



Article Efficiency Evaluation and Influencing Factors of Sports Industry and Tourism Industry Convergence Based on China's Provincial Data

Mei Yang ^{1,2,*}, Hongling Zhou ¹, Yali Li ^{1,2} and Jinyu Zhang ^{1,2}

- ¹ School of Management, Chongqing University of Technology, Chongqing 400054, China
- ² Institute of Digital and Intelligent Management, Chongqing University of Technology,
- Chongqing 400054, China * Correspondence: yangmeimei@cqut.edu.cn

Abstract: As sunrise industries, green industries and happiness industries, the sports industry and the tourism industry have natural convergence, and the convergence of the sports and tourism industries is not only a new strategic support point for the sustainable development of the two industries but also an important way to drive healthy and sustainable development of related industries. We measure the efficiency of sports-tourism convergence in 31 provinces (municipalities and autonomous regions) in China from 2013 to 2019 using the benevolent cross-efficiency DEA model and the qualitative comparative analysis (fsQCA) method and conduct a configuration analysis of the influencing factors. The research indicates: (1) the efficiency of the development of sports-tourism convergence is low and its role in the sustainable development of the tourism and sports industries needs to be improved. (2) The efficiency of sports-tourism convergence shows spatial distribution characteristics of decreasing efficiency in the eastern region-central region-western region. (3) Industrial structure, transportation conditions, openness to the outside world, political support and their combination are the core driving factors affecting integration of sports and tourism.



Citation: Yang, M.; Zhou, H.; Li, Y.; Zhang, J. Efficiency Evaluation and Influencing Factors of Sports Industry and Tourism Industry Convergence Based on China's Provincial Data. *Sustainability* **2023**, *15*, 5408. https:// doi.org/10.3390/su15065408

Academic Editors: José Carmelo Adsuar Sala, Jesús Morenas Martín, Alejandro Vega-Muñoz, Orlando Llanos Contreras and Miguel Angel García-Gordillo

Received: 4 February 2023 Revised: 15 March 2023 Accepted: 17 March 2023 Published: 18 March 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). **Keywords:** convergence of sports and tourism; convergence efficiency; influencing factors; analysis of configuration; benevolent cross-efficiency DEA; fsQCA

1. Introduction

Achieving sustainable development has become a global development trend, and China is currently taking the transformation of its economic development and strategic restructuring of its economy as a major step in promoting sustainable economic development. Industrial convergence is a vital breakthrough for industrial transformation and upgrading and sustainable development. It achieves symbiosis and coexistence and forms new business models through interpenetration and crossover between different industries or different sectors of the same industry [1–3]. As a strategic pillar industry of China's national economy, the tourism industry is currently one of the fastest growing areas of household consumption [4], and it has a positive effect on economic growth [5]. However, the current tourism industry, while generating strong economic benefits, is often accompanied by overuse and high consumption of tourism resources, causing serious damage to the ecological environment and severely limiting sustainable tourism development [6]. Therefore, there is a need to update the tourism product system and accelerate upgrading of the industrial structure and sustainable development. In recent years, under promotion of national strategies, such as Public Sports and Fitness Plan, Healthy China and A Leading Sports Nation, the sports industry has become a new economy and soft industry to be fostered by the state and has unique advantages in promoting transformation and innovative development [7,8]. However, due to the late start, the overall quality of the sports industry

is not high and regional development is unbalanced, so there is a need to improve the level of quality and efficiency and promote a balanced industrial structure [9,10].

As sunrise, green and happiness industries being vigorously developed in the new era of China, the sports industry and tourism industry have a natural convergence. Sports is an important resource for development of the tourism industry, and tourism is an important driving force for promotion of the sports industry. Both the sports industry and tourism industry also have a high degree of industrial correlation with other industries among tertiary industries, such as catering and accommodation, transportation and cultural industry [11–13]. The convergence of the sports industry and tourism industry involves mutual penetration of the value chain and industrial chain and mutual convergence of technology, business, product and market. On the one hand, it promotes the high-quality and sustainable development of the tourism and sports industries. On the other hand, new industrial forms, such as sports tourism, have been formed, which is an important way to cultivate new economic growth points, form new driving forces and drive sustainable development of related industries. In recent years, the Chinese government has encouraged the development of sports-tourism convergence, which has become a hotspot for academic research. Under the promotion of policies, the convergence of the sports and tourism industries of China has entered a stage of rapid development, with fast integration speed, diverse forms and surging scale. Some scholars use quantitative research methods, such as gray correlation analysis and the coupling coordination model, to measure the coupling degree and coupling coordination degree of sports industry and travel industry convergence, etc. The research results show that the interdependence of China's sports industry and tourism industry is gradually increasing, and the growth trend of convergence development is obvious, but the coupling degree is low, the growth rate is slow and the overall state is still dysfunctional regarding development and imbalance [14–16]. Thus, the quality of sports-tourism convergence needs to be improved.

Efficiency refers to the ratio of output to input or benefit to cost in an economic system so as to achieve the goal of maximum benefit at the lowest cost by optimizing allocation of various resources. The efficiency of industrial convergence can consider how the industry can produce optimal benefits and achieve greater economic value after industrial convergence under consumption of the same resources, which is an important indicator to measure quality of industrial convergence [17]. Scientific measurement of the efficiency of sports industry and tourism industry convergence and analysis of the factors affecting improvement of efficiency can not only reflect the development quality of the convergence of the sports industry and tourism industry in China to a certain extent but also clarify which factors and in what combination they affect the improvement of the convergence efficiency so as to accurately implement measures to reduce deviation and inefficiency in the practice of the convergence of sports industry and tourism industry and promote the sustainable development of the sports and tourism industries. At present, the academic research on the convergence of the sports industry and tourism industry is also becoming a hot topic, and the existing literature mainly focuses on the connotations of the convergence of the sports industry and tourism industry, convergence dynamics, convergence mode, convergence path and convergence strategy and other qualitative research [18–21]. In contrast, there are not many quantitative research results, and there are few empirical studies on the efficiency of sports industry and tourism industry convergence and its influencing factors. However, evaluation and analysis of the efficiency of agriculture industry and tourism industry convergence [22–24] and the efficiency of cultural industry and tourism industry convergence [25] in the existing literature provide inspiration and reference for the research ideas and research methods in this paper. At the same time, because industrial integration is an evolving complex system, with long-term, complex, multi-faceted, dynamic characteristics, it will be subject to national policies, economic environment, industrial inputs and other internal and external factors of the interactive impact. Industrial convergence is the overall behavior of a multi-element system whose parts interact with each other. Therefore, the efficiency of sports industry and tourism industry convergence is the result of joint

action of multiple factors rather than the independent influence effect of individual factors, and it is necessary to adopt the idea of set theory and analyze the convergence efficiency of the sports industry and tourism industry in the manner of configuration.

In summary, we first use benevolent cross-efficiency DEA to measure the efficiency of sports industry and travel industry convergence in 31 provinces, municipalities and autonomous regions in China from 2013 to 2019, as well as the efficiency of mutual promotion between the tourism industry and sports industry, and analyze time-series evolution characteristics and regional distribution characteristics. Then, we use the efficiency of sports industry and travel industry convergence (mean value) of 31 provinces, municipalities and autonomous regions in 2019 as the outcome. Indicators from the six dimensions of economic development, industrial structure, scientific and technological information, political force, transportation construction and opening to the outside world are selected as conditional variables. Fuzzy-set qualitative comparative analysis (fsQCA) is used to explore the influencing factors of the efficiency of sports industry and travel industry convergence so as to determine which factors and their configuration play a core role in it. Finally, based on the actual situation of the two industries, we study the synergistic development of the sports industry and tourism industry and put forward some suggestions for the development of the convergence of the sports and tourism industries in order to further improve the quality of sports-tourism convergence and promote the high-quality and sustainable development of the two industries for decision-making reference.

2. Materials and Methods

2.1. Variable Selection

2.1.1. The Evaluation Index System of the Efficiency of Sports Industry and Tourism Industry Convergence

This research on the efficiency of industrial convergence usually takes input and output as two types of indicators to form the efficiency evaluation system. Based on the principles of scientific, systematicity and accessibility, this research constructs an evaluation index system for the efficiency of sports industry and tourism industry convergence (Table 1).

Target	Dimensions	Indicators	Representation
		Sporting goods manufacturing and sports services employees	Level of labor input in the sports industry
		Sporting goods manufacturing and sports Level of labor i services employees sports ind Culture, sports and Level of capital in the sports in Number of main sports industry units Sports industry Travel agencies, A-grade scenic books and star-rated hotels employees Fixed asset investment in the accommodation ry inputs and catering industry Level of c investment ir ndust Number of travel agencies, A- grade scenic spots and star-rated hotels Sports and star-rated hotels Sports industry capacity Sporting goods manufacturing main business income and sports services legal entity units Value added of culture, sports and entertainment industry sports and International tourism foreign exchange earnings	Level of capital investment in
	Sports industry inputs	entertainment industry fixed asset investment	the sports industry
		Number of main sports industry units	Sports industry service level
Inputs		Travel agencies, A-grade scenic spots and star-rated hotels employees	Labor input level of tourism industry
	Tourism industry inputs	Fixed asset investment in the accommodation and catering industry	Level of capital investment in tourism industry
		Number of travel agencies, A- grade scenic spots and star-rated hotels	Tourism service reception capacity level
		Sporting goods manufacturing main business income and sports services legal entity units	Sports industry revenue levels
	Sports industry outputs	Value added of culture, sports and	Value added of
		entertainment industry	sports industry
Outputs		International tourism foreign exchange earnings and domestic tourism revenue	Tourism industry income level
	Tourism industry outputs	Number of inbound tourism and domestic tourism	Tourism industry development radiation surface

Table 1. The efficiency of sports industry and tourism industry convergence evaluation index system.

Input index

Classical economic theory considers labor, land and capital as the most basic input factors for economic development, which play an important role in promoting industrial development [26]. Due to the small percentage of total output of sports field construction in sports industry [27], the development of tourism industry is not limited by land area and difficult to measure tourism land [28]; therefore, we do not include the land factor within the input index and select labor input, capital input and other inputs as input index.

Labor input. A-grade scenic spots, star-rated hotels and travel agencies are the most significant industrial elements of the tourism industry, and their employees are the main labor resource input [29]. Therefore, the sum of employees of A-grade scenic spots, star-rated hotels and travel agencies is chosen as the labor input indicator of the tourism industry in this research. The scale of sports goods manufacturing industry and sports service industry accounts for more than 95% of the total scale of sports industry. Referring to Xu's research [30], we take the sum of employees of sports goods manufacturing industry and sports and sports service industry as the labor input index of sports industry.

