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Does Ski Tourism Improve the Regional Economy? The Case Study of Chongli, China

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Abstract: Chongli is one of the venues for the Beijing 2022 Winter Olympics. Since 2009, the government of Chongli has emphasized the development of a tourism strategy, which gradually contributed to alleviating regional poverty. With data collected from 2009 to 2019, ski tourism and the regional economy in Chongli were analyzed using the Coupling Coordination Degree (CCD) Model. This analysis indicated, first, there were three stages in the relationship between ski tourism and the regional economy in Chongli, including weak coordination (2009–2011), starting coordination (2012–2015), and strong coordination (2016–2019). Second, sport tourism, such as ski tourism, is likely to contribute to the regional economy and alleviate poverty. Third, the case of Chongli illustrates that policy and sports events are significant for helping a place to develop sports tourism, in addition to making full use of local resources. Finally, the development of skiing tourism has had a positive impact on citizens' and farmers' incomes, though it may have impacted citizens more. This research suggests that regional resources are essential for the development of sport tourism and the promotion of regional economies. Developing regions should seize the bonus period of sports events and policies. More attention should be paid to the differences between urban citizens and farmers in order to establish a better redistribution system. Considering the climatic factors, more studies need to analyze the sustainability of ski tourism in developing regions.

Key words: Olympics hosting town; poverty alleviation; skiing tourism; regional economy; coupling coordination degree

1 Introduction

The tourism industry contributes to the economy, and it generates a total of 10.4% of the worldwide gross domestic product (GDP) (Statista, 2021). Because of the economic effect of tourism, many organizations and countries implement tourism-led poverty reduction programs. For example, the UK Department for International Development proposed the concept “pro-poor tourism (PPT),” which uses tourism as a tool for improving the economy and alleviating poverty.

Among the various forms of tourism, sport tourism is special, and includes sport tourists' enthusiasm and emphasis on participatory experience (Sato et al., 2018). The sport

tourism market may possibly grow by USD 890.90 billion during 2021 to 2025, and the market's momentum will increase at a compound annual growth rate (CAGR) of 13.37% (Technavio, 2021). Existing studies have shown that in developed nations in Europe and North America, the advancement of the ski tourism industry has undoubtedly assumed a critical part in the regional economy (Lasanta et al., 2007; Silberman and Rees, 2010; Steiger and Scott, 2020). Due to the 2022 Winter Olympics and the Chinese government's desire that “300 million people will participate in ice and snow sport,” China's ski tourism industry has grown quickly. With the chance to host the 2022 Winter Olympics,

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the atmosphere of enthusiasm for ski tourism has spread in China. Because many areas in China, like Chongli, were not famous for ski tourism in the past, which provides a good opportunity to examine the dynamic relationship between regional economies and ski tourism from scratch.

Nonetheless, there have been few explorations to date on whether the ski tourism industry has alleviated poverty in Chongli or the mechanism by which it works with the regional economy. This study is significant for providing an understanding of the impact of the ski tourism industry on developing regions.

2 Materials and methods

2.1 Study area

Chongli is a small town governed by Hebei Province, and close to Beijing, the capital of China (Fig. 1). However, as it is surrounded by mountains and is one of the least developed regions in China. Before Beijing applied to be the host city of the 2022 Winter Olympics in 2013, the local government of Chongli considered the poverty issue and delivered a strategy—"the tourism prospers the town"—in 2009. Therefore, the ski tourism industry is developing along with the entire tourism industry in Chongli.

Because of its geographic advantages in terms of location (close to Beijing) and natural resources (mountains and snow), Chongli was given the chance to be the host town of the 2022 Winter Olympics, along with Beijing. As a result, the ski tourism industry is now booming in Chongli.

2.2 Data and methods

2.2.1 Coupling Coordination Degree (CCD) Model

This study applies the CCD Model to dissect the connections between the ski tourism industry and the regional economy of Chongli. This approach involves coupling coordination created from the physical field, which clarifies the systems' relationships. If various systems grow amicably and their inner components cooperate, then there is a positive coupling; however, if different systems create coordination, yet the interactions between components are tumultu-

ous, then there is a negative coupling. By testing the CCD of two systems, the level of cooperation can be obtained. The CCD Model has been broadly utilized to examine the tourism industry system and its relationship with a variety of related systems, for example, the tourism industry system and the natural environment system (Wang et al., 2017), the cultural industry system (Weng and Li, 2016), the area economy (Guan et al., 2011; Cheng and Zhang, 2020), and others.

