

Local livelihood under different governances of tourism development in China – A case study of Huangshan mountain area



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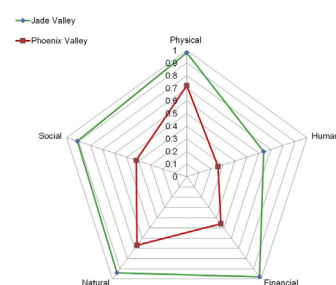
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HIGHLIGHTS

- Livelihood assets under the Community-based (CBT) and Lease-Operation Tourism (LOT) were analyzed according to 15 indicators.
- CBT governance has higher values of all five capitals than that of LOT, indicating that local livelihoods have been improved.
- CBT can contribute to the central government policy on tourism development for reducing poverty in rural areas of China.

GRAPHICAL ABSTRACT



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ABSTRACT

China has considered tourism development as an important policy for reducing rural poverty. However, various governances of tourism development have affected local livelihood in different ways. Here, we assessed local livelihood under the community-based (CBT) and lease-to-operate tourism (LOT) governances in two tourism villages; the Jade and Phoenix valleys located in the World Heritage mountain area of Huangshan. We used the sustainable livelihood approach to assess the local household livelihood assets and institutional arrangements that exist in this area with respect to tourism development. Five capital assets were analyzed according to 15 indicators. Values for natural, physical, human, social, and financial capitals were generally higher for CBT. Overall value for livelihood assets was 0.89 under the CBT compared to 0.51 under the LOT indicating that CBT contributed more to livelihood improvement in the rural area. Therefore, the CBT should be promoted as a policy for poverty alleviation in China.

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1. Introduction

As a sustainable development approach, tourism has exerted a tremendous effect on social development, especially in developing countries and remote areas (Ashley & Mitchell, 2005; Rogerson, 2006; O'Sullivan & Jackson, 2002; Saarinen, Rogerson, & Manwa, 2011; Mowforth & Munt, 2015.) According to the Annual Report of

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the United Nations World Tourism Organization (UNWTO, 2015), tourism has become a leading economic sector contributing to 10% of global GDP and 6% of the world's total exports every year. This is particular true in Gambia and Senegal in West African countries, where annual tourists were just about 75,000 to 420,000 people but their revenues from tourism development represent over 50% of total exports in these countries (Telfer & Sharpley, 2015). In China, despite achieving rapid improvement of living standard since the reform by Chinese central government in 1980s, the majority of Chinese people still live in poverty-stricken rural regions, where individual incomes are below the poverty line (Li, Geoffrey, & Stephen, 2008). In December 2015, the National Poverty Relief Office declared the new poverty line for 2800 Chinese Yuan Renminbi (RMB) per person per year or about US\$2.2 per person per day, slightly higher than the World Bank's poverty standard. Using this number (US\$2.2) as a poverty line, there are still 70 million people who live below that poverty line in China (Xinhua, 2015a). Chinese President Xi Jinping described the eradication of poverty just like a "tough battle", the government would continue to increase investment in rural areas and help to raise farmers' incomes. Meanwhile, Xi went on to comment that economic development should not come at the cost of the environment, stressing that China should protect its environment in the same way as one values his own eyes (Xinhua, 2015b).

As tourism development causes less damages to natural resources, China has regarded tourism as one of the most effective approaches for rural area development. Rural tourism has become more popular since 1990s in China. It has been increasing steadily since then. In 2014 alone, rural areas received more than 120 million tourists and generated more than USD47 billion (1 USD = 6.80 RMB) of revenues (China National Tourism Administration, 2016). Meanwhile, the actual investment of rural tourism is about USD 24 billion, increasing of 69% compared to 2013. Obviously, rural tourism development has become a driving force for economic development and rural poverty reduction. It was estimated that tourism has contributed directly to reducing 10% of people living below the poverty line (China National Tourism Administration, 2015). As these people live in the rural areas and with increasing interests of the central government for poverty alleviation in the rural areas, tourism development is likely to play an important role in improving their local livelihood.

Tourism development focuses on minimizing the effects on local environmental, conservation and cultural inheritance and accelerating the income-generation and community development while promoting environmental education and political awareness (Frey & George, 2010; Honey, 2008; Jimura, 2011; Kim, Uysal, & Sirgy, 2013; Xu, Barbieri, Anderson, Leung, & Rozier-Rich, 2016). As part of the campaigns to alleviate rural poverty through tourism development, the central government of China has encouraged private enterprises and local communities get involved in the tourism development. With that encouragement, multiple stakeholders with their sufficient fund could actively participate in rural tourism development, resulting in the improvement of tourism facility to a great extent. There have been emergent governance models (i.e. institutional arrangements) in order to accommodate the special characteristics of the concerned locations in the rural areas of China (Su, Geoffrey, & Paul, 2007).

