to leverage financial technologies such as blockchain, big data, and cloud computing. These technologies can infuse financial vitality into the industry, efficiently integrate social resources, and optimize resource allocation through digital financial platforms. This will make it easier for sports industry projects to connect with potential investors ^[10,11]. By showcasing the potential and returns of a project, the project side can attract the attention of investors and secure financial support. Investors can also access relevant project information via digital financial platforms and make informed investment decisions. These platforms also simplify the financing process by automating procedures, reducing the complexity of traditional financing methods, shortening the financing cycle, and enabling faster access to funds ^[12,13]. Additionally, digital platforms accelerate project implementation, providing both investors and project parties with comprehensive and transparent information. This helps reduce uncertainty and risk due to information asymmetry, allowing investors to make well-informed decisions based on financial data, project planning, and market potential.

Moreover, digital financial platforms offer valuable feedback and advice from investors, enhancing project operations and management. The empowerment of digital technology, alongside the accelerated integration of industries, has led to the emergence and promotion of new financial tools, such as financial technology, supply chain finance, and inclusive finance. These tools represent a transformation in terms of technology, integration, and inclusiveness, effectively addressing financial asset stratification driven by capital and offering new channels for alleviating enterprise financing constraints. They have become a new driving force for the high-quality development of the sports industry. Furthermore, digital financial platforms can enhance audience participation and entertainment, generating additional business opportunities for the sports industry, such as sponsorship deals and advertising placements. Through the convenient services offered by these platforms, audiences can engage more easily in sports consumption, further benefiting the sports sector with increased sponsorship and advertising revenue ^[14,15].

2. Research design

2.1. Hypothesis formulation

On September 2, 2019, the Sports Power Country Construction Plan was issued by the General Office of the State Council, clearly proposing the strategic goal of developing the sports industry into a pillar of the national economy. This demonstrates the country's emphasis on the development of the sports industry and provides macro-policy support for various development models. Among these is the use of Internet finance to support the sports industry, encouraging diverse stakeholders to promote its growth and attract more Internet finance resources. This policy foundation underpins the potential impact of diversified financing models under Internet finance on the sports industry.

Additionally, on January 12, 2022, the "Fourteenth Five-Year Plan for the Digital Economy Development" issued by the State Council proposed accelerating the industrialization of the digital economy and promoting industrial digitalization. It encouraged financial institutions to innovate financial products and service models

through digital technology, facilitating the integration of online and offline channels in the sports industry. This includes digital financing channels such as online crowdfunding and peer-to-peer (P2P) lending, which provide significant policy support for the digital transformation of the sports industry under internet finance.

2.2. Measurement model construction

The model employed for studying the variables is grounded in economic theory and involves multiple linear regression for time-series data with two or more series. This approach examines the dynamic relationships among multiple time-series variables.

$$Y_t = c + A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \mu_t$$

where c is a 12×1 dimensional constant vector, A_p is a 12×12 dimensional matrix of coefficients where $p = 1, 2, \dots, p$; and μ_t is a 12×1 dimensional white noise vector, satisfying $E(\mu_t) = 0$.

2.3. Variable description

The variables considered in this study include:

- (1) Sports industry income
- (2) Cumulative number of internet finance websites (Quantity)
- (3) Cumulative transaction volume of Internet crowdfunding (ICT)
- (4) Cumulative transaction volume of Internet payment and P2P online lending (Others)
- (4) Sports industry output (Output)
- (5) Sports industry expenditure (Exp)
- (6) Gross domestic product of the three industries (GDP)

These variables are analyzed to determine their relationships and impacts within the context of the study.

2.4. Autocorrelation test

The Breusch-Godfrey LM test was used to examine the presence of serial correlation in the residuals, with a lag order of 1 (i.e., testing whether the residuals are related to their first-order lag). The test statistic yielded a value of 0.8010, with a corresponding p-value greater than 0.05. This indicates insufficient evidence to reject the null hypothesis at the given significance level. The null hypothesis assumes that the residuals do not exhibit serial correlation, implying that the residual sequence can be considered random. Therefore, no significant serial correlation was found that would affect the estimation of the regression model. Based on these results, the current model is acceptable in terms of serial correlation.