2.2.2 Index of the ski tourism system and regional economy system

This study takes past research as benchmarks for the coupling connection between the tourism industry system and other industry systems. The previous articles tried to build several economy systems (Guo et al, 2020; Li, 2020; Ge et al, 2021; Wu et al, 2021). For example, Li (2020) selected Yangshuo County as the research object, which is a city similar in size to Chongli. Therefore, the economy system built by Li (2020) is taken into consideration in this study. However, there are few studies on building the ski tourism system, and the statistics of ski tourism are limited. Taking the general tourism system as a benchmark, it was combined with the available Chongli ski tourism statistics. Most researchers build a tourism system covering tourism revenue, the number of tourists, and the tourist's behavior (Guo et al, 2020; Li, 2020; Ge et al, 2021; Wu et al, 2021). The skiing system in Chongli also covers ski tourism revenue, the number of ski tourists and ski tourists' consumption. In short, this study attempted to build a coupling coordination index of the ski tourism industry system and the local economy system of Chongli. After filtering, three indexes were selected for the ski tourism system, including ski tourism revenue (STR), ski tourist number (STN), and average ski tourist expenditures (ASTE); and seven indexes were confirmed: local tertiary industry gross domestic product (TGDP), local GDP, per capita net income for farmers (IF), per capita disposable income for urban residents (IUR), total retail sale of consumer goods (CG), total investment in fixed assets (IFA), and local financial revenue (LFR). The data for

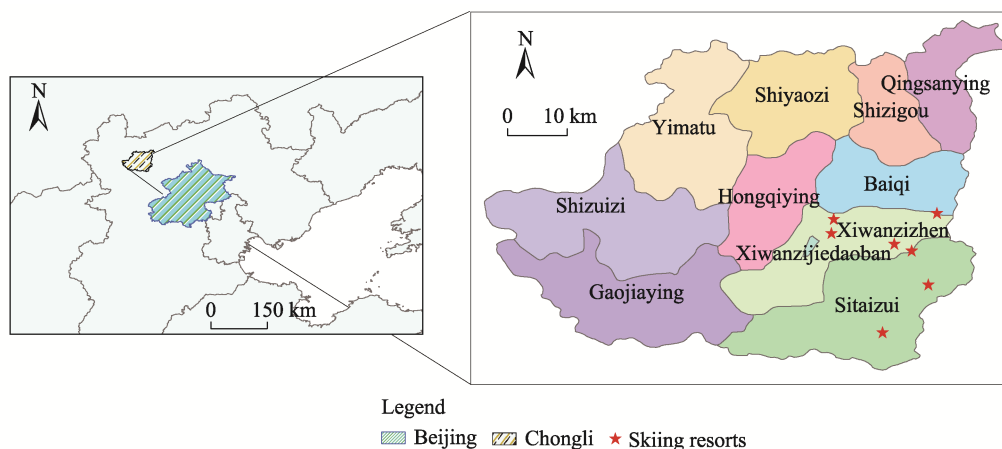


Fig. 1 Location of Chongli

the indexes mentioned above came from the Statistical Official Report, Chongli Tourism Governing Department and the article published by Yang and Xu (2019), and the details are shown in Tables 1 and 2.

Table 1 The data for the index of the ski tourism system

Year	STR (million yuan)	STN (thousand people)	ASTE (yuan)
2009	287	48.6	591
2010	408	68	600
2011	513	81.5	630
2012	670	101.6	660
2013	981	142.24	690
2014	1170	167	701
2015	1540	218.5	705
2016	1890	267.6	706
2017	1630	233	699
2018	2030	284.2	714
2019	1840	252	730

Note: STR: ski tourism revenue; STN: ski tourist number; ASTE: average ski tourist expenditures.

2.2.3 Determination of index weights

The information entropy approach was utilized to confirm the index weights of the ski tourism system and the regional economy system in Chongli. The concept of information entropy was first presented by Shannon in 1948, and can be useful in the estimation of uncertainty regarding data sources and determining the weight of each index. The information entropy approach has been broadly applied in previous tourism studies. The information entropy approach has been demonstrated to be valuable in ascertaining the index weights of tourism industry development (Liao et al.,

2018), the local economy (Cheng and Zhang, 2020), the environment (Tang, 2015), and other components.

The study by Wang and Liu (2020) was selected as the benchmark, and there are four steps to the information entropy approach.

(1) Step 1: Normalization of data

To eliminate the influence of the dimension and magnitude, data normalization must be conducted. Since all indices in this study are positive, the higher the data value, the better its effect in the system. Therefore, the equation is as follows:

$$X_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)} \quad (1)$$

where, X_{ij} represents the normalized data value, x_{ij} represents the original data value, i is the year, j is the index, and $\max(x_j)$ and $\min(x_j)$ are the maximum and minimum values, respectively.

(2) Step 2: Confirmation of weights

First, the ratio of the index p_{ij} is determined to obtain the contribution of the j -th index in the i -th year. The equation is:

$$p_{ij} = X_{ij} / \sum_{i=1}^n X_{ij} \quad (2)$$

Second, based on the concept of information entropy, the value of the information entropy e_j of the index j can be calculated by the following formula:

$$e_j = -\frac{1}{\ln n} \sum_{i=1}^n p_{ij} \ln p_{ij} \quad (0 \leq e_j \leq 1) \quad (3)$$

where e_j is the information entropy of the index j ; p_{ij} is the proportion of the index j in year i ; i is the year from 1 to n .