These emergent types of governance model are associated with governments, private enterprises and local communities involving public, civil and private actors that employ various institutional arrangements (Røiseland, 2011) for their respective locations. Generally, multiple governments act as supervisor, directly or indirectly to monitor and/or to provide assistance in tourism development in the rural areas. However, not all governance models worked effectively in terms of local satisfaction and

participation in the tourism development (Qian, Sasaki, Shivakoti, & Zhang, 2016) because of the different settings of the rural areas. Previous studies suggest that stakeholders need to collaborate in order to ensure the successful development of tourism in the rural areas as well as to maximize the tourism benefits for all parties. To understand the appropriate governance models for tourism development as a policy for poverty alleviation, assessment of local livelihood under various governance models is timely important to provide a basis for better-informed decision making. Such assessment is also important for the central government of China to support its policy on using tourism development as a significant complementary means for sustainable development of the rural areas (Gu & Ryan, 2009; Wu, 2004). Using the Huangshan mountain area (the World Heritage site) as a case study, this study assessed the local livelihood of two different but nearby locations in the Jade and Phoenix valleys, where two types of governance model were respectively adopted, the community-based and lease-to-operate tourism governance (CBT and LOT hereafter). This study aims to assess the local livelihoods and evaluate the institutional arrangements under the CBT and LOT governance through the analysis of the livelihood assets using the sustainable livelihood approach (SLA).

2. Study methods and materials

2.1. Description of CBT and LOT

Over the last three decades, rural tourism in China has become a policy tool for poverty alleviation. However, there remains little understanding about the effectiveness of the governance systems on rural tourism development and future directions of the rural tourism development (Wang et al., 2013). As described in the previous study (Qian et al., 2016), CBT is the community-based tourism governance model, under which local communities actively participate in the management of tourism in their respective communities, while LOT is the lease-to-operate tourism governance model, under which commercial company is entitled to develop the tourism in the community awarded by the governmental authority. Analysis of institutional arrangement and how such arrangements affect local livelihood can provide the needed information for long-term successful development of tourism in the rural poor in China. In addition, understanding how both systems performed in terms of capital assets and local satisfaction is also important for any government or authority to decide which governance system to support or to intervene as part of its campaigns to alleviate rural poverty through sustainable tourism development.

2.2. Description of the study area

For this study, Jade and Phoenix valleys were selected as case studies to represent CBT and LOT, respectively (Fig. 1). Jade valley is located in the famous East Gorge of Mountain Huangshan. It is about 6 km away from the main entrance of the Mountain Huangshan Scenic Spot. Phoenix valley is about 3.7 km away. Jade valley established its own tourism corporation on 1 August 1987, while the Phoenix valley adopted the LOT in 2000, under which operational rights for tourism development were granted to an outside investor. Administratively, the two valleys are located in the Tangkou township of Huangshan district, Huangshan City, in the Anhui Province of China. Tangkou township is situated in the south and east foothills of the Mountain Huangshan World Heritage Scenic Spot spanning 18.3 km wide from east to west and 13.0 km long from north to south. Its geographical coordinates for longitude are 118° 12', and for north latitude 30° 07'. Tangkou Township is