2.5. Co-integration test

In time-series analysis, directly regressing non-stationary variables may result in spurious regression. This situation arises when there is no genuine economic relationship between the variables, yet the regression results falsely indicate a significant relationship. The Augmented Dickey-Fuller (ADF) residual co-integration test is employed to address this issue (**Figure 1**). If the test passes, it signifies that the regression between the variables is not spurious, making the regression model reasonable in economic terms.

Ensuring that the residual sequence has no systematic trend or cyclical changes is critical for establishing a Vector Autoregression (VAR) model. The ADF test results for the residuals show a p-value of 0.0165, which is less than the 0.05 threshold at the 5% significance level. Consequently, the null hypothesis that the residuals are

non-stationary is rejected, indicating that the residuals are stationary.

It can thus be concluded that a long-term co-integration relationship exists between the income of the sports industry, the cumulative number of internet finance websites recorded, the cumulative transaction volume of internet crowdfunding, the cumulative transaction volume of internet payments, the cumulative transaction volume of P2P network lending, sports industry output, sports industry expenditure, and the GDP of the three industries within the time interval. Accordingly, a VAR model can be constructed.

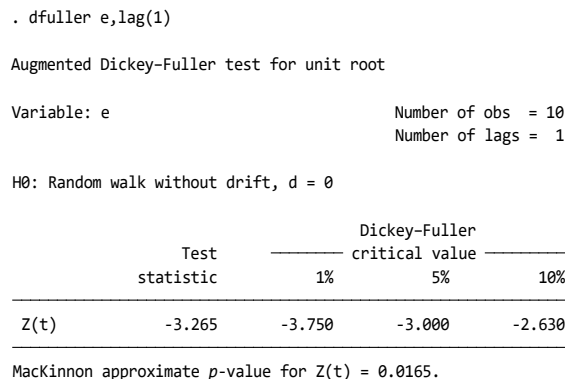


Figure 1. Residual stationarity test

2.6. VAR model construction

To account for potential numerical changes in variables caused by unforeseen future events, a VAR model was constructed. Although the original variables in the stability test were non-stationary, and the first-order difference of sports industry expenditure (Exp) remained unstable even after passing the co-integration test, adjustments were made. The model incorporated the sports industry income (Income), the cumulative number of internet finance websites (Quantity), the cumulative transaction volume of internet crowdfunding (ICT), the cumulative transaction volume of internet payments, the cumulative transaction volume of P2P network lending (Others), sports industry output (Output), and GDP of the tertiary industry (GDP) as endogenous variables after one-step differencing. Sports industry expenditure (Exp) was treated as an endogenous variable after two-step differencing to accommodate instability and to predict changes in case of unexpected events.

The optimal lag order was determined using the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and other statistical criteria. Based on the results, the optimal lag order was found to be one.

The stability of the VAR model was verified through characteristic root analysis (**Figure 2**). If the characteristic roots fall outside the unit circle, the model is considered unstable. Conversely, if all characteristic roots lie within the unit circle, the model is deemed stable. Since the study selected seven variables and the optimal lag order was one, seven characteristic roots were analyzed. Verification results confirmed that all AR roots were located within the unit circle, with the modulus of each characteristic root being less than one. This indicates that the VAR(1) model constructed in this study is stable and suitable for further analysis.

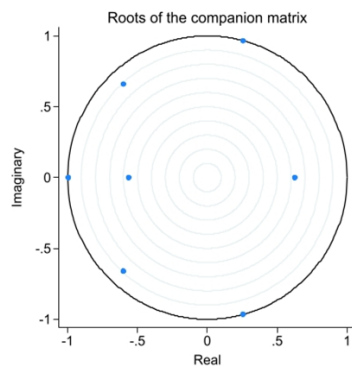


Figure 2. Results of AR root test

2.7. Granger causality test

In economics, it is often necessary to determine the direction of causality between two variables, such as whether the relationship flows from X to Y, Y to X, or is bidirectional. The Granger causality test, proposed by Granger (1969), operates on the premise that if X causes Y but Y does not cause X, the past values of X should help predict the future values of Y, whereas the past values of Y should not aid in predicting X.

This test is applicable only to stationary sequences or unit root processes with cointegration. For unit root variables without cointegration, differencing is required to produce a stationary sequence before applying the Granger causality test.