Table 2 The data for the index of the regional economy system

Year	TGDP (million yuan)	GDP (million yuan)	IF (yuan)	IUR (yuan)	CG (million yuan)	IFA (million yuan)	LFR (million yuan)
2009	480.70	1696	3106	11177	455	2302	228
2010	559.40	2329	3714	12573	523	3081	321
2011	651.52	3009	4481	14291	627	3548	501
2012	759.52	3371	5145	16192	710	4740	618
2013	813.25	3837	5979	18536	780	5728	638
2014	793.97	3840	6840	21750	880	7380	590
2015	873.35	3434	7695	24098	1004	7327	608
2016	1045.56	3385	8657	26500	1090	4720	648
2017	118.60	3773	9679	29371	1204	5695	835
2018	134.80	3434	10860	32337	1303	7096	1015
2019	185.60	3268	12120	35636	1400	9317	1083

Note: Source: Bureau of Statistics in Chongli, data collected from websites. TGDP: local tertiary industry gross domestic product; GDP: local GDP; IF: per capita net income for farmers; IUR: per capita disposable income for urban residents; CG: total retail sale of consumer goods; IFA: total investment in fixed assets; LFR: local financial revenue.

Next, the entropy redundancy (d_j) is determined depending on e_j to calculate the deviation degree of index j . The equation is:

$$d_j = 1 - e_j \quad (4)$$

The greater the deviation degree of index j , the larger the weight of index j . The weight of index j (w_j) can be calculated by the following equation:

$$w_j = d_j / \sum_{j=1}^m d_j \quad (5)$$

where n stands for the number of years, and m stands for the number of indices.

The weight of indexes in the ski tourism system and the regional economy system are shown in Table 3.

Table 3 The weights of indexes

System	Index	Weight (%)
Regional economy (U_1)	TGDP	18.25
	GDP	13.27
	IF	11.97
	IUR	15.33
	CG	17.53
	Social IFA	16.32
Ski tourism U_2	LFR	7.52
	STR	37.19
	STN	36.06
	ASTE	26.75

Note: The meaning of each variable abbreviation in the table is the same as that in Table 1 and Table 2.

2.2.4 Determining CCD

According to Wang and Liu (2020), the CCD between U_1 (regional economy) and U_2 (ski tourism) is calculated as follows:

$$C = \sqrt{\frac{2U_1U_2}{U_1 + U_2}} \quad (6)$$

$$T = \alpha U_1 + \beta U_2 \quad (7)$$

$$D = \sqrt{CT} \quad (8)$$

where C represents the coupling degree, T represents the coordination degree, U_1 and U_2 stand for the levels of the regional economy system and ski tourism system, respectively, D illustrates the total effect of the level of the regional economy and ski tourism; and α and β reflect the contributions of the regional economy and ski tourism, respectively. Typically, values of $\alpha = 0.5$ and $\beta = 0.5$ are used for the tourism and regional economy system, respectively (Li and Feng, 2020). Although the ski tourism system plays a significant role in the tourism system of Chongli in this study, it is still a subset of the entire tourism system. Therefore, the coefficient of ski tourism should be slightly smaller

than that of the entire tourism system, so this study used $\alpha = 0.6$ and $\beta = 0.4$.

3 Results

3.1 The dynamic relationship between systems

The results of the coupling degree (C), the coordination degree (T) and the total effect (D) from 2009 to 2019 are shown in Table 4. The results of the CCD of the ski tourism system and the regional economy system show a pattern of coordination step-by-step.

Table 4 The results of the CCD model

Year	C	T	D
2009	1	0.01	0.1
2010	0.995	0.095	0.307
2011	0.997	0.203	0.45
2012	1	0.316	0.562
2013	0.995	0.444	0.664
2014	0.995	0.535	0.73
2015	0.984	0.627	0.786
2016	0.97	0.704	0.826
2017	0.998	0.735	0.856
2018	0.995	0.885	0.938
2019	1	0.966	0.983

Note: C represents the coupling degree; T represents the coordination degree; D represents the total effect of the level of the regional economy and ski tourism.

The CCD of the above two systems was evaluated according to the classification standard of the coordination degree of the coupling model (Table 5). According to the results of the CCD of the two systems, the dynamic relationship between the regional economy system and the ski tourism system of Chongli can be analyzed. These systems have developed from an extremely unbalanced status in

Table 5 Classification scheme of CCD

Range of D	Coordination level
(0.0, 0.1)	1. Extremely unbalanced status
[0.1, 0.2)	2. Seriously unbalanced status
[0.2, 0.3)	3. Moderately unbalanced status
[0.3, 0.4)	4. Slightly unbalanced status
[0.4, 0.5)	5. Barely unbalanced status
[0.5, 0.6)	6. Barely balanced status
[0.6, 0.7)	7. Slightly balanced status
[0.7, 0.8)	8. Moderately balanced status
[0.8, 0.9)	9. Favorably balanced status
[0.9, 1.0)	10. Superiorly balanced status

Note: D illustrates the total effect of the level of the two systems.

Table 6 The relationships between the systems in Chongli from 2009–2019

Year	<i>D</i> value	Coordination level
2009	0.100	2. Seriously unbalanced status
2010	0.307	4. Slightly unbalanced status
2011	0.450	5. Barely unbalanced status
2012	0.562	6. Barely balanced status
2013	0.664	7. Slightly balanced status
2014	0.730	8. Moderately balanced status
2015	0.786	8. Moderately balanced status
2016	0.826	9. Favorably balanced status
2017	0.856	9. Favorably balanced status
2018	0.938	10. Superiorly balanced status
2019	0.983	10. Superiorly balanced status

Note: *D* illustrates the total effect of the level of the two systems.