Capital input. There is a long-term and stable mutual promotion relationship between fixed asset investment and economic growth. Referring to Fang's study [23], the fixed asset investment in accommodation and catering industry is taken as the capital input index of tourism industry. Since there are no separate statistics of capital investment in sports industry of China, the sports industry with high interrelatedness and convergence is often integrated with culture and entertainment industry in the tertiary industry. Therefore, this research is based on Su's study [31] and uses the social fixed asset investment in culture, sports and entertainment industry in the tertiary as the capital investment index of sports industry.

Other inputs. We use the number of A-class scenic spots, star-rated hotels and travel agencies as other input indicators to reflect the level of service input and infrastructure construction of tourism industry and to a certain extent to make up for the lack of land input elements [32]. The main sports industry unit is a vital carrier for the development of sports industry and a key indicator to reflect the development scale of the industry. Referring to Hu's study [33], we take the number of main sports industry units as other input index of sports industry.

Output index

Output index is a measure of the overall development level of a region's industry. They are generally selected to reflect the level of comprehensive industrial development, such as comprehensive industrial income, industrial value added and the number of consumers (e.g., the number of tourists).

Sports industry output. Most of the related studies use the main business income of sports industry and the value added of sports industry as the output elements to evaluate the efficiency of sports industry [33]. In this research, referring to the study of Li [27], the main business income of sports goods manufacturing industry and the business income of sports service legal entity units are chosen as the main business income indicators of sports industry. Because the statistical caliber of China's sports industry is still being improved, the value added of sports industry is missing in the research interval and research scope of this research. In view of the strong cultural characteristics and entertainment qualities of the sports industry [34] and the fact that China usually combines culture, sports and entertainment industries into one category for relevant data statistics, the value added of sports industry is missing are chosen as the indicators of the value added of sports industry is more category for relevant data statistics, the value added of sports industries are chosen as the indicators of the value added of sports industry in this research.

Tourism industry output. Tourism revenue reflects the development level and industrial status of the tourism industry, and the number of tourists shows the influence and radiation of the development of the tourism industry. The combination of the two is a comprehensive reflection of the maturity of tourism development and the most common indicator of the output of tourism production activities [35]. Therefore, we select domestic tourism revenue and international foreign exchange earnings as well as the number of domestic tourists and the number of inbound tourists as the output index of the level of tourism industry development.

2.1.2. Variable Selection of the Influencing Factors

Outcome variables

In this research, the efficiency (mean value) of sports industry and tourism industry convergence in 31 provinces, municipalities and autonomous regions in China in 2019 is taken as the outcome variable to explore which factors and their permutations (i.e., groupings) affect the efficiency improvement of the efficiency of sports industry and tourism industry convergence through the fuzzy-set qualitative comparative analysis (fsQCA) method. From the perspective of input–output, the industry convergence efficiency is reflected by the smallest mutual promotion efficiency value of the two industries [36].

Conditional variables

From the perspective of resource allocation, the efficiency of industrial convergence is the optimal way of resource allocation among different industries [37]. It has been pointed out in the literature that industrial convergence is always influenced by the internal and external environment: political force, economic development, industrial structure, transportation conditions, openness to the outside world, scientific and technological information, innovation capability, consumer demand and enterprise competition have an effect on resource allocation and are important factors affecting the efficiency of industrial convergence [28,33]. Meanwhile, based on the requirements of qualitative comparative analysis (QCA) on the selected condition variables, the ideal number of conditions is generally between 4 and 7, too many of which will lead to limited diversity of cases [38]. Therefore, in this research, one indicator from each of the six dimensions of economic development, industrial structure, scientific and technological information, political force, transportation condition and openness to the outside world is selected as a condition variable. The definition and description of the conditional variables are shown in Table 2. It should be noted that we mainly study the efficiency of sports industry and tourism industry convergence at the macro and meso levels for the whole country, the three major regions (eastern region, central region and western region) and the provincial areas and thus do not include micro-level indicators, such as consumer demand and enterprise competition, in the conditional variables.

Economic development. Level of regional economic development directly affects level of industrial development. It is the original driving force for the efficiency improvement of industrial convergence development [39]. GDP per capita is a vital criterion to measure regional economic development. In this research, referring to Hu's study [33], GDP per capita is chosen to characterize the level of regional economic development.

Industrial structure. The difference of industrial structure is related to the input and transfer of resources. The optimization of industrial structure promotes more efficient allocation of resources. Referring to Fan's research [40], the ratio of value-added of tertiary industry in GDP is chosen as the indictor of industrial structure in this research.

Scientific and technological information. Scientific and technological progress, especially widespread application of information technology, enables more efficient allocation and utilization of resources. Referring to Wang's study [28], we select the total volume of post and telecommunications businesses in each region as the indicator of scientific and technological information level.

Political force. Government support to industry is mainly reflected through fiscal expenditure [40]; the more policy support budget expenditure, the more resources available for deployment. Therefore, referring to Chen's research [41], we choose local fiscal general budget expenditure as the indicator of characterizing political force.

Transportation conditions. Transportation conditions are a reflection of a region's infrastructure and service capacity. Quality of regional traffic can be best reflected by highway passenger transport volume, which represents the intra-regional road convenience, and the railway density and highway traffic volume, which represents the external accessibility. Therefore, we refer to the study of Chen and Wang [28,41] and select the density of public and railroad network ((road mileage + railroad mileage)/land area) as an indicator of regional transportation construction.

Openness to the outside world. Degree of external openness reflects the level of interaction between the region and external capital, information, technology and human resources [42], which is a significant condition to ensure sustainable and healthy development of regional economy. Referring to the study of Li [42], the proportion of total import and export trade to regional gross domestic product (GDP) is chosen as the indictor of openness to the outside world.

	Varia	ables	Definition and Description		
	Economic development	GDP per capita (RJ)	The regional GDP achieved in the reporting period is calculated compared to the resident population of local economic development.		
	Industrial structure	Ratio of value-added of tertiary industry in GDP(SZ)	It refers to the ratio of added value of tertiary industry to regional GDP, reflecting the degree of development of local tertiary industry.		
	Scientific and technological information	Total volume of post and telecommunications business (YZ)	It refers to the total amount of postal business and telecommunication business in each region, which is the total amount of postal and telecommunication services provided by postal and telecommunication enterprises to society and reflects the degree of information		
Condition variables	Political force	Local fiscal general budget expenditure (CZ)	It refers to the expenditures arranged by the district for the planned allocation and use of centralized budget revenues during the reporting period, reflecting the level of government support.		
	Transportation conditions	Density of public and railroad network (LM)	It refers to the ratio of total road and rail mileage to land area in each province, which reflects the level of local transportation construction.		
	Opening to the outside world	Proportion of total import and export trade to regional gross domestic product GDP(KD)	It refers to the proportion of total regional import and export trade to regional gross domestic product (GDP) in the reporting public period, reflecting the degree of regional openness to the outside world.		
Result variable	Efficiency of sports industry and tourism industry convergence		It refers to the integrated efficiency value calculated by MATLAB software, which reflects the level of efficiency of sports industry and tourism industry convergence		

Table 2. Selection and definition of relevant variables.

2.2. Study Methods and Data Sources

Existing studies have mostly evaluated efficiency using the data envelopment approach (DEA), which uses a linear programming model to compare the relative efficiency between decision units of the same type. However, the traditional DEA model is based on the idea of self-evaluation, which will maximize the decision-making efficiency of the unit and ignore the driving effect of other DMUs. Therefore, in the calculation results, multiple DMUs may reach the optimal efficiency value of 1 at the same time, which makes it difficult to effectively distinguish and judge the advantages and disadvantages of each DMU and cannot reflect the mutual promotion relationship between the two industries. Correlation between industries is a prerequisite for industrial convergence [11]. Sports industry and

tourism industry have complementary resources and symbiotic sharing, which is a relationship of cooperation rather than competition. Therefore, we adopt the DEA cross-efficiency evaluation method proposed by Silkman et al. [43] to combine self-evaluation with other evaluation so as to more scientifically and accurately evaluate the efficiency value of each DMU.

The efficiency of sports-tourism convergence is the result of a combination of factors. Most relevant studies use Tobit model [41], geographic detector [44] and other methods to measure the driving factors affecting the efficiency of industrial convergence and conduct detection and significance analysis on single factor or double factor without reflecting the joint effect of multiple factors. Therefore, we take a holistic view of the factors influencing the efficiency of the convergence of sports and tourism industries using the qualitative comparative analysis (QCA) method proposed by Charles Ragin based on the ideas of Boolean algebra and set theory.

The combination of DEA and fsQCA is feasible and has been applied in different research areas, such as industrial integration [24], technological innovation [45], ecology and environment [46], etc.

2.2.1. Benevolent Cross-Efficiency DEA

Data envelopment approach (DEA) is a widely used and mature efficiency evaluation method that compares the relative efficiency among the same type of decision-making units (DMUs) by using linear programming model without setting weights and production function forms for each index and without dimensioning the data, which has obvious advantages for solving multi-input and multi-output problems. DEA cross-efficiency evaluation can be divided into benevolent cross-efficiency and aggressive cross-efficiency. The former regards all DMUs as a cooperative relationship, which can not only maintain the optimal efficiency value of itself but also maximize the efficiency value of other DMUs. The latter regards DMUs as competitive relations and minimizes the efficiency of other DMus while maximizing its own efficiency [47]. Hence, we use the benevolent cross-efficiency model DEA to measure the efficiency of China's body–travel convergence. The model is as follows:

Suppose that there are n DMUs and each DMUs has m kinds of inputs and s kinds of outputs. For DMUs *j*, the *i*-th type of input is x_{ij} (I = 1,2, 3,..., m), the *r*-th output is y_{rj} (r = 1, 2, ..., s). First, the traditional DEA model is applied to calculate the self-assessed efficiency of θ_d :

$$\theta_d = \max \frac{u^T Y_d}{v^T X_d},\tag{1}$$

$$s.t.\frac{u^{T}Y_{i}}{v^{T}X_{i}} \le 1, i = 1, 2, \dots, n,$$
(2)

$$u \ge 0, \ v \ge 0, \tag{3}$$

where *u*, *v*, respectively, are output and input weight vector, and the optimal solution is noted as $(\theta_d^*, u_d^*, v_d^*)$; then, the optimal solution for the other DMUs *j* is $(\theta_j^*, u_j^*, v_j^*)$. The cross-efficiency *Ed* of DMU *d* is expressed as:

$$E_{d} = \frac{1}{n} \frac{\sum_{j=1}^{n} u_{j}^{T} Y_{d}}{\sum_{i=1}^{n} v_{i}^{T} X_{d}},$$
(4)