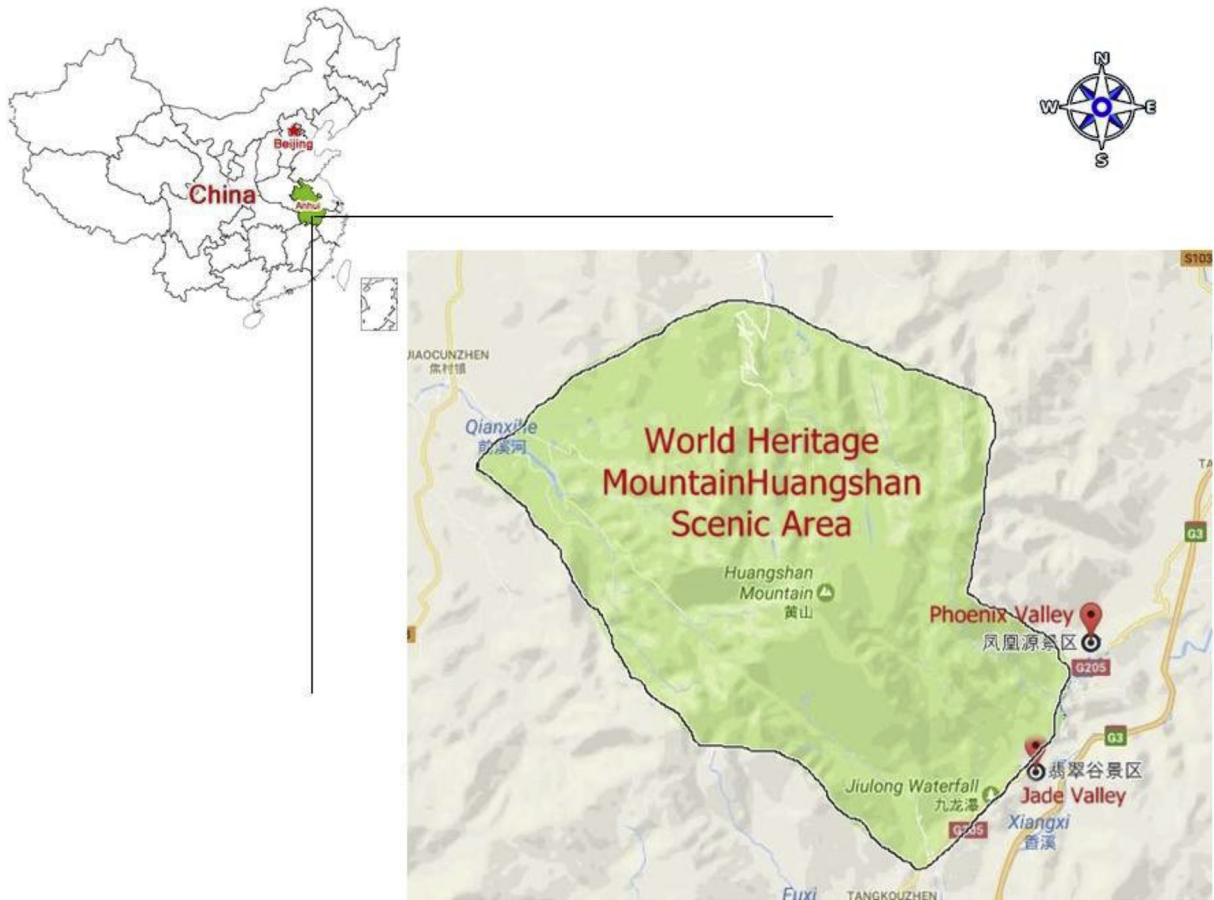


Fig. 1. Local map of Jade valley (翡翠谷) and Phoenix valley (凤凰源) in Huangshan mountain world heritage site.

about 300–600 km from Shanghai, Nanjing, Hangzhou, Suzhou, and other large cities, and it can be accessed through expressways, high speed railways, and airlines.

Tangkou township is composed of six administrative towns, Shancha, Tangkouju, Zhaixi, Daling xia, Fangcun and Gangcun. Due to lack of arable land, local livelihoods depended almost entirely on clearing forests and prolonged conditions of poverty were observed prior to the tourism development. The listing of the Huangshan Mountain area as the world heritage site coupled with the development reform in the Tangkou township has resulted in the rapid increase of holiday tourists. The neighboring towns have become free riders (Frohlich & Oppenheimer, 2015; Ostrom, 2014) and the majority of the local people became involved in the tourism industry. Local people have earned their incomes through the offering of homestay to the incoming visitors, especially during the peak season. Among the six towns, Shancha is the most successful town despite having only about 760 households living on a total area of about 30 km². Fig. 2 illustrates that the tourism industry has significantly accelerated the economic development of the area. As it shown in Fig. 2, there are 11 sources of income in the Shancha village, where our study sites are located. These sources of income include total income of rural economy, income from rural collective enterprises, income from guesthouse operation, income from agriculture, income from forestry, income from animal husbandry, industry revenue, transportation income, income from catering industry, income from service trade, and income of migrant workers. Total annual incomes per household increased to USD 4035.96 in 2012 from just USD 284.11 in 2000. Income from

guesthouse operation shared 23% of the total annual incomes in 2012. Per capita incomes also increased from just USD 422.50 in 2000 to USD 1819.85 in 2012 (Fig. 2).

2.3. Data collection

This study used quantitative and qualitative analysis as the main research methods. To ensure systematic understanding of the entire progress of tourism development in the Mountain Huangshan area, field work in the form of household surveys (questionnaires) and open-ended interviews with local residents, officials and key informants were conducted spanning three years from 2011 to 2014. Additionally, non-participant observation was also adopted in this study. The two valleys are adjacent to each other at the foot of Mountain Huangshan. The natural resources of the two valleys possess similar characteristics. All of the tourism depends on the valleys that consist of small waterfalls and colorful pools, exotic natural rocks and bamboo forests. To maintain the tourists' willingness to pay, all of the natural resources have been strictly protected by the laws and policies of multiple governments. Under such formidable centralized governance concerning natural resource protection, the two valleys have established their own tourism businesses over time. The local residents also possess similar attributes and are the descendants of different settlements of one village. The group size has fewer than 50 households; all residents are located in the rural area without sufficient external financial support. Prior to tourism development, the main method of subsistence for local people depended on agriculture, forestry