2009 ($D = 0.1$) to a superiorly balanced status ($D=0.983$) in 2019 (Table 6). According to the result in Tables 5 and 6, the coordination level between the ski tourism system and the regional economy system was improving each year from 2009 to 2019. This development can be divided into three stages based on the coordination level: the period of unbalanced status (2009–2011), the period of gradually balancing status (2012–2015), and the period of high-quality balanced status (2016–2019).

3.2 Analysis of the three stages

3.2.1 The period of unbalanced status (2009–2011)

The ski tourism system and the regional economy system in Chongli were in a condition of imbalance from 2009 to 2011. The *D* value increased from 0.1 in 2009 to 0.45 in 2011, and the coordination level moved from 2 in 2009 to 5 in 2011, according to the data in Table 6. In short, the relationship between the ski system and the regional economy system in Chongli improved, but it was still unbalanced. Among the potential reasons, the regional economy relied on the primary and secondary industry before it could enthusiastically advance the ski tourism industry. It has iron and gold resources, but the impact of the “Resource Curse” is reflected in Chongli. As a result, Chongli performed poorly in the regional economy. Although the local government realized the issue and published the strategy of “tourism prospers the town” in November 2009, this strategy could not induce a positive effect immediately. The strategy shows the determination of Chongli to develop a new industry to support the regional economy. The yield of Chongli’s mining resources, such as iron powder and gold, still expanded from 2009 to 2011. However, it shows a declining pattern after 2011, so the impact of the tourism strategy grew gradually. In summary, in this period, the two systems interacted poorly because tourism, including ski tourism, had just started to develop.

3.2.2 The period of gradually balancing status (2012–2015)

According to the data in Table 6, the *D* value increased from 0.562 in 2012 to 0.786 in 2015, and the coordination level moved from 6 in 2012 to 8 in 2015. Obviously, the relationship between the ski system and the regional local economy system in Chongli achieved a balanced status. The benefits of the strategy were not immediate upon its promulgation. The specific actions under the strategic framework, such as the updating of infrastructure, the upgrading of support services, and the creation of scenic spots, had been underway since 2009, from which ski tourism, as a part of the overall tourism in Chongli, gained the opportunity to develop. The year 2012 was a significant defining moment in the level of coordination between the ski tourism system and the regional economy system in Chongli. After 2012, the two systems started to interact more effectively. In 2012, the opening of the Secret Garden Genting Garden Ski Resort, with investments from the Malaysia Excellence Group and the Genting Group, significantly improved the continuous coordination. In 2013, China officially applied to host the 2022 Winter Olympics. As one of the key host regions for snow competitions, Chongli has ceaselessly improved its reputation in ski tourism, and the whole of China has paid more attention to this industry, which was previously popular only in a few scattered areas. With the development of ski tourism in 2014, Chongli was no longer one of the poorest towns in China. In 2015, the coordination relationship between the ski tourism system and the regional economy system in Chongli improved further. In 2015, China made a solemn promise that “300 million people will participate in ice and snow sports,” which made the whole Chinese ice and snow market gain the political dividend. China’s successful bid to host the 2022 Winter Olympics has greatly promoted the image of Chongli, as the “Ice and Snow Town.” Since ski culture has become popular in China, the number of ski tourists in Chongli has also increased.

3.2.3 The period of the high-quality balanced status (2016–2019)

According to the data in Table 6, the *D* value increased from 0.826 in 2016 to 0.983 in 2019, and the coordination level moved from 9 in 2016 to 10 in 2019. The relationship between the ski system and the regional economy system in Chongli appeared to achieve a perfectly balanced status. In 2016, the “Ice and Snow Sports Development Plan (2016–2025)” program was released, in which the Chinese government proposed the creation of a social atmosphere that values ice and snow, supports ice and snow, and participates in ice and snow. Additionally, it emphasized that the Beijing–Tianjin–Hebei region should lead in the development of ice and snow sports. Since then, the ski tourism industry in the Chongli area has further improved. More ski resorts were established in 2016 and 2017. With the coming Winter Olympics, more skiing news and a skiing atmosphere spread through social media. Additionally, the infrastructure of ski

tourism was completed during this period. In 2016, construction started on the high-speed road “Yanchong” from Beijing to Chongli, and it was completed in 2019. A high-speed railway from Beijing to Chongli was conceived in 2014, and construction started in 2017 and finished in 2019. All the above factors sped up ski tourism’s coordination with the regional economy.

3.3 The effect of ski tourism on individual income

The above results prove the favorable relationship between the ski tourism system and the economic system. However, the overall increase in the regional economy was the basis of poverty alleviation. In addition to measuring the dynamic relationship between the regional economy system and ski tourism, the effect of ski tourism on the farmers’ income and urban residents’ income is another important aspect. If different types of people in Chongli can improve their income under the effect of ski tourism, then ski tourism can be fully considered as a useful tool for poverty alleviation. A regression analysis was conducted with the indicator of STR mentioned above and the two indicators of IUR and IF. In the first regression analysis, STR was the independent variable, and IUR was the dependent variable. In the second regression analysis, STR was the independent variable, and IF was the dependent variable. After preliminary testing, the index was found to satisfy the premise of the regression analysis so it could be used for the regression analysis. The results of the two regression analyses are shown in Table 7.