When DMU *d* achieves efficiency θ_d^* , the benevolent cross-efficiency DEA of DMU *k* relative to DMU *d* is calculated as follows:

$$\theta_{dk} = \max \frac{u^T Y_k}{v^T X_k},\tag{5}$$

$$s.t.\frac{u^{T}Y_{i}}{V^{T}X_{i}} \le 1, \ i = 1, 2, 3, \dots, n,$$
(6)

$$\frac{u^T Y_d}{v^T X_d} = \theta_d^*, \ u \ge 0, v \ge 0, \tag{7}$$

Let
$$t = \frac{1}{x_j^T v}$$
, $\omega = tv$, $\mu = tu$ and the equivalent linear program is as follows:

$$\max Y_k^T u, \tag{8}$$

$$s.t.Y_j^T \mu \le X_j^T \omega, \tag{9}$$

$$X_k^T \omega = 1, \tag{10}$$

$$Y_d^T \mu - \theta_d^* X_d^T \omega = 0, \tag{11}$$

$$\mu \ge 0, \ \omega \ge 0, \tag{12}$$

Therefore, the average benevolent cross-efficiency DEA of DMU k is obtained as follows:

$$E_k = \frac{1}{n} \sum_{j=1}^n \theta_{jk},\tag{13}$$

$$E_{d} = \frac{1}{n} \frac{\sum_{j=1}^{n} u_{j}^{T} Y_{d}}{\sum_{j=1}^{n} v_{j}^{T} X_{d}},$$
(14)

2.2.2. Qualitative Comparative Analysis (QCA)

The focus of QCA analysis is not on how individual condition variable leads to the occurrence of outcomes but on the idea that the interdependence and different combinations of different conditions can constitute multiple concurrent causal relationships and that different antecedent variable configurations have perfect equivalence with the explanatory variables that do not conflict with each other [48]. According to different variable types, QCA can be divided into three methods: csQCA (clear set qualitative comparative analysis), mvQCA (multi-valued qualitative comparative analysis) and fsQCA (fuzzy-set qualitative comparative analysis). csQCA and mvQCA are suitable for dealing with categorical problems, while fsQCA can deal with continuous variables and perform more precise consistency assessment, which has the dual advantages of qualitative and quantitative analysis. The data used in this research are all continuous-type variables, so the fsQCA method is used to conduct a configuration analysis on the influencing factors of the efficiency of sports industry and travel industry convergence in 31 provinces, municipalities and autonomous regions in China in 2019. By constructing a dichotomous data table, constructing a truth table, solving the contradictory configuration, performing Boolean minimization and interpreting the results [49], the explanatory power of each combination of conditional variables on the outcome variable is derived [50].

2.2.3. Data Sources

Given that the development of China's sports industry is later than the tourism industry, in 2014, the release of "Several Opinions on Accelerating the Development of Sports Industry and Promoting Sports Consumption" was a landmark point in time, which was followed by a boom in the practice and research of sports tourism integration. At the same time, in order to better carry out the diachronic comparative study, put back the research time by one year and take 2013 as the starting point. Considering that the sports industry and tourism industry are in an extraordinary situation under the influence of COVID-19 since 2020, we take 2013–2019 as the research interval. DMU is an operational entity that can transform certain inputs into corresponding outputs, and, in benevolent cross-efficiency DEA studies, it is common to compare the relative efficiency between decision units of the same type. In this research, one year of data from 31 provinces, cities and autonomous regions of China (excluding Hong Kong, Macau and Taiwan) are taken as a DMU that is the object to be evaluated and the weight vector of the input and output of each decision unit is used as a variable to measure the efficiency of the integration of body travel and evaluate it from the perspective of the most beneficial decision. It should be noted that we take provinces, municipalities and autonomous regions as the research objects. The main reason is that the statistics of China's sports industry started relatively late, the statistical caliber and statistical indicators are under constant revision and improvement and the data in small-scale spaces (such as counties) are incomplete and missing, while the data at the provincial level are relatively complete and suitable for horizontal comparative research. In order to ensure the authority and objectivity of the data, the indicator data in this research are obtained from the 2014–2020 China Tertiary Industry Statistical Yearbook, China Industrial Statistical Yearbook, China Culture and Tourism Statistical Yearbook, China Tourism Statistical Yearbook as well as the statistical yearbooks and national economic and social development statistical bulletins of each province, municipality and autonomous region. Among them, individual missing data were obtained by interpolation method, while we draw on the data stripping approach [51–53] to strip the data of sports industry indicators crossed with culture and entertainment industries based on the weight of sectoral (industry) indicators to improve the accuracy of the data.

3. Results

3.1. The Efficiency of Sports Industry and Tourism Industry Convergence

Using the benevolent cross-efficiency model DEA and MATLAB 2017 software, we measure the promotion efficiency of tourism industry to sports industry and the promotion efficiency of sports industry to tourism industry in 31 provinces, municipalities and autonomous regions in China from 2013 to 2019 (the results are shown in Tables A1 and A2). Efficiency of sports industry and tourism industry convergence is generally selected as the smaller value of the mutual promotion efficiency of sports industry and tourism industry. Thus, we collate the two sets of data in Tables A1 and A2 to obtain the level value of the efficiency of sports industry and tourism industry convergence in 31 provinces, municipalities and autonomous regions in China (Table A3).

3.1.1. The Promotion Efficiency of Tourism Industry to Sports Industry

Time-series evolutionary characteristics. As seen from Table A1, the average value of the promotion efficiency of the tourism industry to the sports industry in 31 provinces, municipalities and autonomous regions in China from 2013 to 2019 is 0.4392. It is low overall and shows a fluctuating falling phase from 2013 to 2016 and a continuous rising phase from 2017 to 2019. From 2013 to 2016, the promotion efficiency of the tourism industry to sports industry declined year by year, gradually decreasing from 0.4137 in 2013 to 0.3766 in 2016, with an annual average decrease of 3.08%. This is quite related to the fact that, from 2013 to 2016, the growth of the world economy slowed down, so the development of China's tourism industry was inhibited to a certain extent. Since 2016, the promotion efficiency of the tourism industry to the sports industry has been rising year by year, reaching the maximum value of 0.5338 in 2019, with an average annual increase of 12.33%, showing a gradually improving trend. From the regional point of view, the average value of the eastern, central and western regions from 2013–2019 also showed a fluctuating decline from 2013–2016, with annual average single decreases of 0.31%, 4.99% and 5.16%, and a continuous rise from 2017–2019, with annual average respective increases of 7.31%, 16.19% and 16.72%. In 2016, China put forward the development strategy of all-for-one tourism, taking tourism as the advantageous industry, driving regional economic development through organic convergence of resources, industrial convergence and development and social construction and sharing. In the same year, the National Tourism Administration and the National Sports Administration jointly issued the Guidance on Vigorously Carrying Out Sports Tourism to accelerate the development of the sports-tourism industry and actively

promote construction of sports-tourism demonstration areas, which greatly promoted the convergence of the sports industry and tourism industry. Consequently, the promotion efficiency of the tourism industry to the sports industry gradually increased from 2017 to 2019, and the growth rate accelerated. The eastern region rose from 0.5552 in 2013 to 0.6797 in 2019, with a growth rate of 22.43%. The central region increased from 0.4132 to 0.5549, with a growth rate of 34.30%. The western region rose from 0.2845 to 0.3859, with a growth rate of 35.67%, showing "west–east–central" gradually decreasing characteristics. The backward economy, single industrial structure and lagging development of the sports industry in the western region led to low efficiency of the tourism industry to promote the sports industry. However, in recent years, the western region has made use of its local conditions and resources to vigorously develop the tourism industry, coupled with the favorable policies of western development, so the growth rate is faster.

Regional distribution characteristics. From 2013 to 2019, the promotion efficiency of tourism industry to sports industry in 31 provinces, municipalities and autonomous regions demonstrated great regional differences, which were uneven. There were 18 provinces, municipalities and autonomous regions with an average promotion efficiency lower than the national average, accounting for 58.1%. Even in 2019, when the promotion efficiency peaked, it still accounted for 61.3%; that is, the promotion efficiency of 19 provinces, municipalities and autonomous regions was lower than the national average (0.5338). From a regional perspective (eastern region, central region and western region), the promotion of the tourism industry to the sports industry is not balanced, with large disparities between regions. The mean values during the study period, respectively, were 0.5919, 0.4310 and 0.3047, and the mean values in 2019 singly were 0.6797, 0.5549 and 0.3859, showing the characteristics of "east-middle-west" decreasing efficiency. The eastern region has a high level of economic development, well-developed tertiary industry, well-developed infrastructure and mature tourism industry, and the tourism industry has a stronger pulling effect on the sports industry. At the provincial level, the top three rankings of the mean efficiency of the tourism industry on the sports industry during the study period are Tianjin (0.9830), Guangdong (0.8298) and Shanghai (0.8128), all located in the eastern region. The bottom three ranked by mean value are Tibet (0.1371), Qinghai (0.1666) and Hainan (0.2026). There is a huge difference of 0.8459 in efficiency value between Tianjin (0.9830), which ranks first in mean value, and Tibet (0.1371), which ranks last.

3.1.2. The Promotion Efficiency of Sports Industry to Tourism Industry

Time-series evolutionary characteristics. As observed from Table A2, the average value of the promotion efficiency of the sports industry to the tourism industry in 31 provinces, municipalities and autonomous regions in China from 2013 to 2019 is 0.4833. It is low on the whole and shows a fluctuating change trend of falling, rising, falling again and rising again. Among them, the promotion efficiency reached the maximum value of 0.5632 in the study interval in 2015, and the promotion efficiency range of increase in 2014–2015 reached 29.19%. This was followed by 2016, with a promotion efficiency of 0.5145, and the rest of the years fluctuated up and down between 0.43 and 0.50. In 2014, the State Council issued "Several Opinions on Accelerating Sports Industry and Promoting Sports Consumption". In terms of China, the rapid growth of China's sports service industry from 2014–2016, driven by the policy, has played a role in promoting development of tertiary industry [51]. Thus, the promotion efficiency of the sports industry to the tourism industry was higher than other years during this period. In the following years, the promotion efficiency fell slightly again and decreased to 0.4558 in 2019 with a smaller fluctuation, with a larger decrease (19.07%) compared with the peak in promotion efficiency in 2015 (0.5632). It shows that the sustainable development of China's sports industry needs to be improved. At the regional level, the average values of the eastern, central and western regions also show a fluctuating change trend of declining, rising, declining again and rising again. In 2015, the promotion efficiency reached the maximum value of the study interval, while, in 2019, the promotion efficiency values all decreased compared with 2015, especially in

11 of 23

the eastern region (a decrease of 31.75%). In terms of growth rate, the growth rate of the three major regions from 2013 to 2019 is not high, and the eastern region is even negative, from 0.4799 to 0.3839, with a growth rate of -20%. The central region rises from 0.4933 to 0.5008, with a growth rate of 1.5%. The western region rises from 0.4492 to 0.4918, with a growth rate of 9.5%. The growth rate is "western region–central region–eastern region" in decreasing order.