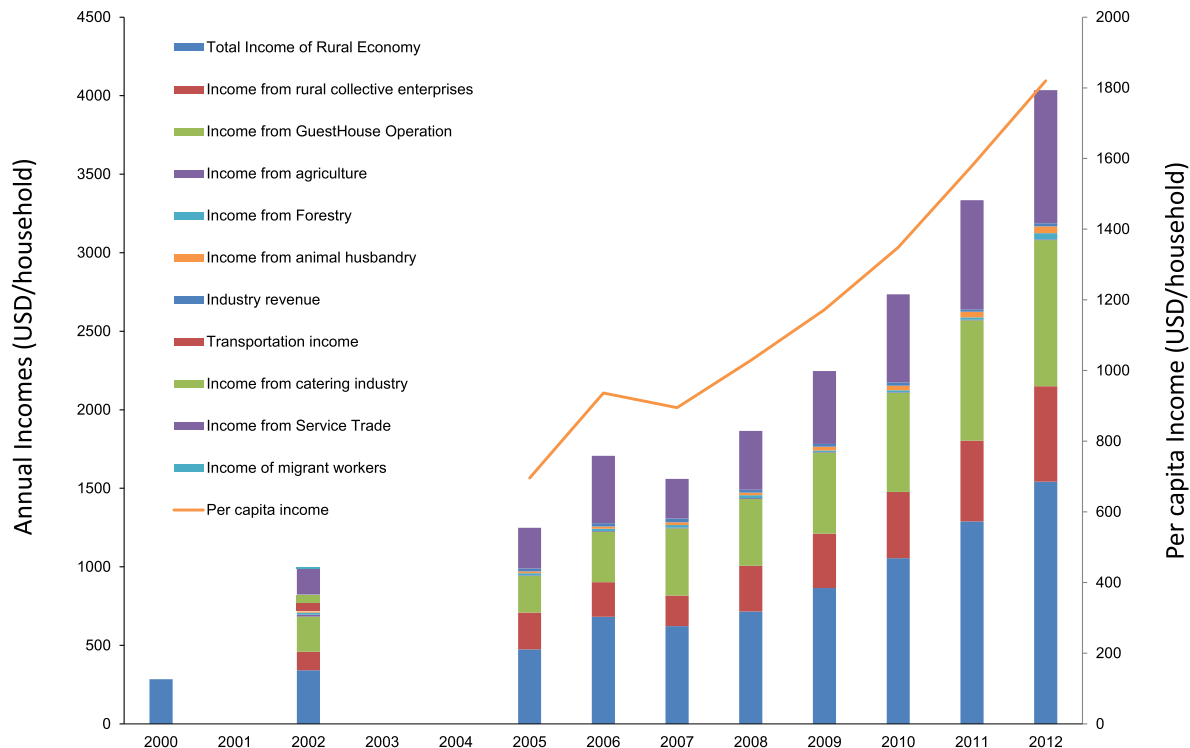


Fig. 2. Annual incomes and incomes per capita in the Shancha Village, where our study sites are located (2000–2012).

Source: Statistical statement of local government (2000–2012). Note: The incomes shown in Fig. 2 were derived from the RMB at the exchange rate of 1 USD = 6.80 RMB (constant value).

and migrant work. The inhabitants of both valleys are free riders of tourism development in World Heritage sites. Therefore, it is feasible to compare the different ecological, economic and social outcomes and to analyze the interaction between hybrid governance and outcomes.

This survey provides an in depth, comprehensive understanding of the different livelihoods of local households under various types of governance. The survey questionnaire focuses on the process of tourism development and the effects on natural resources; physical condition; the area's economy; individual wealth; social networks; human capital before and after tourism development; the process of rules-making and rules-following; and the support of tourism governors. This study employed a checklist for the interviews with government officials, external investors, managers and staff of the local autonomies. In Jade Valley, three leaders and five staff members including a cleaner, a ticket vendor, a dooly carrier and a security guard were interviewed. Only one manager, the assistant chief manager, is not local resident. The interviews involve discussions concerning the history of tourism development; the evolution of institutional arrangements; the main responsibilities and welfare of the local staff; the relationship between the local company, the local community and local households; and significant events concerning tourism business. In Phoenix Valley, interviews were conducted with one manager and two members of company staff. Because all of them are not local residents, their knowledge of local household livelihoods and the history of local tourism development are limited. Thus, the researchers attempted to obtain additional information from two key local inhabitant informants; one is the former head of the community and another is a former manager of the company.

Certain non-participant observation has also been adopted in this study. Researchers visited the valleys several times during

2011–2014. The researchers remained at the guesthouse for long periods, especially during the summer vacation, and attempted to live and communicate with the local people, observing their work and lifestyles, and focusing on the methods used by the inhabitants to express their needs. Factors such as decision-making processes, who possesses the power to determine final decisions, the response to changes in tourism development, the percentage of local residents involved in community action, the information flow, attitudes towards tourism by multiple stakeholders and the further impacts on long-term tourism development were analyzed. In addition to fieldwork for primary data collection, the researchers collected secondhand data. Statistics documents and annual reports were copied from local government agencies and websites. A literature review on the research field was completed.

2.4. Indicators of livelihood assessment

This study adopted a system of indicators and variables of CBT that include five different types of livelihood capital – physical, natural, human, financial and social capital (Bebbington, 1999; Carney, 2003; Chambers & Conway, 1992; Chen, Zhu, Krott, & Maddox, 2013a). All of the indicators were chosen for each type of capital asset because each asset is related to the reality of livelihood conditions under various governance arrangements with respect to tourism development in the case study area (see Table 1).

With respect to natural capital (NC), we used local government statistics to define the indicators forest coverage and biodiversity combined with the perception of local inhabitants on the status of environmental conservation such as water quality, air quality, and soil quality in the respective valleys.

Tourism infrastructure was chosen as an indicator to measure the physical capital (PC) in addition to other two common

Table 1
Selection of indicators for individual capital assets.

Capital Asset	Principle Description	Criterion for individual Principles	Indicators
Natural Capital	- Option for future use are maintained - Quality and quantity of natural resources and services are maintained or improved	- Biodiversity is conserved or not - Ecosystem function is maintained or not	- Biodiversity - Forest coverage - Environmental conservation
Physical Capital	Physical capital is maintained or improved overtime	- House physical status is maintained or improved - Tourism facilities are improved or not	- Household fixed assets - Household durable goods - Tourism infrastructure
Human Capital	Ability to provide added value is improved overtime	- Education or skill knowledge is improved or not - Local people's physical condition is maintained or improved - Tourism service level is improved or not	- Skills and knowledge - Health status - Potential leadership
Financial Capital	- Financial capital grows and is equitably distributed - Financial capital is circulated within the system	- Tourism as a revenue is improved or not - Household harvest from tourism is improved or not	- Household income related to tourism - Household income not related to tourism
Social Capital	Maintenance of systems of social reciprocity	Economic and other shocks are buffered by system of social reciprocity	- Kinship - Community membership - Capacity building opportunity - Community participation

Source: Modified from Campbell et al. (2001).

indicators, the household fixed assets and household durable goods. Typically, the roads, bridges, parking facilities and other tourism facilities constructed for tourist convenience are key parameters for tourism development. More tourism revenue will be derived from perfect serving facilities. Therefore, knowledge of the infrastructure changes is necessary to gauge the influence of these changes on sustainable livelihoods and tourism development.