Table 7 The effect of STR

Dependent variables	Standard Beta	<i>t</i>	<i>Sig.</i>
Income of urban residents (IUR)	1229.139	9.786	.000***
Income of farmers (IF)	438.972	9.151	.000***

Notes: *** means *Sig.* value < 0.001

The results in Table 7 show that when the revenue of ski tourism in the Chongli area increases, it has a positive impact on the income of both urban residents and farmers in the area. Therefore, the development of ski tourism will increase the income of urban residents and farmers, which shows its potential for poverty alleviation. Among the two, the regression coefficient of ski tourism income and IUR is a bit larger than that of ski tourism income and IF, which means that the influence of ski tourism on IUR is larger than on IF. While IF is lower than IUR, farmers need more assistance in rising from poverty or improving their living standards. Building a complete distribution system, using sports as a tool for poverty alleviation, will assist the residents deeply (Qu et al., 2020). Although ski tourism can bring benefits to both urban residents and farmers in the area, there is still room for optimizing the profit distribution system of ski tourism. The optimal use of sports tourism resources, such as snow and mountains, and the optimization of the income distribution mechanism are the core and basic

principles of poverty alleviation using ski tourism in this area.

4 Discussion

4.1 The chance to develop ski tourism

Ski tourism plays a significant role in Chongli. There are two main reasons that Chongli chose ski tourism as an important industry during its development. The first reason is ecological. Chongli is near many rivers which provide water to Beijing (Zhang et al., 2020). To ensure water quality, there are restrictions on the local industries in Chongli. The location of Chongli is next to Beijing; therefore, Chongli is considered as the protection area for Beijing to stop the storms (Xu et al., 2006). In this context, Chongli lost many opportunities to develop its local economy, becoming a part of the “poverty belt” around Beijing. However, tourism is considered a pro-environmental industry, which can be encouraged in Chongli. While there are few cultural tourist attractions in Chongli, its outdoor resources should be emphasized.

As Lee (2016) points out, the Winter Olympics represents a unique cultural and economic level of the participants. The Chinese government intends to shape its international image by hosting the 2022 Beijing Winter Olympics (Hu, 2020). Beijing experienced the 2008 Summer Olympics, and its legacy has made the city more affluent. However, the city lacks a snowy and mountainous area. In 1996, the first small ski resort was established in Chongli. Although it was initially just a niche market in China, the atmosphere of ski tourism is developing step-by-step. Therefore, Chongli has gained the opportunity to host the Winter Olympics along with Beijing, and developing ski tourism is an opportunity for Chongli to change the cold to the gold.

4.2 Ski tourism and its economic effect

The economic effect of ski tourism has been proven in several regions, such as the North American Rockies, northern Italy, and southeastern France. In addition, some countries, such as Switzerland and Austria, rely wholly on ski tourism (Andrew, 2019). Its effect in developing regions like Chongli has been proved again by this study. The results show that ski tourism is beneficial to the regional economy in Chongli, although it took nearly three years (from 2012 to 2015) to make the two systems coordinate well. After 2015, ski tourism and the local economy system became better coordinated. It did not take a long time for ski tourism to coordinate well with the regional economy in Chongli, where the “late-mover” advantage occurred. In the 1920s, a ski lift was installed on the mountain, and ordinary consumers had access to alpine skiing, which was regarded as a sport for men and tough women because of the climbing effort required. Since the 1930s, ski lifts have been common in most ski resorts. Many scholars have shown that the technique plays an essential role in spreading skiing. Ski

tourism started later in Chongli than in Western countries; so Chongli could take advantage of the mature model and management experience of those countries. In addition, according to the Western experience, ski tourism became popular with the development of television, movies, and magazines (Marilyn and Nancy, 2019). Massive social media has matured in China, which can spread ski culture easily, reducing the time spent on the developmental progress of Chongli as a popular skiing area.

According to the Western countries' experiences, ski tourism first draws investment to the region (Andrew, 2015). Transportation is necessary when developing a ski tourism industry. Because ski resorts are located in mountainous or rural areas, railways, roads, and airports need to be established. In addition to regional transportation, the lift has been a compulsory component of modern ski tourism since shortly after the 1930s (Christof, 2019). With consumers increasing and ski resorts expanding, more lifts must be built. The influence of these projects brings funds to the mountainous or rural areas, resulting in economic development. Because of ski tourism, more projects have been completed in Chongli, such as the construction of the "Yanchong Expressway" and "Jingzhang railway". These projects have increased the employment rate and attracted labor.