Regional distribution characteristics. The regional differences in the promotion efficiency of the sports industry to the tourism industry in China's 31 provinces (municipalities and autonomous regions) from 2013 to 2019 are large and uneven, with a share of 58.1%; that is, 18 provinces (municipalities and autonomous regions) with promotion efficiency lower than the national average. In 2019 (0.4558), there was a year-on-year decrease in promotion efficiency and lower than the national average in the study interval, with 18 provinces (municipalities and autonomous regions) with promotion efficiency lower than the national average for that year. At the regional level, the average values of the eastern, central and western regions are 0.4647, 0.5056 and 0.4855, respectively, during the study period, and the average values of 0.3839, 0.5008 and 0.4918, respectively, in 2019 show the characteristics of decreasing efficiency of "western region-central region-eastern region". The rapid growth in efficiency promotion in the central region is greatly related to the local government's vigorous development of sports tourism industry by taking advantage of resources. For example, Jilin and Heilongjiang attract tourists from inside and outside the region with ice and snow sports, Shanxi covers multiple sports tourism resources in the province with the three plates of "Yellow River, The Great Wall and Taihang Mountain" and actively builds national sports tourism demonstration units, which greatly promote the development of sports tourism convergence. At the provincial level, the top three research interval means are Guizhou (0.9696), Tianjin (0.7819) and Shanxi (0.7704); the bottom three mean values are Ningxia (0.2060), Qinghai (0.2267) and Hainan (0.2839). Guizhou in the western region relies on mountain features and ethnic culture to create sports-tourism convergence projects and build a strong province of ethnic sports with mountain features. The mean value of the efficiency of the sports industry to promote the tourism industry among the study area reached 0.9696, with a great difference of 0.7636 between the efficiency value and Ningxia (0.2060), which ranks at the bottom.

3.1.3. Analysis of the Efficiency of Sports Industry and Tourism Industry Convergence

Time-series evolutionary characteristics. As can be seen from Table A3, the mean value of sports industry and tourism industry convergence in 31 provinces, municipalities and autonomous regions in China from 2013 to 2019 is always low, with a maximum value of no more than 0.4, and shows a trend of falling, rising, falling again and rising again. However, the overall fluctuation is small, with a maximum of 0.3732 (2015) and a minimum of 0.3272 (2016). Comparing Table A3 with Tables A1 and A2, it is found that the sports industry and tourism industry convergence in China can be roughly divided into two stages: the first stage is from 2013 to 2016, when the promotion efficiency of tourism industry to sports industry in most provinces, municipalities and autonomous regions is smaller than that the promotion efficiency of sports industry to tourism industry, i.e., the efficiency of sports industry and tourism industry convergence shows the promotion efficiency of tourism industry to sports industry. In this period, the sports industry is still in the stage of accumulation and growth. The tourism industry is developing steadily. The demand for leisure sports projects in tourism activities is expanding, and the pulling effect of the tourism industry on the sports industry is more obvious. The second stage is from 2017 to 2019; under the promotion of national strategies such as Healthy China, Sports Power and National Fitness, the sports industry gradually becomes an important force to promote economic and social development and the efficiency of sports industry and tourism industry convergence is expressed as the promotion efficiency of the sports industry to tourism industry. In this period (except for 2019), the efficiency of sports industry and tourism industry convergence shows a steady increase, with an average annual growth rate of 4.7%, and the promotion efficiency of sports industry to tourism industry is smaller than that of tourism industry to sports industry in 18 provinces, municipalities and autonomous regions in both 2018 and 2019. From the perspective of the three major regions, the efficiency of sports industry and tourism industry convergence in the western and central regions basically showed a similar situation to the national average. The eastern region continued to climb slightly from 2013 to 2015 and showed a fluctuating change trend of decline and rise from 2016 to 2019. From the viewpoint of growth rate, it shows the characteristics of "western region–central region–eastern region" in decreasing order. Among them, the efficiency value of sports industry and tourism industry convergence in the eastern region fell from 0.3394, with a growth rate of -19.15%. The central region fell from 0.3866 to 0.3464, with a growth rate of -10.40%. The western region rose from 0.2750 to 0.3100, with a growth rate of 12.73%.

Regional distribution characteristics. During the study period, China has 58.1%, i.e., 18 provinces, municipalities and autonomous regions have lower efficiency than the national average value of the sports industry and tourism industry convergence. From a regional perspective, the mean values of the efficiency of sports industry and tourism industry convergence in the eastern, central and western regions, respectively, are 0.4146, 0.3542 and 0.2774, forming a decreasing efficiency distribution characteristic of "eastcentral–west". The top three mean values in the research area are Tianjin (0.7819), Shanghai (0.6496) and Guangdong (0.5071), all located in the eastern region. The bottom three mean values are Tibet (0.1371), Qinghai (0.1629) and Hainan (0.1895). The difference between the efficiency values of Tianjin (0.7819) and Tibet (0.1371) is 0.6448, a large gap. The eastern region has a high level of economic and social development, rapid momentum of sports industry development, rich cultural tourism resources and perfect infrastructure and the efficiency of the level of sports industry and tourism industry convergence is better than the other two regions. Although the central region accounts for 50% of the cities with depleted tourism resources [54], the overall economic development level and transportation conditions are still better than the western region, so the efficiency of sports industry and tourism industry convergence is in the middle. The western region has a certain gap with the eastern and central regions in many aspects, such as economy, industry and transportation, and has the lowest efficiency of sports industry and tourism industry convergence, but the growth rate efficiency of sports industry and tourism industry convergence is the fastest among the three regions due to the political force of western development and the characteristic development of sports tourism.

3.2. Configuration Analysis of Influencing Factors

Data calibration is first required for qualitative comparative analysis. Calibration is the process of transforming data into sets and assigning set membership scores to each case [55]. According to the theoretical and actual external knowledge, three qualitative anchor points are assigned, which are 95% (full membership), 50% (cross-over point) and 5% (full non-membership) of the sample data, respectively [56]. The calibrated ensemble data are in the interval [0,1] (table omitted), which satisfies the Boolean logic of QCA. Second, we test whether individual conditional variables (including non-sets) constitute a necessary condition for the efficiency of sports and travel industries convergence by fsQCA 3.0 software. Necessity analysis involves exploring the extent to which the set of outcomes constitutes a subset of the conditions set; that is, without the existence of this condition, the result cannot occur directly [57,58]. Consistency is a significant indicator to judge that a condition variable becomes a necessary condition, which is determined to be necessary when the consistency score is greater than 0.9 [59]. The tests of necessary conditions for both high-level and non-high-level efficiency of sports industry and tourism industry convergence (Table A4) show that the consistency scores for a single condition are less than 0.9 for both high-level and non-high-level efficiency of sports industry and tourism industry convergence, so a single antecedent condition has limited explanation for

the outcome variable and cannot constitute a necessary condition for affecting the efficiency of sports industry and tourism industry convergence on its own.

Analysis of the Conditional Configurations

In this research, the data of each provincial and urban area were analyzed by fsQCA 3.0 software, and, due to the small sample size, the frequency was set to 1, the threshold value was 0.8 and the PRI value was 0.75 and three configurations of high-level efficiency of sports industry and tourism industry convergence (H1-H3) and six configurations of non-high efficiency of sports industry and tourism industry convergence (NH1-NH6) were obtained after the run. As shown in Table 3, the overall coverage of high-level and nonhigh-level efficiency of sports industry and tourism industry convergence is 0.63 and 0.83, respectively, indicating that the configuration has good explanatory power for the outcome variables. The overall consistency of high-level and non-high-level efficiency of sports industry and tourism industry convergence is 0.84 and 0.82, and the consistency level of each configuration solution is greater than 0.8, indicating that the solution is meaningful and the calculation results can be used as the main reason to explain the high-level and non-high-level efficiency of sports industry and tourism industry convergence. fsQCA operation can obtain three kinds of solutions: complex solutions, intermediate solutions and parsimonious solutions. Generally speaking, intermediate solutions are better than complex solutions and parsimonious solutions [48]. Therefore, we discuss the intermediate solutions, analyze the different configurations that produce high-level convergence efficiency and non-high-level convergence efficiency and identify the core conditions among them, that is, the condition variables that play a leading role. To avoid duplication of cases with similar but different conformational sources [60], we will categorize the different configurations according to the core conditions and obtain a total of two high-level explanation paths and three non-high-level explanation paths.

Table 3. Analysis of high and non-high levels of efficiency of sports industry and tourism industry convergence configuration.

Conditional Variables	H1	High Leve H2	l H3	NH1	NH2	Non-Hi NH3	gh Level NH4	NH5	NH6
Economic development (RJ)		\otimes	\otimes			\otimes			
Industrial structure (SZ)		•	\otimes		\otimes		\otimes	•	\otimes
Scientific and technological information (YZ)	\otimes	•	•		\otimes	\otimes	•	\otimes	
Political force (CZ)				•	\otimes	\otimes	•	\otimes	\otimes
Transportation construction (LM)		\otimes	•	•	\otimes	\otimes	•	\otimes	\otimes
Opening to the outside world (KD)	•	\otimes	\otimes		\otimes	\otimes	\otimes	•	•
Consistency	0.85	0.94	0.86	0.88	0.86	0.84	0.86	0.92	0.92
raw coverage	0.39	0.39	0.43	0.49	0.33	0.53	0.40	0.27	0.28
Unique coverage	0.11	0.09	0.09	0.12	0.01	0.04	0.02	0.01	0.01
Solution consistency		0.84				0.	82		
Solution coverage		0.63				0.	83		

Note: \bullet and \bigotimes indicate the presence and absence of core variables; \bullet and \bigotimes indicate the presence and absence of marginal conditions; spaces indicate that the condition is optional.

High-level efficiency of sports industry and tourism industry convergence explanation paths:

Economy and industry and transportation-driven includes configuration H1 (RJ*SZ*~YZ*LM*KD). The economic development, industrial structure and transportation conditions play a leading role in H1, indicating that, in regions with low level of science and technology information, even if the role of policy support is not obvious, high-level efficiency of sports industry and tourism industry convergence can be generated by higher level of economic development, reasonable industrial structure and good transportation conditions. Configuration H1 covers four provinces (municipalities) of Tianjin, Shanghai, Chongqing and Guangdong. From Tables A1–A3, the mean values of convergence efficiency in Tianjin and Shanghai ranked among the top in China in 2019, and the mutual promotion efficiency of sports industry and tourism industry are all at a high level. Chongqing's mean value of convergence efficiency (0.4031) is also at a high level, ranking fifth, and is the province (municipality, autonomous region) with the highest efficiency of sports industry and tourism industry convergence in the western region.