The results of the test, as shown in **Table 1**, indicate the following conclusions:

- (1) At the 1% and 10% significance levels, the explanatory variable—the cumulative transaction volume of internet payment and the cumulative transaction volume of P2P network lending—rejects the null hypothesis concerning the dependent variable, sports industry revenue.
- (2) Similarly, the cumulative transaction volume of internet crowdfunding as the explanatory variable also rejects the null hypothesis concerning sports industry revenue.

These findings confirm a clear Granger causality between the specified explanatory variables and the dependent variable, indicating that the explanatory variables significantly influence the dependent variable.

As this study focuses on the direct relationships between the explanatory and dependent variables, the results involving partial control variables have been omitted for brevity.

Table 1. Granger test results

Null hypothesis	Chi-squared value	P value
<i>dICT</i> indicates non- <i>dIncome</i> Granger causes	3.7054	0.054
<i>dOthers</i> non- <i>dIncome</i> Granger reason	23.995	0.000

3. Conclusion

This study explores the influence of diversified financing pathways, enabled by the development of Internet finance, on the sports industry from 2010 to 2022 using a VAR model. The empirical analysis yields the following conclusions:

(1) Granger causality test findings: The results of the Granger causality test demonstrate that the development of crowdfunding has a significant and direct impact on the growth of the sports industry. Furthermore, other emerging internet-based financial financing methods also exhibit a strong and direct influence on the development of the sports industry. These findings underscore the importance of diversified financing paths in driving the growth and transformation of the sports sector.

(2) Policy and practical implications: To enhance the development of the sports industry, it is essential to expand financing capabilities and diversify financing channels. Strengthening the understanding and application of internet-based financing models, such as crowdfunding and P2P lending, is crucial. Cultivating professional financing teams, equipped with expertise in these innovative models, will enable the formulation of effective financing strategies tailored to the specific needs of enterprises. Such measures will contribute to fostering the sustainable and prosperous development of the sports industry.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Zheng Y, 2014, Research on the Status of China's Sports Industry in the National Economy, dissertation, Wuhan Institute of Physical Education.
- [2] Ye L, 2022, Research on Development Characteristics and Global Market Structure of Professional Sports Broadcasting Industry in the Era of Digital Economy, dissertation, Ningbo University.
- [3] Chen G, 2019, Research on Current Status and Optimization Countermeasures of China's Sports Industry Structure, dissertation, Jilin University.
- [4] Yang Q, 2024, Research on the Restrictive Factors Affecting the Development of Sports Investment and Financing in China, dissertation, Chengdu Sports Institute.
- [5] Meng F, 2018, Research on Internet Finance Supporting the Development of Sports Industry, dissertation, Lanzhou University.
- [6] Feng J, 2021, Internet Based on Block Chain Supply Chain Finance Research, dissertation, Beijing University of Posts and Telecommunications.
- [7] Yuan Y, Huang H, 2023, Development History, Key Fields and Promotion Path of Sports Industry Investment and Financing in China. *Sports Culture Guide*, 2023(7): 65–70 + 110.
- [8] Shao S, Gou W, Shao C, 2024, Current Situation and Policy Evolution of Sports Industry Investment and Financing in China. *Journal of Longdong University*, 35(4): 70–73.
- [9] Tian ZQ, Dong F, Guo Y, 2023, Current Situation and Countermeasures of Sports Industry Development. *Sporting Goods and Technology*, 2023(14): 76–78.
- [10] Ma T, Gao X, 2023, Financing Dilemma and Countermeasures of Sports Industry. *China Finance*, 2023(17): 91–92.
- [11] Guo J, Pu Y, 2021, Socialization of Financial Mechanism and the Path to Promote the Development of Sports Industry Depth Fusion. *Journal of Xi'an Sports Institute*, 38(6): 681–688.
- [12] Wang G, Hao X, Lu T, 2021, China's Sports Industry Investment and Financing Problems Research. *Journal of Contemporary Sports Science and Technology*, 11(36): 112–114.
- [13] Liu X, Dong Y, 2024, The Internal Logic, Realistic Dilemma and Targeted Path of the Development of Sports

Industry Empowered by Digital Finance. Heilongjiang Finance, 2024(4): 50–53.

- [14] Liu X, 2012, Research on the Reform of Investment and Financing Mechanism of China's Sports Industry, dissertation, East China Normal University.
- [15] Zhang X, 2017, Research on Investment and Financing Development of China's Sports Industry, dissertation, Liaoning University.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.