Second, ski tourism changes the industrial structure of the mountainous or rural regions. Livestock, agriculture, forestry, and mining are the typical practices in mountainous or rural areas (Lasanta et al., 2007; Silberman and Rees, 2010). These traditional practices are primary production, with lower value to the local economies. Ski tourism is a tertiary industry, which stimulates regional economies. Modern ski resorts include recreational facilities, catering, and accommodation. Tourism-based economies spread gradually around ski resorts by resident and immigrant investors (Andrew, 2015). More consumers flow to the remote regions, consuming the local products and services. In this cycle, the regional economy becomes dynamic, which utilizes resources instead of selling them. Ski tourism promotes the "urbanization" of mountainsides. Several decades ago, those first ski resorts grew organically in and around the existing mountain towns and villages. After the 1930s, the modern ski resorts were constructed by developers according to the available land and snow conditions that they scouted. As early as 1945, the French created "integrated stations" to meet skiers' demands (Andrew, 2015). Restaurants, shops, and other recreational facilities are appearing in the mountains, which reshapes communities. For instance, ski tourism solves employment issues and ageing issues, and it upgrades the industry (Lasanta et al., 2007). The ski resorts in Chongli did not grow naturally around a village, and the effect of ski tourism there has accelerated the development of the area. Chongli has changed the path of the developing regional economy from relying on mineral re-

sources to using ski tourism as a resource.

Ski tourism also extends the annual business period for mountainous or rural regions. For example, the Alps was traditionally only popular for the summer holidays. In past centuries, European cultures regarded the Alps in winter as "only frost and death" (Andrew, 2015). The winter not only meant a stagnant tourism market but also terrible conditions for traditional practices, such as agriculture and raising livestock. Because ski tourism became prevalent in the Alps, after the 1900s, an annual stable economy was realized. Ski tourism is also assisting Chongli in running a four-season business.

4.3 Ski tourism and policies

Because ski tourism is a complex industry, some countries treat it as an economic and social tool. Therefore, national intervention is essential in forming the ski tourism industry under certain policies. France and Austria are two typical countries that encourage the ski tourism industry. After 1947, the Marshall Plan assisted the Austrian government in investing more funds in tourism, and more cash flowed to the Alpine regions. Between 1950 and 1955, the Austrian government spent 93 million schillings on building chairs and cable lifts, which stimulated the development of ski tourism (Andrew, 2015). In addition to the Austrian government, the French authority published "Plan neige (Snow Plan)" in 1964, which led to adding 150000 tourist beds to French ski resorts from 1965 to 1975 (Andrew, 2015). The US also developed ski tourism policies. After World War II, ski tourism was popular due to the national economy taking off and military factors, such as the troops mastering skiing after the war (Brugger, 2013). Regarding ecological problems, the National Forest Management Act of 1976 directly influenced the newly established ski resorts. Entering the twenty-first century, the American ski tourism industry faced dilemmas due to environmental degradation, homogeneous operations, and lower increases in consumer numbers (Hamilton et al., 2003). In this context, new policies were introduced, such as "Sustainable Slopes", the "Ski Industry Climate Change Policy", the "Ski Area Recreational Opportunity Enhancement Act", the "Policy to Promote Year-Round Recreation on Ski Areas", and "Learn to Ski & Snowboard Month". Most of these policies were published by industrial associations. Although they promoted ski tourism, their force was limited.

The Chinese government has paid attention to the development of winter sports, and many policies have been published since 2016. The Chinese government has committed to over 300 million people participating in winter sports. As Chongli seized this chance to develop its ski tourism, the ski tourism systems gradually coordinated with the regional economy, which proves again that the ski tourism industry relies heavily on governmental policies.

4.4 The challenge to Chongli's ski tourism

This study found that the effect of ski tourism differs for

urban citizens and farmers, although it is positive for both groups. The reason for this phenomenon may be a result of the model of developing ski tourism in Chongli. The new model of the ski tourism industry has changed from ski resorts growing organically in and around the existing mountain towns and villages to corporate design and management (Andrew, 2015). Farmers in the towns and villages may not gain direct benefits from this model. The urban citizens, however, may have a higher education and qualify for jobs in the ski resorts, and they may have more money to invest in the ski tourism industry. This new finding indicates that a better redistribution system needs to be established.

It is obvious that ski tourism and the regional economy have gradually come to work well with each other in Chongli. However, one challenge should be considered. The ski tourism industry relies on natural resources. Climate issues influence the entire tourism industry (Feng et al., 2019), and also impact the operation of ski resorts. At present, because of the Beijing 2022 Winter Olympics Games and governmental policies, the climate may be neglected. Following the Winter Olympic Games, the industry may be reshaped because subsidies will be reduced, so ski tourism and the regional economy may face a new challenge. Therefore, the future impact of ski tourism on the regional economy in Chongli deserves further research.

5 Conclusions

5.1 Contributions to theory development

This study illustrates the dynamic relationship between ski tourism and the regional economy in Chongli. It enriches the research on the effect of sport tourism.

First, the ski tourism system and the regional economy system in Chongli both showed a growth trend, and the coordination connection between the two systems has gone through progressive improvement. The level of coordination of the two systems has gone through three phases: the period of unbalanced status (2009–2011), the period of gradually balancing status (2012–2015), and the period of high-quality balanced status (2016–2019).