Government-driven includes configurations H2 (~RJ*SZ*YZ*CZ*~LM*~KD) and H3 (~RJ*~SZ*YZ*CZ*LM*~KD). Configuration H2: Policy support exists as a core condition in this configuration, and industrial structure and scientific and technological information play a supporting role (marginal condition), indicating that, when the economic development is not well and the constraint effect arises from the low degree of opening to the outside world and transportation accessibility, the government can take the lead to increase policy support and financial investment to promote industrial transformation and upgrading and information construction so as to achieve a high level of efficiency in the convergence of sports and tourism industries. Configuration H2 covers the cases of Guizhou, Hebei and Jilin Provinces. For example, Guizhou actively improves the ratio of tertiary industry structure, vigorously develops the service industry with tourism as the leader and at the same time promotes the convergence development of sports and tourism industries around the goal of building a strong province of sports and tourism with ethnic characteristics with remarkable effectiveness, and the mean value of the study interval ranks first in China (0.9696). Configuration H3: Policy support plays a leading role (core condition) in this solution path; transportation conditions and scientific and technological information play a supporting role (marginal condition), indicating that regions with low levels of economics development, less rational industrial structure and openness to the outside world need to be improved; policy support focused on supporting the development of scientific and technological information and improving transportation conditions can produce high levels of efficiency in the convergence of sports and tourism industries. Configuration H3 covers the cases of Yunnan, Guangxi, Sichuan and Heilongjiang Provinces, etc. For example, Heilongjiang Province fully implements the strategy of integrating the sports industry and the tourism industry with ice and snow sports as the core while actively building a comprehensive travel service platform for provincial tourism transportation, road passenger transport, tourism data and information and social resources open sharing, improving the level of information technology services. In 2019, Heilongjiang Province received 66 million domestic and foreign ice and snow tourism tourists to achieve ice and snow tourism revenue of CNY 66 billion.

Non-high-level efficiency of sports industry and tourism industry convergence explanation paths:

Industrial-structure-deficient, including configuration NH1 (RJ*YZ*CZ*LM): Configuration NH1 shows that industrial structure and openness to the outside world are dispensable as causal variables and do not play a significant role but will produce low convergence efficiency. The configuration covers the cases of Jiangsu, Zhejiang, Shandong, Shaanxi and Hunan Provinces. For example, the industrial structure of Shaanxi Province is not reasonable, the development of tertiary industry lags behind and the ratio of the added value of tertiary industry to regional GDP in 2019 is 45.8%, which is lower than the national average, resulting in low efficiency in sports and tourism industries convergence.

Policy support and industrial structure and openness to the outside world is deficient, including configurations NH2 (~SZ*~YZ*~CZ*~LM*~KD) and NH3 (~RJ*~YZ*~CZ*~LM*~KD), NH4 (~SZ*YZ*CZ*LM*~KD). The path suggests that, due to the lack of the core role of industrial structure, policy support and openness to the outside world, the efficiency of sports and tourism industries convergence is not high. Configuration NH2 covers cases in Ningxia, Inner Mongolia and Shanxi Provinces (municipality); configuration NH3 covers cases in Gansu, Tibet, Liaoning and Xinjiang Provinces (municipalities); configuration NH4 covers cases in Henan, Hubei and Anhui Provinces. The minority regions, such as Ningxia, Inner Mongolia, Gansu, Tibet and Xinjiang Provinces, in the cases of configuration NH2 and configuration NH3 are located in the western region of China and are economically backward. Although there are favorable policies for the development of western China, the policy support is still limited and the convergence efficiency has been extremely low (Tables A1–A3). While Liaoning Province in the eastern region and Shanxi, Henan, Hubei and Anhui Provinces in the central region have better economic, transportation and scientific and technological information conditions, the industrial structure ratios are not reasonable and the opening to the outside world needs to be improved.

Traffic condition-driven configurations include NH5 (RJ*SZ*~YZ*~CZ*~LM*KD) and NH6 (RJ*~SZ*YZ*~CZ*~LM*KD). The lack of transportation conditions as the core condition in this path will lead to the result of low efficiency of sports and travel industries convergence, even if the level of economic development and scientific and technological information is high and the industrial structure is more reasonable. Qinghai in configuration NH5 is a typical case. As one of the inland provinces on the plateau, Qinghai can guarantee basic travel problems, but the total amount of overall transportation supply is insufficient, transportation accessibility needs to be improved and the degree of informatization is low, so the efficiency of sports and travel convergence is low. The average value of Qinghai in the research interval ranked second from the bottom in China and dropped to last place in 2019. Fujian is a typical case in configuration NH6. Leading enterprises such as 361, Anta, XTEP, Hongxing Erke Group and Bosideng have injected strong impetus into the sports manufacturing industry in Fujian; in 2019, the added value of sports goods and related products manufacturing industry in Fujian accounted for 63.6% of the added value of the sports industry in Fujian. However, the density of the public railroad network in Fujian Province is at the lower middle level in China, which restricts the efficiency of the convergence of the sports and tourism industries.

4. Discussion

4.1. Discussing Results

This research analyzes the time series evolution and regional distribution of the results of the mutual promotion efficiency of the sports industry and tourism industry, as well as the efficiency of the sports and tourism industries' convergence, based on 31 research subjects in China. The results of the research show that the national average value of the efficiency of convergence of sports and tourism and the level value of each province, city and autonomous region show a year-on-year increase during the study period. The quantitative and empirical data also verify that industry convergence has a positive effect on industry transformation, upgrading and sustainable development. However, the research also finds that the overall level of efficiency of sports–tourism convergence in China is low and that the development of China's sports industry lags behind that of the tourism industry and that the two are not on an equal footing. This is in line with the findings of Zhang [14]and Xu [16], who also found that the overall level of the tourism industry is better than that of the sports industry and that the overall level of coupling and coordination between the sports and tourism industries is at a low level. For a long time, China has basically relied on the government to supply public sports services, which are sports undertakings, and the sports industry started late. Entering a new era, the multi-dimensional value and asset versatility of sports have been verified, and, with concerted promotion of numerous national strategies, the sports industry has gradually become a new growth point for the national economy in China. However, factors such as the low proportion of sports services and the low profit level and lack of innovation in the sports goods manufacturing industry have restricted the level of output of China's sports industry [61]. Su's [62] research found that excessive differences between industries can lead to certain negative effects in the process of industrial integration. For example, in Hainan, one of the case studies in this study, the tourism industry is a pillar industry in Hainan, but the sports industry is a

shortcoming, "small, scattered and weak", and has long faced problems, such as shortage of sports infrastructure, imbalance in industrial structure and uncoordinated supply and demand [61], leading to low efficiency in integration of sports and tourism, with a peak efficiency of only 0.2951 in 2019, which is lower than the national average. Development of tertiary industry is the new engine of China's economic development in the new era. The sports–tourism industry should not simply pursue scale and speed but also focus on improving the quality of development and sustainable development, which is the key and important task to enhance the efficiency of the integration of sports and tourism in China.

Industrial integration is a dynamic evolutionary complex system, and the sustainable development of the sports and tourism industries involves resources, environment, economy and society at all levels. Based on economic complexity theory, we used the fsQCA method to study the interaction and mutual influence of heterogeneous multiple subjects in the above system, revealing that the efficiency of sports and tourism convergence is the result of multiple factors acting together, demonstrating diverse non-linear dynamic phenomena. The results of the study show that the efficiency of the convergence of sports and tourism is not balanced enough due to the level of economic development and industrial structure. Level of regional economic development directly influences level of industrial development and is the original driver of the efficiency of industrial integration development, which is consistent with Tan's [39] findings. In the context of China's economic development entering a new normal, vigorous development of tertiary industry and further optimization of the industrial structure are decisive factors for high-quality development of the sports and tourism industries and enhancement in efficiency of the convergence of the sports and tourism industries. The importance of transport conditions cannot be overstated, with transport accessibility and passenger turnover capacity being prerequisites and guarantees for the development of the sports and tourism industries. The efficiency of sports-tourism convergence is generally higher in the eastern regions precisely because of the central role played by economic development, industrial structure and transport conditions. The western region, on the other hand, has a poor economic base, unreasonable industrial structure (the third sector is lagging behind), transport conditions that need to be improved and low level of openness to the outside world, which makes the convergence of sports and tourism less efficient. The central region, which accounts for 50 percent of the country's cities with depleted tourism resources, has a better level of economic development, technological information and transport conditions than the western region, so the efficiency of the integration of sports and tourism is in the middle. The central driving role of policy support is also evidenced by the findings of this research. This is consistent with the findings of Wang [28] and Li [63], who point out that integration of sports and tourism is an industrial development decision driven by many national strategies in China and that government action has a dominant and overarching role in aggregation and integration of industries. The research also shows that, with policy support, the western region has greatly improved transportation conditions, opened up to the outside world and the efficiency of the convergence of sports and tourism industries has grown much faster than that of the central and eastern regions, with more room for development.

4.2. Contributions

In terms of theoretical contributions of this research, first, most of the existing research results are theoretical and qualitative studies, and there are fewer quantitative studies on the convergence of sports and tourism, mainly focusing on evaluation of the degree and level of convergence of sports and tourism and lacking relevant analysis on the efficiency of the sports and tourism industries' convergence. This research attaches importance to quantitative and empirical data based on input–output theory, tries to construct an evaluation index system, combines self-evaluation and other evaluation through the benevolent cross-efficiency DEA method, measures the efficiency of sports and tourism. The

theoretical basis of this research is different and the research method is innovative and enriches the evaluation research on the convergence of sports and tourism industries. Second, existing research still rests on a univariate or binary analysis of causality, analyzing the driving role of individual explanatory variables through multiple regression methods, emphasizing the independent net effect of each variable, yet the industrial factors involved in convergence are more complex and are the result of multiple factors acting together rather than the independent impact effect of individual factors. We look at industrial convergence as a complex system; the QCA method is introduced into the study of the influencing factors of body-tourism integration to quantitatively describe how several different explanatory variables affect the explained variables in a combined form (configuration), which is conducive to explaining the complexity of the interdependence and causality of sports-tourism integration. As well as adaptation and response of multi-element systems to the patterns created by these multiple elements, it expands the research horizon of the efficiency of sports and tourism industries' convergency in terms of ideas and methods.

The practical contribution of this research is, first, to assess the efficiency of sportstourism convergence in 31 provinces, cities and autonomous regions in China and to analyze it in three aspects: temporal evolution, spatial distribution and interaction between industries, which helps to accurately grasp the current quality level of sports-tourism convergence development, identify problems and clarify priorities for the sustainable development of the tourism and sports industries. Second, China is a vast country with significant differences in development between regions; through the analysis of fsQCA's configuration, it clarifies which factors and their configurations play a central role in the integration of sports and tourism, which helps to explore and innovate models and paths for the integration of sports and tourism in depth according to local conditions.