For human capital (HC), we selected the common indicators of skills and knowledge, potential leadership and health status. If the indigenous population desires access to the tourism market and to opportunities for decision making, they need become members of the tourism company first. Membership with the respective CBT or LOT that dominates their own valley is vital for local people involved in tourism development and it will certainly affect their livelihoods.

With respect to financial capital (FC), this study used income related to tourism and income not related to tourism. The income not related to tourism was generated as a result of tourism development but it is difficult to differentiate. Moreover, during our interviews the local people usually tended to overstate their cost, making such cost often exceeding their income because they didn't want to release their generated income. Therefore, expenditure was excluded as an indicator for measuring financial capital assets.

To assess the social capital (SC), this study used kinship, community membership, capacity building and community participation as indicators. The trust that exists among kin and members of the community is crucial to consensus and collective decision making. With an effective social network, local people possess a greater likelihood of collecting information and communicating with external potential stakeholders, obtaining opportunity for capacity building and improving their ability to enhance the tourism service quality.

2.5. Scoring the capital assets

According to the principles of the individual capital assets and the criteria of the principles developed by Campbell et al. (2001), this study selected proxy indicators (Table 1) for each capital asset to create a particular livelihood pentagon for Jade and Phoenix valleys. Therefore, this study adopted scaling and indexing methods to obtain comparable indicators and to facilitate meaningful interpretation. Based on the questionnaire, if the indicator was

described as poor, average or good, the rating scale method was used to weight them with livelihood indices of 0.00–0.33, 0.34 to 0.66, or 0.67 to 1.00. The critical values of 0.33, 0.66 and 1.00 represented the poor, average and good, respectively. Additionally, if the indicator was described by a response of yes or no, then yes = 1.00 and no = 0.00 (Chen et al., 2013b; Islam, Rahman, Asahiro, Sato, & Tani, 2014; Muangkaew & Shivakoti, 2005).

When the indicator refers to detailed numbers such as income, we chose the average income of the whole district (Huangshan City) as the control value. We compared the control value with the detailed number for Jade Valley and Phoenix Valley. A value less than the control value is defined as poor and is given a weight value of 0.33; a value more than the control value and less than 1.50 * control value will be classified as average and given a weight value of 0.66; finally, a value of more than 1.50*control value will be classified as good and given a weight value of 1.00.

To assign score to the individual indicators, the following formulas were used:

$$I_1 = \text{poor} \times 0.33 + \text{average} \times 0.66 + \text{Good} \times 1.00 \quad (1)$$

$$I_2 = \text{No} \times 0.00 + \text{"Yes"} \times 1.00 \quad (2)$$

$$I_3 = (\text{number} < \text{CV}) \times 0.33 + (\text{number} < \text{CV} < 1.5 \times \text{CV}) \times 0.66 + (\text{number} > 1.5 \times \text{CV}) \times 1 \quad (3)$$

Where,

CV is the control value (rural area average income of Huangshan city for that year).

Then, we could obtain the integration values by

$$C = \sum_{n=0}^n \frac{I_n}{T_n} \quad (4)$$

where,

C represents the criteria total score for each asset ($0 \leq C \leq 1$);
n represents the nth indicator of criteria ($n = 1, 2, 3, \dots, n$);
I represents the indicator; including I_1, I_2, I_3
T is the total number of indicators

Subsequently, total scores of the livelihood assets for both valleys were derived by

$$LA = (PC + NC + HC + FC + SC)/5 \quad (5)$$

Where.

LA represents the livelihood asset in each valley
 PC represents physical capital in each valley
 NC represents natural capital in each valley
 HC is human capital in each valley
 FC represents financial capital in each valley
 SC represents social capital in each valley

3. Results and discussions

3.1. The Institutional arrangements of the CBT and LOT

3.1.1. CTB in the Jade Valley

Our interviews with officials of the local tourism company revealed that the institutional arrangements and decision making and rules-following processes in these two valleys are different. Jade Valley has established hierarchical institutional arrangements since 1987. The institutional arrangements in Jade Valley include four dimensions, namely democratic election, management, monitoring and decision making. During the 1980s, the local people elected a committee from the local community to manage major issues. During the tourism development progress, the operator was the collective owner company that conducts the decision making by collective selection. The local households, local community committee and multiple governments have played the role of monitor.

The committee decided to recentralize all the natural resources including forest and mountain land in the valley. The committee then decided to establish their own tourism company for collective choice on commercialized management and the marketable operation. The majority of company leaders are committee members and the enterprise management system combines traditional regulations and customs. There are regular assembly meetings for local people to discuss major issues such as the appointment of the board of directors, the responsibilities of the board, the allocation of benefits, incentives and disincentives. Every proposal must be discussed and decided by a vote. The leader has the duty to ensure transparency in business affairs. The local people have the right to share the information on audit accounts, income distribution, and review the working report of the committee and leaders. All these measures have guaranteed the development of tourism in Jade Valley.