Second, different opportunities have emerged, such as the Chongli government's procedure of "tourism prospers town" in 2009, entering the preliminary phase of the Olympic Games bid in 2013, China's effective bid for the 2015 Olympic Games, the Ice and Snow Sports Development Plan (2016–2025) in 2016, and the improvement of ski tourism in the Chongli region, which are all joined by political benefits and the opportunity to host the 2022 Winter Olympics.

Third, during the progressive facilitated improvement of ski tourism and the regional economy, Chongli eliminated extreme poverty. The advancement of ski tourism can be coordinated with the regional economy, which serves as an exemplary instance of sports tourism easing poverty. However, attention should be paid to the redistribution systems,

because urban citizens gain more benefits from developing ski tourism than farmers.

Ski tourism is only one type of sport tourism. This study proves the potential for regional tourism in the economy and its social effect in poor areas. The research on sport tourism in general, especially ski tourism, can gain empirical evidence when it focuses on the impact of this special type of tourism. This study also found the process of ski tourism and the regional economy, which can remind future scholars that when they conduct an evaluation on the effect of sport tourism, they need to consider a longer period. Since the relationship between sport tourism and the regional economy is dynamic, a shorter time period may not reveal the whole truth.

5.2 Implications on industry practice

This study provides a concept for poor regions to use sport tourism as a tool for fostering their economies and alleviating poverty. First, a resource analysis is necessary for the areas to cultivate sport tourism. Chongli has taken full advantage of its snow and mountains to develop its ski tourism industry and achieve its goals. For other developing areas, there may be other promising sport tourism resources, such as glaciers, cliffs, deserts, and so on. These resources may be more difficult to develop than traditional tourism products at times, though they may be basic elements in sport tourism. Second, the location should be considered in developing sport tourism. Chongli is close to Beijing. As the reputation of ski tourism in Chongli spreads, the customers from Beijing flow to Chongli. This suggests that poor regions should pay attention to developing sport tourism in cooperation with big nearby cities. Finally, the positive effects of policies and a mega event can provide a great opportunity for these regions to forge a new image in sport tourism and improve their local economies.

5.3 Limitations and future directions

First, this examination has certain shortcomings because of limited data. The present study collected data from 2009 to 2019. Because of COVID-19, ski tourism has suffered, and the relationship between ski tourism and the regional economy may have been affected. Therefore, further exploration will continue to examine new developments in this system. Second, this study mainly focuses on one area under the effect of the Winter Olympics. Other areas in China can be examined and compared with this area to obtain more specific results regarding where ski tourism can benefit the region without a direct influence from the unusual Winter Olympics opportunity.

References

- Andrew D. 2015. Skiing into modernity. California, USA: University of California Press.
- Andrew D. 2019. Going downhill? The Industrialisation of skiing from the