4.3. Implications and Further Research

The largest drawback of this research lies in the limitations of the selection of indicators. First, as the statistics on the sports industry are still being improved, it is difficult to obtain data on some indicators, which affects the comprehensiveness and representativeness of the indicators. Individual data are obtained by interpolation and data stripping, which also affects the accuracy of the data to some extent. Second, we focus on the efficiency and factors influencing integration of sport and tourism at the meso level (provincial and three regions). However, the overall behavior of a system is not equal to the simple sum of the behavior of its parts; there is a lack of verification as to whether the average value of the efficiency of the convergence of sport and tourism industries in the 31 provinces, cities and autonomous regions fully reflects the national situation. At the same time, micro-level indicators, such as consumer demand and business competition, were not included in the indicators for evaluating the efficiency of sports tourism industry convergence and the fsQCA condition variable, which affects the comprehensiveness of this research. In addition, due to the limitation of space, this study has briefly analyzed the causes of the typical phenomena involved but has not been able to conduct a detailed case study, and heterogeneity of different subjects, non-linear mechanisms and complex interactions are not sufficiently studied. Therefore, future research should aim to go deeper from the following angles: first, construction of an indicator system for the efficiency of industrial integration from the micro level to explore macroeconomic phenomena through micro foundations and to study the linkages and strategic interactions between macro, meso and micro. Second, it is possible to carry out more detailed case studies on a precise sample of research subjects, demonstrating the richness of non-linear dynamic phenomena and bringing research results closer to objective reality.

5. Conclusions and Suggestions

This research uses benevolent cross-efficiency DEA to measure the efficiency of sports and tourism convergence in 31 provinces (municipalities and autonomous regions) in China from 2013–2019 and conducts a configuration analysis of the factors influencing the efficiency of sports and tourism convergence through the fsQCA method to draw the following conclusions.

The convergence of the sports and tourism industries at the provincial level in China is generally in a state of dysfunctional development and imbalance, and, although the convergence efficiency in the study interval (2013–2019) shows a year-on-year increase, the maximum value does not exceed 0.4, with an overall low level of quality and weak capacity for sustainable development.

The excessive differences between the industries are one of the reasons for the inefficiency of sports-tourism convergence. The development of China's sports industry lags behind the tourism industry, resulting in low industry convergence and hindering the efficiency of convergence. The sustainable development of the sports industry requires focused attention. The convergence efficiency of the sports and tourism industries is the result of the combined effect of many factors. Industrial structure, transportation conditions, openness to the outside world, political support and their combination are the main factors that generate regional differences and restrict improvement regarding efficiency of convergence of sports and tourism, also the main reason why the growth rate of the efficiency of the convergence of sports and tourism industries is decreasing in the "western region–central region–eastern region". It is clear from the research that there are three key tasks at hand to enhance the level of efficiency of sports–tourism convergence and to sustainably promote the sustainable development of the sports and tourism industries:

(1) First, the government should make up for the shortcomings, deepen the supply-side structural reform of the sports industry, reduce the proportion of surplus sports manufacturing, increase the proportion of sports services, optimize the supply of sports products and services, improve quality and efficiency and promote high-quality development of the sports industry. Second, the sports industry should actively integrate into the tourism industry, effectively promote organic integration of sports competition and performance industry, sports fitness and leisure industry, sports stadium service industry and tourism industry, develop and innovate new sports tourism products and extend the sports-tourism industry chain. At the same time, the tourism industry and sports industry should give full play to their interconnectedness and cross-border compatibility through "sports +" and "tourism +" pull and drive, formation of the sports industry and tourism industry as the core of the symbiotic development of integrated industrial clusters so the sports industry and tourism industry.

(2) All provinces, municipalities and autonomous regions should, according to their own conditions and local conditions, deeply explore and innovate the mode and path of sports industry and tourism industry convergence. At the same time, all provinces, municipalities and autonomous regions also need to stress differentiation of development, highlighting local characteristics and national characteristics. The western region should vigorously develop the tertiary industry, optimize the industrial structure and further improve transport accessibility and passenger turnover. The central region, where tourism resources are depleted, should focus on specialized development of sports tourism. The eastern region should strengthen talent training and innovation leadership to further promote the sustainable development of the sports and tourism industries.

(3) The government should take the lead and focus on two tasks: one is to promote industrial transformation and upgrading, optimize the industrial structure of the western and central regions and improve the quality and efficiency of tertiary industry. The second is to devolve power to the market through transfer of some functions, participation of the market (enterprises) and social organizations in coordinated development of sports market players, active introduction of social resources and social capital, the long-term mechanism of "government–market–society" cooperation, formation of governance synergy and the promotion of synergistic development of the sports industry and tourism industry to enhance the efficiency of convergence of the sports and tourism industries.

Author Contributions: Conceptualization, M.Y. and H.Z.; methodology, M.Y. and H.Z.; software, H.Z., J.Z. and Y.L.; formal analysis, M.Y.; data curation, H.Z.; writing—original draft preparation, M.Y. and H.Z.; writing—review and editing, M.Y.; visualization, J.Z. and Y.L.; funding acquisition, M.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Social Science Foundation of China, grant number 18XSH017, and the Humanities and Social Sciences Major Emphasis Projects of Chongqing Municipal Education Commission, grant number 22SKGH301. Funded by the Action Plan for High-Quality Development of Postgraduate Education of Chongqing University of Technology, grant number gzlcx20223118.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Promoting efficiency of tourism industry to sports industry.

Region	2013	2014	2015	2016	2017	2018	2019	2013–2019 Average Value
Beijing	0.5054	0.5127	0.5649	0.5762	0.6810	0.6214	0.5944	0.5794
Tianjin	0.9988	0.9988	0.9926	0.9915	0.9901	0.9500	0.9591	0.9830
Hebei	0.3729	0.3572	0.3484	0.3268	0.3662	0.4503	0.5183	0.3914
Liaoning	0.3787	0.2892	0.3466	0.2867	0.3484	0.3683	0.3815	0.3428
Shanghai	0.7125	0.7487	0.8036	0.7301	0.8098	0.9225	0.9625	0.8128
Jiangsu	0.6531	0.6465	0.6545	0.6547	0.7475	0.8250	0.8881	0.7242
Zhejiang	0.4712	0.4767	0.5059	0.4880	0.4922	0.5578	0.5811	0.5104
Fujian	0.4858	0.5161	0.5191	0.5735	0.6402	0.6704	0.7508	0.5937
Shandong	0.6239	0.5466	0.5377	0.5024	0.5218	0.4838	0.5718	0.5411
Guangdong	0.7699	0.7567	0.7570	0.7735	0.8537	0.9235	0.9743	0.8298
Hainan	0.1353	0.1758	0.1614	0.1474	0.2234	0.2798	0.2951	0.2026
Eastern region	0.5552	0.5477	0.5629	0.5501	0.6068	0.6412	0.6797	0.5919
Shanxi	0.2968	0.3336	0.3748	0.3092	0.4460	0.4575	0.4316	0.3785
Jilin	0.4063	0.4098	0.3625	0.3134	0.3994	0.4394	0.4491	0.3971
Heilongjiang	0.4659	0.3712	0.3568	0.2892	0.3332	0.3103	0.3288	0.3508
Anhui	0.3237	0.3088	0.3097	0.3115	0.3466	0.4921	0.5275	0.3743
Jiangxi	0.3827	0.3101	0.2945	0.3013	0.3806	0.4113	0.4899	0.3672
Henan	0.5519	0.6218	0.5604	0.4967	0.5777	0.7152	0.8122	0.6194
Hubei	0.4350	0.4010	0.3867	0.3699	0.4847	0.6837	0.7538	0.5021
Hunan	0.4429	0.3579	0.3616	0.3195	0.4608	0.6198	0.6459	0.4584
Central region	0.4132	0.3893	0.3759	0.3388	0.4286	0.5162	0.5549	0.4310
Inner Mongolia	0.3575	0.3883	0.3265	0.3392	0.3415	0.3635	0.3279	0.3492
Guangxi	0.2916	0.3024	0.2527	0.2407	0.2936	0.3761	0.3933	0.3072
Chongqing	0.4107	0.4031	0.3823	0.3839	0.4970	0.6860	0.7756	0.5055
Sichuan	0.3645	0.4528	0.4328	0.4227	0.4606	0.6195	0.6186	0.4817
Guizhou	0.3549	0.3412	0.3107	0.2465	0.2979	0.4153	0.4326	0.3427
Yunnan	0.2007	0.2076	0.1917	0.1761	0.2130	0.3582	0.3517	0.2427
Tibet	0.1686	0.1635	0.1316	0.0998	0.1418	0.1214	0.1328	0.1371
Shaanxi	0.2874	0.2938	0.2731	0.2569	0.3019	0.4174	0.4546	0.3265
Gansu	0.2150	0.2105	0.1849	0.1503	0.2060	0.2384	0.2778	0.2118
Qinghai	0.2273	0.1875	0.1831	0.1627	0.1314	0.1507	0.1236	0.1666
Ningxia	0.2926	0.3161	0.3237	0.2464	0.3063	0.3789	0.3657	0.3185
Xinjiang	0.2427	0.2374	0.2229	0.1876	0.2457	0.3543	0.3770	0.2668
Western region	0.2845	0.2920	0.2680	0.2427	0.2864	0.3733	0.3859	0.3047
National average	0.4137	0.4078	0.4005	0.3766	0.4368	0.5052	0.5338	0.4392