3.1.2. LOT in Phoenix Valley

Phoenix Valley transferred its operations to an external investor. The investor invested external funds in order to get involved in the tourism business. The transfer agreement was emphasized in the lease-operation contract and the investor was required to distribute tourism benefits every year to the stakeholders instead of a one-time buyout payment. The investor was required to pay 5000 RMB per year to the local community in the first five years of contract. Subsequently, 5% of tourism net income needs to be allocated to the local community over the following 10 years, and if renewed for another 10 years, 10% of the net income is allocated to the local community. At the last five years of their lease, the company was required to pay 15% of tourism net income to the local community. At the end of the lease term, local community will reclaim operational rights in addition to the tourism infrastructures.

Our interviews indicated that at the beginning of the contract period, local people were enthusiastic towards the outside investor. They did not dispute the land acquisition and worked as volunteers in the construction of tourism infrastructures. However, the external investor excluded local community from any decision making process, did not negotiate with the local people and refused the requirement of local community to check the auditing accounts. This practice resulted in increasing conflicts between local community and the external investor. Worse yet, when such conflicts occurred, the government agent who supposed to act as supervisor remained silent in order to maintain the stable development of the local economy. Consequently, mistrust among stakeholders (i.e. local community, investor, and government) has resulted in increasing conflicts and therefore, it could jeopardize the poverty alleviation policy of the central government through the development of local tourism.

In terms of institutional arrangements, the Jade valley is owned 90%, 5%, and 5% by CBT Company, local community, and state, respectively. On the other hands, the Phoenix valley is owned 95% and 5% by LOT Company and 5% local community, respectively (Table 2). Households committee of local community and local government are the supervisor for CBT while local government is the only supervisor for LOT. Local community is ignored in any decision making. In terms of income distribution, flexible dividend is provided to all stakeholders under the CBT, and LOT only the bonus based on a fixed contract of about USD102.94 per person.

3.2. Livelihood assets in Jade and Pheonix valleys

Results of the analysis of all five capital assets and related indicators are presented in Table 3. Totally, 14 of the 15 indicators of the capital assets under CBT had higher weighted values compared to that of LOT, indicating that local livelihoods are much better in the CBT governance. Values of the potential leadership indicator of the human capital in both governances were lower (0.06 and 0.08, respectively) suggesting local people had less interest in taking the lead in tourism development as long as their needs are met. The higher value for LOT suggests that local people was less concerned when the leadership was taken over solely by the investor.

The values of the natural capital, physical capital, human capital, social capital, and financial capital were 0.94, 0.98, 0.64, 0.91, and 0.98 for CBT in the Jade valley and 0.67, 0.72, 0.26, 0.42, and 0.46 for LOT in the Pheonix valley, respectively (Fig. 3). The overall values for all five capitals representing the livelihood assets were 0.89 and 0.51, respectively for both governances. CBT's livelihood assets were 43% higher, indicating that CBT can improve local livelihoods and therefore CBT supports the central government's policy toward poverty alleviation in the rural area of China.

3.3. Livelihood improvement before and after the introduction of CBT and LOT

To assess whether the CBT and LOT themselves have had any impact of local livelihoods in both valleys, we also interviewed the local households using same questions but encouraging them to recall their memories of their respective communities before and after the introduction of the CBT and LOT in 1987 and 2000, respectively. Then, we used the same methods as described in equation (1) through (5) to estimate the capital assets. Surprisingly, the CBT governance had significantly different values for all five capital assets before and after its introduction, while such values were slightly different under the LOT governance, except the physical capital and social capital assets. Under LOT, infrastructure development has been improved but the exclusion of the community in the tourism management decision has worsened the

Table 2

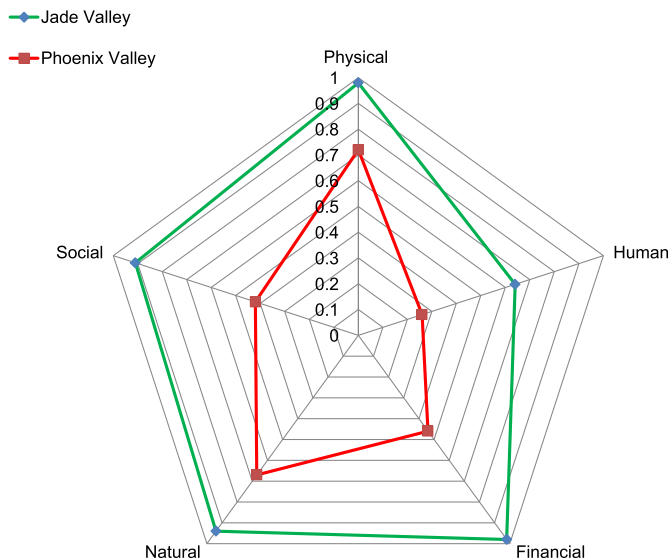
The Institutional arrangements for tourism management in both valleys.

Description	CBT in Jade Valley	LOT in Phoenix Valley
Governance model	Community-based management	Lease-operation Management
Property ownership	• 90% CBT Company • 5% local community • 5% state	• 95% LOT Company • 5% local community
Operator	the CBT Company	the LOT Company
Supervisor	• Households • Committee of local community • Local government	• Local government
Income distribution	Dividend (depending on performance)	Share bonus based on a fixed contract of USD 102.94 (700 RMB) per person

Table 3

Weighted values of the indicators for individual capitals in Jade Valley and Phoenix Valley.