- 1930s to the 1970s. In: Stephen W, David A (eds.). *Leisure cultures and the making of modern ski resorts*. London, UK: Palgrave Macmillan.
- Brugger A. 2013. The influence of politics on the development of turnen, mountaineering and skiing in western Austria. *The International Journal of the History of Sport*, 30(6): 674–691.
- Cheng L, Zhang J. 2020. Assessment of coupling coordination between tourism development and economic growth after the 2008 Wenchuan earthquake: Beichuan, China. *Asia Pacific Journal of Tourism Research*, 25(6): 602–619.
- Christof T. 2019. Going downhill? Arlberg: the creation of a resort and the transfer of knowledge. In: Stephen W, David A (eds.). *Leisure cultures and the making of modern ski resorts*. London, UK: Palgrave Macmillan.
- Feng L, Chen D, Gao S, et al. 2019. Responding to global warming: Mitigation policies and actions of stakeholders in China's tourism industry. *Journal of Resources and Ecology*, 10(1): 94–103.
- Ge D, Chen Q, Lai Z. 2021. Coupling and coordination degree of provincial tourism, economy and ecological environment in China. *Ecological Economy*, 37(4): 132–139. (in Chinese)
- Guan D, Gao W, Su W, et al. 2011. Modeling and dynamic assessment of urban economy–resource–environment system with a coupled system dynamics-geographic information system model. *Ecological Indicators*, 11(5): 1333–1344.
- Guo X, Mu X, Ding Z, et al. 2020. Coordination effect and dynamic relationship of urban ecological environment and tourism economy: A case study of Qujing. *Economic Geography*, 40(7): 231–240. (in Chinese)
- Hamilton L C, Rohall D E, Brown B C, et al. 2003. Warming winters and New Hampshire's lost ski areas: An integrated case study. *International Journal of Sociology and Social Policy*, 23(10): 52–73.
- Hu J. 2020. Preparation and national image construction of the 2022 Beijing Winter Olympics. *Sports Culture Guide*, 11(11): 1–19. (in Chinese)
- Lasanta T, Laguna M, Vicente-Serrano S M. 2007. Do tourism-based ski resorts contribute to the homogeneous development of the Mediterranean mountains? A case study in the Central Spanish Pyrenees. *Tourism Management*, 28(5): 1326–1339.
- Lee J W. 2016. A game for the global north: The 2018 winter Olympic games in pyeongchang and south Korean cultural politics. *The International Journal of the History of Sport*, 33(12): 1411–1426.
- Li Y, Feng S. 2020. The research of coupled and coordinated development of tourism industry and county economy: Empirical evidence from Yangshuo County, Guilin. *Journal of Technology Economics*, 39(9): 82–88. (in Chinese)
- Liao K C, Yue M Y, Sun S W, et al. 2018. An evaluation of coupling coordination between tourism and finance. *Sustainability*, 10(7): 1–23.
- Marilyn C, Nancy D. 2019. Slippery slopes: skiing, fashion, and intrigue in 1960s film. In: Stephen W, David A (eds.). *Leisure cultures and the making of modern ski resorts*. London, UK: Palgrave Macmillan.
- Qu Z, Li Y, Gu X. 2020. Difficulty and development strategy of sports tourism poverty alleviation in Guizhou minority villages. *Sports Culture Guide*, 3(3): 47–53. (in Chinese)
- Sato S, Gipson C, Todd S, et al. 2018. The relationship between sport tourists' perceived value and destination loyalty: An experience-use history segmentation approach. *Journal of Sport & Tourism*, 22(2): 173–186.
- Shannon C E. 1948. A mathematical theory of communication. *Bell System Technical Journal*, 27(3): 379–423.
- Silberman J A, Rees P W. 2010. Reinventing Mountain settlements: A GIS model for identifying possible ski towns in the US Rocky Mountains. *Applied Geography*, 30(1): 36–49.
- Statista. 2021. Travel and tourism: Share of global GDP 2000–2019. <https://www.statista.com/statistics/1099933/travel-and-tourism-share-of-gdp/>. Viewed on 2021-06-20.
- Steiger R, Scott D. 2020. Ski tourism in a warmer world: Increased adaptation and regional economic impacts in Austria. *Tourism Management*, 77: 104032. DOI: 10.1016/j.tourman.2019.104032.
- Tang Z. 2015. An integrated approach to evaluating the coupling coordination between tourism and the environment. *Tourism Management*, 46: 11–19.
- Technavio. 2021. Sports tourism market by product, type, category, and geography-forecast and analysis 2021–2025. https://www.technavio.com/report/sports-tourism-market-industry-analysis_ Viewed on 2021-06-20.
- Wang R, Cheng J H, Zhu Y, et al. 2017. Evaluation on the coupling coordination of resources and environment carrying capacity in Chinese mining economic zones. *Resources Policy*, 53: 20–25.
- Wang X, Liu D L. 2020. The coupling coordination relationship between tourism competitiveness and economic growth of developing countries. *Sustainability*, 12(6): 2350. DOI: 10.3390/su12062350.
- Weng G, Li L. 2016. The coupling coordination degree and spatial correlation analysis on integrational development of tourism industry and cultural industry in China. *Economic Geography*, 36(1): 178–185. (in Chinese)
- Wu Q, Xie R, Song C. 2021. Research on the coordinated development of tourism, economy and environment in Guangdong Province. *Ecological Economy*, 37(4): 140–146. (in Chinese)
- Xu M, Xie F, Li Y, et al. 2006. The rangeland type and current situation of Chongli County in sand source areas around Beijing and Tianjing. *Journal of Agricultural University of Hebei*, 29(2): 72–76. (in Chinese)
- Yang R, Xu T. 2019. Development scale of Chongli ski tourism industry under Winter Olympics: From the perspective of economic forecasting. *Journal of Shenyang Sport University*, 38(6): 1–7. (in Chinese)
- Zhang M, Lu C, Wu Y, et al. 2020. Analysis of water resources carrying capacity in Chongli District, Zhangjiakou City, Hebei Province based on supply-demand balance of water. *Bulletin of Soil and Water Conservation*, 40(1): 276–282. (in Chinese)

滑雪旅游能否改善地区经济? ——以冬季奥林匹克举办地崇礼为例

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摘要:崇礼是2022年冬季奥运会主办城市之一,自2009年起发布了“旅游立县”的发展战略,滑雪旅游系统与经济发展系统都得以迅速发展。通过收集2009–2019年崇礼地区滑雪系统和当地经济系统的指标数据进行耦合度分析,探寻崇礼滑雪旅游系统和地区经济系统之间协调发展程度及阶段。研究发现:滑雪旅游助力崇礼地区实现脱贫摘帽的任务,促进地区经济良性发展;崇礼地区的滑雪系统和经济系统的耦合发展情况可以分为三个阶段:失调阶段(2009–2011年)、逐步协调阶段(2012–2015年)和优质协调阶段(2016–2019年);在此过程中,崇礼地区的滑雪系统和经济系统协调程度变化的主要影响因素在于政策红利和冬奥机遇;虽然崇礼地区滑雪旅游的发展对于城镇居民和农民的收入都具有正向影响,但是滑雪旅游的发展对于城镇居民收入的影响程度要大于对农民收入的影响程度。研究建议,充分发挥地区资源优势发展体育旅游,促进地区经济发展;抓住体育赛事和政策的红利期,发展滑雪旅游;关注滑雪旅游对居民群体的影响差异,构建完备的“再分配”系统;考虑滑雪旅游受气候等因素的影响,关注其对地方经济影响的可持续性。

关键词:奥运举办地;扶贫;滑雪旅游;地区经济;耦合度