_

Region	2013	2014	2015	2016	2017	2018	2019	2013–2019 Average Value
Beijing	0.3372	0.5219	0.5374	0.2744	0.2322	0.2203	0.2189	0.3346
Tianjin	0.6433	0.7344	0.8748	0.8057	0.7742	0.8645	0.7764	0.7819
Hebei	0.2796	0.2788	0.3422	0.4393	0.4302	0.3637	0.3278	0.3517
Liaoning	0.5621	0.6518	0.7749	0.9028	0.6630	0.8871	0.8708	0.7589
Shanghai	0.6608	0.6156	0.8407	0.6819	0.5930	0.6849	0.5076	0.6549
Jiangsu	0.4379	0.4263	0.5044	0.4965	0.4594	0.3895	0.2941	0.4297
Zhejiang	0.4123	0.4376	0.5720	0.4201	0.3193	0.3756	0.2715	0.4012
Fujian	0.3326	0.2886	0.3561	0.3374	0.2777	0.2549	0.2083	0.2937
Shandong	0.3742	0.2923	0.3659	0.3601	0.2956	0.2697	0.2434	0.3145
Guangdong	0.6265	0.5709	0.6814	0.5772	0.4507	0.3462	0.2966	0.5071
Hainan	0.2586	0.2757	0.3375	0.3858	0.2465	0.2759	0.2076	0.2839
Eastern region	0.4477	0.4631	0.5625	0.5165	0.4311	0.4484	0.3839	0.4647
Shanxi	0.6451	0.5280	0.7398	0.8038	0.9523	0.9276	0.7960	0.7704
Jilin	0.5487	0.4976	0.6287	0.6624	0.5380	0.8739	0.9086	0.6654
Heilongjiang	0.5824	0.2656	0.3502	0.3499	0.3116	0.5945	0.5304	0.4264
Anhui	0.4213	0.4246	0.6553	0.4676	0.3812	0.4845	0.4521	0.4695
Jiangxi	0.4711	0.3996	0.5745	0.8066	0.6924	0.7730	0.6995	0.6309
Henan	0.4570	0.3927	0.4801	0.3737	0.3054	0.2425	0.2270	0.3541
Hubei	0.4953	0.4428	0.6119	0.5206	0.3869	0.2141	0.1405	0.4017
Hunan	0.3255	0.3025	0.4846	0.3129	0.2959	0.3118	0.2521	0.3265
Central region	0.4933	0.4067	0.5657	0.5372	0.4830	0.5527	0.5008	0.5056
Inner Mongolia	0.4151	0.4206	0.5407	0.5364	0.5737	0.7547	0.6399	0.5544
Guangxi	0.4415	0.4395	0.6672	0.6325	0.5423	0.6480	0.6991	0.5815
Chongqing	0.5783	0.6184	0.7362	0.6005	0.4513	0.4086	0.3819	0.5393
Sichuan	0.5031	0.4993	0.7927	0.4879	0.3470	0.4397	0.3570	0.4895
Guizhou	0.9946	1.0000	0.9831	0.9381	0.9453	0.9347	0.9912	0.9696
Yunnan	0.4919	0.4688	0.7187	0.7988	0.7119	0.6723	0.7032	0.6522
Tibet	0.5262	0.4066	0.5588	0.4845	0.4239	0.4276	0.3394	0.4524
Shaanxi	0.5044	0.4889	0.5567	0.5435	0.4880	0.3969	0.3391	0.4739
Gansu	0.2498	0.2195	0.2771	0.2481	0.3193	0.4676	0.5125	0.3277
Qinghai	0.2010	0.2436	0.3224	0.2647	0.2207	0.1885	0.1458	0.2267
Ningxia	0.2053	0.1815	0.2759	0.1811	0.1705	0.2022	0.2254	0.2060
Xinjiang	0.2792	0.1818	0.3185	0.2540	0.2271	0.6449	0.5674	0.3533
Western region	0.4492	0.4307	0.5623	0.4975	0.4518	0.5155	0.4918	0.4855
National	0.4601	0.4260	0 5622	0 5145	0.4525	0 5012	0.4558	0.4822
average	0.4001	0.4300	0.3032	0.3143	0.4323	0.3015	0.4336	0.4035

 Table A2. Promoting efficiency of sports industry to tourism industry.

Table A3. Evaluation results of the efficiency of sports industry and tourism industry convergence.

Region	2013	2014	2015	2016	2017	2018	2019	Average 2013–2019
Beijing	0.3372	0.5127	0.5374	0.2744	0.2322	0.2203	0.2189	0.3333
Tianjin	0.6433	0.7344	0.8748	0.8057	0.7742	0.8645	0.7764	0.7819
Hebei	0.2796	0.2788	0.3422	0.3268	0.3662	0.3637	0.3278	0.3264
Liaoning	0.3787	0.2892	0.3466	0.2867	0.3484	0.3683	0.3815	0.3428
Shanghai	0.6608	0.6156	0.8036	0.6819	0.5930	0.6849	0.5076	0.6496
Jiangsu	0.4379	0.4263	0.5044	0.4965	0.4594	0.3895	0.2941	0.4297
Zhejiang	0.4123	0.4376	0.5059	0.4201	0.3193	0.3756	0.2715	0.3918
Fujian	0.3326	0.2886	0.3561	0.3374	0.2777	0.2549	0.2083	0.2937
Shandong	0.3742	0.2923	0.3659	0.3601	0.2956	0.2697	0.2434	0.3145
Guangdong	0.6265	0.5709	0.6814	0.5772	0.4507	0.3462	0.2966	0.5071
Hainan	0.1353	0.1758	0.1614	0.1474	0.2234	0.2759	0.2076	0.1895
Eastern region	0.4198	0.4202	0.4982	0.4286	0.3945	0.4012	0.3394	0.4146
Shanxi	0.2968	0.3336	0.3748	0.3092	0.4460	0.4575	0.4316	0.3785
Jilin	0.4063	0.4098	0.3625	0.3134	0.3994	0.4394	0.4491	0.3971
Heilongjiang	0.4659	0.2656	0.3502	0.2892	0.3116	0.3103	0.3288	0.3317
Anhui	0.3237	0.3088	0.3097	0.3115	0.3466	0.4845	0.4521	0.3624
Jiangxi	0.3827	0.3101	0.2945	0.3013	0.3806	0.4113	0.4899	0.3672
Henan	0.4570	0.3927	0.4801	0.3737	0.3054	0.2425	0.2270	0.3541
Hubei	0.4350	0.4010	0.3867	0.3699	0.3869	0.2141	0.1405	0.3335
Hunan	0.3255	0.3025	0.3616	0.3129	0.2959	0.3118	0.2521	0.3089

Region	2013	2014	2015	2016	2017	2018	2019	Average 2013–2019
Centralregion	0.3866	0.3405	0.3650	0.3226	0.3591	0.3589	0.3464	0.3542
Inner Mongolia	0.3575	0.3883	0.3265	0.3392	0.3415	0.3635	0.3279	0.3492
Guangxi	0.2916	0.3024	0.2527	0.2407	0.2936	0.3761	0.3933	0.3072
Chongqing	0.4107	0.4031	0.3823	0.3839	0.4513	0.4086	0.3819	0.4031
Sichuan	0.3645	0.4528	0.4328	0.4227	0.3470	0.4397	0.3570	0.4024
Guizhou	0.3549	0.3412	0.3107	0.2465	0.2979	0.4153	0.4326	0.3427
Yunnan	0.2007	0.2076	0.1917	0.1761	0.2130	0.3582	0.3517	0.2427
Tibet	0.1686	0.1635	0.1316	0.0998	0.1418	0.1214	0.1328	0.1371
Shaanxi	0.2874	0.2938	0.2731	0.2569	0.3019	0.3969	0.3391	0.3070
Gansu	0.2150	0.2105	0.1849	0.1503	0.2060	0.2384	0.2778	0.2118
Qinghai	0.2010	0.1875	0.1831	0.1627	0.1314	0.1507	0.1236	0.1629
Ningxia	0.2053	0.1815	0.2759	0.1811	0.1705	0.2022	0.2254	0.2060
Xinjiang	0.2427	0.1818	0.2229	0.1876	0.2271	0.3543	0.3770	0.2562
Westernregion	0.2750	0.2762	0.2640	0.2373	0.2603	0.3188	0.3100	0.2774
National average	0.3552	0.3439	0.3732	0.3272	0.3334	0.3584	0.3298	0.3459

Table A3. Cont.

Table A4. Necessity analysis for high and non-high levels of efficiency of sports industry and tourism industry convergence.

	Hi	gh	Non-High		
Antecedent Condition –	Consistency	Coverage	Consistency	Coverage	
Economic development	0.4708	0.4705	0.6160	0.6068	
~ Economic development	0.6066	0.6158	0.4625	0.4628	
Industrial structure	0.5317	0.5435	0.5478	0.5520	
~ Industrial structure	0.5618	0.5576	0.5470	0.5351	
Scientific and technological information	0.5208	0.5034	0.5822	0.5547	
~ Scientific and technological information	0.5394	0.5670	0.4788	0.4962	
Political force	0.5093	0.5123	0.5776	0.5727	
~ Political force	0.5752	0.5801	0.5081	0.5051	
Transportation construction	0.5227	0.5344	0.5770	0.5814	
~ Transportation construction	0.5905	0.5861	0.5379	0.5262	
Opening to the outside world	0.5587	0.5965	0.5042	0.5306	
~ Opening to the outside world	0.5604	0.5342	0.6165	0.5793	

Note: ~ indicates dispensable.

References

- 1. Feng, D.; Li, Y.F.; Qin, C.; Sun, J. How industrial convergence affects regional green development efficiency: A spatial conditional process analysis. *J Environ. Manag.* **2021**, *300*, 113738.
- Qiu, P.; Zhou, Z.; Kim, D.J. A New Path of Sustainable Development in Traditional Agricultural Areas from the Perspective of Open Innovation-A Coupling and Coordination Study on the Agricultural Industry and the Tourism Industry. J. Open Innov. Technol. Mark. Complex. 2021, 7, 16. [CrossRef]
- 3. Liu, R.; Qiu, Z. Urban Sustainable Development Empowered by Cultural and Tourism Industries: Using Zhenjiang as an Example. *Sustainability* 2022, 14, 12884. [CrossRef]
- Li, S.D.; Li, S.X.; Zhong, Y.D.; Ren, T.; Xiao, H.L.; Jia, B.B. Research on the efficiency of regional tourism resource allocation based on DEA model. *Contr. Decis. Mak.* 2022, *8*, 1945–1954.
- Giango, M.K.; Hintapan, R.; Suson, M.; Batican, I.; Quiño, L.; Capuyan, L.; Anoos, J.M.; Batoon, J.; Aro, J.L.; Maturan, F.; et al. Local Support on Sports Tourism Development: An Integration of Emotional Solidarity and Social Exchange Theory. *Sustainability* 2022, 14, 12898. [CrossRef]
- 6. Ma, M.; Tang, J.X. Interactive coercive relationship and spatio-temporal coupling coordination degree between tourism urbanization and eco-environment: A case study in Western China. *Ecol. Indic.* **2022**, *142*, 109149. [CrossRef]
- 7. Huang, H.Y. Strategic thinking of promoting sports industry as a pillar industry of national economy. *Sports Sci.* 2022, 12, 3–16.
- 8. Bao, X.M. Sports help "five major constructions". J. Shanghai Inst. Phys. Educ. 2018, 1, 7–11.