Capital	Indicators	Jade Valley	Phoenix Valley
Natural Capital	Biodiversity	1.00	0.75
	Forest coverage	1.00	1.00
	Environmental conservation (air, water and soil)	0.87	0.51
Physical Capital	Household fixed assets (house, cable, internet, telephone)	1.00	0.75
	Household durable goods (car, AC, TV, RF)	1.00	0.52
	Tourism infrastructure (TAP, sanitation, market, hospital)	0.94	0.84
Human Capital	Expert skill and knowledge	0.91	0.08
	Health status	0.96	0.61
	Potential leadership	0.06	0.08
Social Capital	Kinship	1.00	0.72
	Community membership	1.00	0.39
	Capacity building opportunity	0.73	0.30
Financial Capital	Participation with group	0.92	0.33
	Household income relate to tourism (guesthouse, restaurant, shop, bar, diver, guide)	0.98	0.46
	Household income not related to tourism (plantation, remittance, pension)	0.97	0.45

**Fig. 3.** Values of capital assets in the Jade (CBT) and Phoenix (LOT) valleys.

communications or mistrust between the company and local community, which resulted in lower value of social capital asset after the introduction of LOT (Fig. 4).

More specifically, tourism development in Jade Valley has significantly changed local household livelihoods. Natural capital has increased from 0.63 before tourism to 0.94 following tourism development. This demonstrates that the valley's natural resources have been efficiently protected during the tourist development process and have not been affected by tourism development. Before

the establishment of the CBT, the physical capital was only 0.22, whereas it dramatically increased to 0.98 by 2012 following CBT establishment. This result demonstrates that the quality of life for local community has greatly improved. Local community began to appreciate their daily lives under the CBT. Human capital has experienced a slow incremental increase from 0.32 to 0.64, indicating that skill knowledge and health status have improved and that indigenous capacity is growing in parallel with the tourism development.

Social capital increased from 0.82 in 1987 to 0.91 in 2012. This demonstrates that the original social network in Jade Valley is effective. The development of CBT has provided local people with more opportunity to access the tourism market, to build their social networks, and to be involved in decision-making processes. The value of financial capital increased from 0.33 to 0.98; income from tourism sharply increased from 675 RMB in 1987 to 133,857 RMB in 2012 (an increase of 789% annually). The vast majority of this income was composed of guest house revenue and dividends from the CBT Company. The income from the guide tours decreased over the same period because tourists seemed to prefer the self-guide tours because of the increasing availability of the tourist information and easy access. In addition, local people did not seem to have interests in receiving the limited gratuity from the tourists because they could earn more by doing something else.

Under LOT, improvement of the local household livelihoods was not significant before and after tourism development. The natural capital maintained similar levels before (before 2000) and after (in 2012) tourism development; at a value of 0.67 it is means average. Although the quality levels of forestland coverage and biodiversity have increased to 1.00 (good), the perception of environmental conservation has dropped sharply, especially with respect to water and air quality. This result demonstrates the concern among the local people with pollution caused by tourism development in their valley.

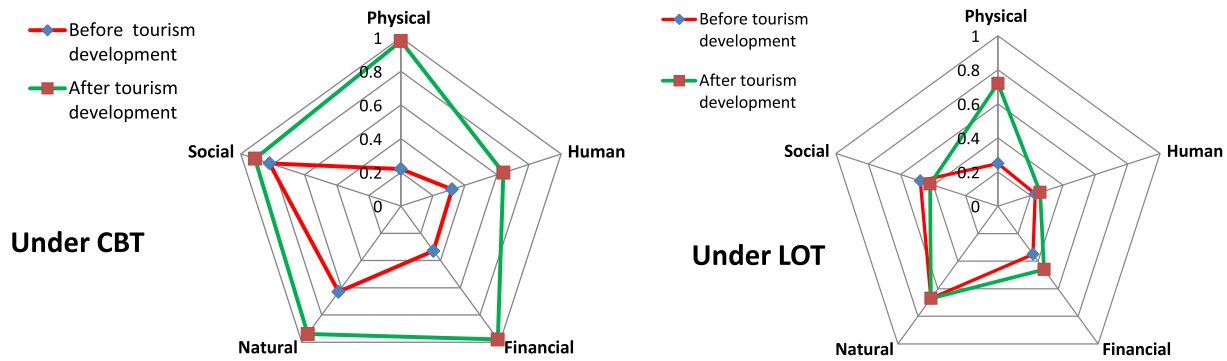


Fig. 4. Values of capital assets in the Jade and Phoenix valleys before and after the introduction of CBT and LOT.

Over the same period, the value of physical capital increased from 0.25 to 0.72 as local community had access to some forms of internet and phone connections and possessed some durable goods such as TV and AC. However, generally it is difficult to conclude that the value of house fixed assets and other durable goods have increased significantly. Our observations during the field works were that the only enhancement has involved the tourism facility in Phoenix valley and but the living areas for the local community did not change and even worse in some cases.