- 9. Wang, Y.; Wang, Y.; Li, M.X. Regional characteristics of sports industry profitability: Evidence from China's province level data. *Phys. A.* **2019**, *555*, 946–955. [CrossRef]
- Zhuo, L.; Guan, X.; Ye, S. Quantitative Evaluation and Prediction Analysis of the Healthy and Sustainable Development of China's Sports Industry. *Sustainability* 2020, 12, 2184. [CrossRef]
- 11. Yang, Q. Research on the intrinsic mechanism and extrinsic dynamics of the integration development of sports industry and related industries. *J. Beijing Sport. Univ.* **2013**, *11*, 20–24.
- 12. Wang, G. Research on tourism integration development under the new normal. Learn Explor. 2016, 11, 104–106.
- 13. Yuan, J.; Zhou, Y.; Liu, Y. Convergence Evaluation of Sports and Tourism Industries in Urban Agglomeration of Guangdong–Hong Kong–Macao Greater Bay Area and Its Spatial-Temporal Evolution. *Sustainability* **2022**, *14*, 10350. [CrossRef]
- 14. Zhang, L.L. Research on the measurement of integration degree between sports industry and tourism. *J. Jilin Inst. Sport.* **2015**, *1*, 20–23.
- 15. Yang, X.; Wang, H.M.; Jiang, C. Research on the integration and development of sports industry and tourism industry in China–an empirical analysis based on coupled coordination degree model. *Cult. Ind. Res.* **2019**, *04*, 126–138.
- 16. Xu, J.F.; Chen, H.C. Measurement of coupling correlation between sports industry and tourism industry development in China and spatial correlation analysis. *J. Shandong Inst. Sports* **2020**, *1*, 9–16.
- 17. Yan, S.H.; Miao, J.J. Research on the efficiency of integration between high-tech industries and traditional industries in the middle reaches of Yangtze River city cluster. *Sci. Technol. Manag. Res.* **2017**, *12*, 66–72.
- 18. Lin, Y.H.; Lin, Z.G. Research on synergistic innovation of sports industry and tourism industry based on industrial integration. *J. Shenyang Inst. Sports* **2016**, *1*, 25–28.
- 19. Weed, M. The role of the interface of sport and tourism in the response to the COVID-19 pandemic. *J. Sport. Tour* **2020**, *24*, 79–92. [CrossRef]
- Zhou, M.Y.; Miao, L.; Yan, X. Research on high-quality development of China's sports tourism industry. J. Sport. M Cul. 2021, 4, 8–13.
- Yuan, J.; Liu, Y. Evaluation of Integration Development of Sports Industry and Tourism Industry: A Case Study of Guangdong Province. In Proceedings of the 2019 5th International Conference on Information Management (ICIM), Cambridge, UK, 24–27 March 2019; pp. 346–351.
- Gu, J.H.; Chai, H.Q.; Ge, P.F.; Wang, X.L. Study on the quality of agro-tourism integration in provincial regions of the Yellow River basin—An empirical analysis based on DEA cross-efficiency. *Econ. Issues* 2021, 12, 97–103.
- 23. FANG, S.M.; LI, X.Y. Study on the spatial and temporal differences in the efficiency of agro-tourism integration in Dongting Lake Ecological Economic Zone and its optimization. *J. Xiangtan Univ. Philos. Soc. Sci. Ed.* **2021**, *1*, 60–64.
- Yang, M.; Li, M.L.; Jiang, Y.Y.; Zhou, H.L.; Cai, S.S. Evaluation of the efficiency of agricultural tourism integration for poverty alleviation in Wuling Mountain Area and analysis of histological factors. *Resour. Dev. Mark.* 2022, 2, 217–223.
- Wu, Y.C.; Lin, S.W. Efficiency evaluation of Asia's cultural tourism using a dynamic DEA approach. Socio-Econ. Plan Sci. 2022, 84, 101426. [CrossRef]
- 26. Dong, Y. Empirical Study on the Green Transformation of the Sports Industry Empowered by New Infrastructure from the Perspective of the Green Total Factor Productivity of the Sports Industry. *Sustainability* **2022**, *14*, 10661. [CrossRef]
- 27. Li, H.J.; Shao, G.H.; Wang, Y. Research on the influence of China's sports industry agglomeration on industrial efficiency. *J. Tianjin Sports Inst.* **2019**, *6*, 512–520.
- 28. Wang, Z.F.; Zhao, S.S. Spatial and temporal dynamic evolution of tourism industry efficiency and influencing factors in Hunan Province based on DEA-Malmquist model. *Yangtze River Basin Resour. Environ.* **2019**, *8*, 1886–1897.
- 29. Zhang, R.; Ming, Q.; Jiao, W.; Qi, F. Study on the efficiency and development level of tourism in China and its coordination characteristics. *Resour. Dev. Mark.* 2022, *38*, 210–216.
- Xu, J.F.; Yang, S.X.; Lin, J.X. Research on the efficiency of sports industry in Yangtze River Economic Zone based on DEA-Tobit model. J. Fujian Norm. Univ. (Nat. Sci. Ed.) 2020, 3, 107–116.
- 31. Su, J.; Ben. Research on the evaluation of the coordination relationship between sports industry and regional economic development level–Evaluation test based on the data of 12 provinces and cities in China. J. Xi'an Sport. Ins. 2021, 4, 449–460.
- Yang, G.; Yang, Y.; Gong, G.; Gui, Q. The Spatial Network Structure of Tourism Efficiency and Its Influencing Factors in China: A Social Network Analysis. *Sustainability* 2022, 14, 9921. [CrossRef]
- 33. Hu, J.S.; Huang, H.Y. Regional sports industry efficiency and its influencing factors from the perspective of factors-an empirical analysis based on the data of Shanghai jurisdictions from 2014–2018. *J. Sport.* **2021**, *2*, 48–53.
- 34. Zhang, J.Q.; Wang, J. On the integration and development of sports industry and cultural industry. J. Shanghai Sport. Inst. 2012, 5, 41–44.
- 35. Wang, Y.; Wang, M.; Li, K.; Zhao, J. Analysis of the Relationships between Tourism Efficiency and Transport Accessibility—A Case Study in Hubei Province, China. *Sustainability* **2021**, *13*, 8649. [CrossRef]
- 36. Zhang, Y.L.; Cui, Q. Research on the evaluation of the integration of industrialization and informatization in China. *Sci. Res. Manag.* **2013**, *4*, 43–49.
- 37. Qian, X.L. Analysis of industrial integration theory. J. Hunan Inst. Sci. Technol. 2011, 2, 98–99.
- 38. Berg-Schlosser, D.; Meur, G.D.; Rihoux, B.; Ragin, C.C. *Qualitative Comparative Analysis (QCA) As an Approach;* Sage: Thousand Oaks, CA, USA, 2009; pp. 1–18.

- 39. Tan, N.; Huang, W. Do cultural industry agglomeration policies drive regional tourism economic growth? –Evidence from a quasi-natural experiment of cultural and creative park selection. *China Soft Sci.* **2021**, *1*, 68–75.
- Fan, L.; Hou, Z.; Shi, Y.; Cao, M. Spatio-temporal evolution and influencing factors of tourism efficiency of excellent tourism cities in China. *Resour. Dev. Mark.* 2021, *8*, 984–990+997.
- 41. Chen, H.L.; Zheng, X.; Zhao, Z. The Spatial and Temporal Dynamics of the Integration Efficiency of Culture and tourism Industry in China and Its Driving Mechanism. *Resour. Dev. Mark.* 2020, *1*, 99–106.
- 42. Li, J.; Shu, B.Y. Research on tourism financial efficiency in six provinces in central China: Dynamic evolution, spatial pattern and driving factors. *Explor. Econ. Issues* **2022**, *1*, 67–78.
- 43. Silkman, R.; Sexton, T.R. Data Envelopment Analysis: Critique and Extensions. New Dir. Prog. Eval. 1986, 32, 73–105.
- 44. Wu, L.; Liang, H.; Yu, H.J.; Huo, R.M. Spatial differentiation and driving factors of cultural and tourism integration development in China. *Econ. Geog.* **2021**, *2*, 214–221.
- Prokop, V.; Hajek, P.; Stejskal, J. Configuration paths to efficient national innovation ecosystems. *Technol. Forecast. Soc. Chang.* 2021, 168, 120787. [CrossRef]
- 46. Qin, M.; Sun, M.; Li, J. Impact of environmental regulation policy on ecological efficiency in four major urban agglomerations in eastern China. *Ecolo. Indic.* 2021, 130, 108002. [CrossRef]
- 47. Yang, F.; Xia, Q.; Liang, L. A DEA cross-efficiency evaluation method considering both competitive and cooperative relationships of decision units. *Syst. Eng. Theory Pract.* **2011**, *31*, 92–98.
- 48. FISS, P.C. Building better causal theories: A fuzzy set approach to typologies in organization research. *Acad. Manag. J.* **2011**, *2*, 393–420. [CrossRef]
- 49. Benoit, R.H.; Charles, C. Larkin. QCA Design Principles and Applications: A New Approach beyond Qualitative and Quantitative Research; Du, Y.Z.; Li, Y.F., Translators; Machinery Industry Press: Beijing, China, 2017.
- 50. Misangyi, V.F.; Greckhamer, T.; Furnari, S.; Fiss, C.; Crilly, D. Aguilera. Embracing causal complexity: The emergence of a neo-configurational perspective. *J. Manag.* **2017**, *1*, 255–282.
- 51. He, G.S.; Wang, X.H.; Zhou, H.J.; Guo, Y.; Xu, C.C. Research on the accounting method of gross marine product. *Mar. Bull.* **2006**, 3, 64–71.
- 52. Han, Y.J.; Wu, P.; Lin, T. Measurement and comparative analysis of tourism industry efficiency in representative provinces based on carbon emissions. *Geogr. Res.* 2015, *10*, 1957–1970.
- 53. Zhao, Y.L.; Dai, T.H. Analysis of regional characteristics in the development process of China's sports industry–based on available inter-provincial data. *China Sport. Sci. Technol.* **2019**, *4*, 31–42+80.
- 54. He, Z.L.; Wang, S. Spatial and temporal evolution of the conversion efficiency of tourism resources in China and the influencing mechanism. *China Popul.-Res. Environ.* **2020**, *30*, 185–193.
- 55. Schneider, C.Q.; Wagemann, C. Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis; Cambridge University Press: Cambridge, UK, 2012.
- 56. Li, F.; Long, J.; Zhao, W. Mining Braces of Innovation Linking to Digital Transformation Grounded in TOE Framework. *Sustainability* **2023**, *15*, 301. [CrossRef]
- 57. Zhang, M.; Du, Y.Z. The application of QCA methods in organization and management research: Orientation, strategy and direction. *J. Manag.* **2019**, *9*, 1312–1323.
- 58. Rihoux, B.; Ragin, C.C. Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques; Sage: Thousand Oaks, CA, USA, 2009.
- 59. Ragin, C.C. Redesigning Social Inquiry: Fuzzy Sets and Beyond; University of Chicago Press: Chicago, IL, USA, 2008.
- Shen, J.X.; Li, S.; Zhang, J.Y. Research on factors influencing the development capability of big data industry—Based on fsQCA method. *Sci. Technol. Manag. Res.* 2019, 7, 140–147.
- 61. Zhong, J.Q.; Cui, R.H.; Zhao, W.Z.; Wang, Z.Y. Exploring the input-output-efficiency spatial divergence and its coupling relationship in China's sports industry. *J. Shenyang Inst. Sport.* **2018**, *1*, 41–50.
- 62. Su, F. Construction and empirical analysis of coupling model of agriculture and tourism. *China Agric. Res. Zoning* **2017**, *7*, 58–63+72.
- Li, W.; Wang, L. Research on innovation mechanism of Integration of Sports and tourism Industry. J. Shangdong Phys. Educ. Univ. 2016, 6, 28.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.