The human capital in Phoenix Valley has increased slightly from 0.23 (poor) and 0.26 (poor) following tourism developments. This was because the investor did not include local people in the decision making process and nor did they invest in improving expert skills and knowledge, health, and leadership. On the contrary, the social capital value dropped from 0.48 to 0.42, indicating that training opportunities and the frequency of meetings have significantly decreased. Local people were rarely invited by the LOT Company for negotiating or collective decision making. Additionally, there is no training for capacity building among local people, and the result was lower. This result implies that social networks are incomplete, creating more distrust among the community and investor and therefore, sustainable development of rural area for reducing poverty may not be achieved. In terms of financial capital, the value slightly increased to 0.45 in 2012 from 0.34 prior to establishment of the LOT, indicating that local people's wealth has increased.

The data generally indicate that tourism development from CBT has brought substantial benefits to the local people of Jade Valley and that their livelihood assets have been dramatically improved. In contrast, the local people of Phoenix Valley have not shared the same benefits from tourism development because their expectations from LOT and their livelihoods have not experienced significant improvements. An analysis of the reason for such distinct outcomes in tourism development in our case study sites is required. Overall, mean value for all indicators was 0.4141 prior to tourism development and 0.5365 in 2012 after tourism development (i.e. introduction of the LOT governance) compared to 0.5276 (prior to 1987) and 0.8888 in 2012 after the introduction of CBT for tourism development in the Jade valley (Table 4).

3.4. Changes in livelihood assets

3.4.1. Natural capital

3.4.1.1. Forestland coverage. The forestland coverage has increased from 0.57 to 1.00 in Jade Valley, and from 0.42 to 1.00 in Phoenix Valley, before and after tourism development. The main reason for the growth in forestland coverage is the enforcement of laws and policies by multiple governments. To protect the environment and

natural resources in the Mountain Huangshan area, local government decided to close hillsides to facilitate afforestation and to return the land that has been devoted to grain plots since 1999 to forestry. Moreover, solar power and biogas have been promoted, changing traditional local energy consumption patterns. Local households do not depend on forest timber or firewood. According to the local government statistics from the Huangshan City Forest Bureau, the rate of forestland coverage has increased by approximately 2% in 2000 and is now above 95% in this area. Additionally, the local community has its own regulations with respect to forestry protection. Every community member volunteers to prevent forest fires each year. Certain traditional customs are strictly forbidden in this area such as setting off fireworks and burning "ghost money" and there are substantial penalties for violators. Consequently, since 2004, there have been no incidences of fire or timber stealing.

3.4.1.2. Biodiversity. According to the local Forestry Bureau statistics, the condition and biodiversity of the natural resources has remained unchanged. Regardless of the governance model, flora and fauna species have increased slightly in both locations. Strict laws are imposed and enforced for the preservation of plants and animals in this world heritage site. Timber harvesting has been forbidden entirely and bamboo can be cut intermediately in certain areas. There are several rare animals in existence such as tigers, leopards, reindeer and giant salamanders. In addition to these rare species in the Mountain Huangshan area, stump-tailed monkeys and long-nosed pit vipers are another attraction for tourists. There are also precious plants such as ginkgo and Chinese yew, as well as other rare Chinese medicinal herbs. The local people are aware that the higher the quality of landscape, the more tourists will exhibit a willingness to pay; thus, indigenous populations are motivated to protect the forest and water for sustainable development. Therefore, the value of biodiversity has increased dramatically from 0.33 to 1.00 in Jade Valley. In Phoenix Valley, the indigenous population believes that animal species have decreased because the majority of the wild animals rarely emerge following tourism development. Therefore, the value of biodiversity in Phoenix Valley is different from Jade Valley, and changed from 0.33 to 0.75.

3.4.1.3. Perception of environmental quality

3.4.1.3.1. Water quality. The data report a value of water quality that has increased from 0.67 before tourism development to 0.80 following tourism development, whereas in Phoenix Valley the water quality dropped from 0.80 to 0.43. This result demonstrates that opposite trends have affected the water quality in the two valleys. The water in both valleys has been directly used as drinking water. Jade Valley has regulations designed to protect water quality.

Table 4

The statistical results of a Wilcoxon matched-pair signed-rank test of livelihood capital indicators before and after tourism development in Jade and Phoenix valleys.

Year of Establishment	Valid N (listwise)	Minimum	Maximum	Mean	Standard Deviation
Jade prior to 1987	17	0.03	1.00	0.5276	0.32,587
Jade in 2012	17	0.06	1.00	0.8888	0.22,735
Significant 0.147 (Significance level is 0.05)					
Phoenix prior to 2000	17	0.00	1.00	0.4141	0.30,004
Phoenix in 2012	17	0.08	1.00	0.5365	0.25,261
Significant 0.001 (Significance level is 0.05)					

Tourists cannot play, swim, or wash in the water upstream of the valley. A swimming pool has been built downstream that is free of charge for everyone and a sanitation system ensures that the water is not contaminated. However, in Phoenix Valley, the majority of the local people complain that the water quality is not adequately monitored. There are only three local security guards and they carry resentment concerning poor wages and welfare; they have no capacity or incentive to perform their duties. Therefore, a majority of tourists plays and bathe in the water in the valley. This negatively influences perceptions of water quality protection. Moreover, one key informant was concerned that the construction of a new public toilet on the top of Mountain Huangshan will pollute their water in the near future.

3.4.1.3.2. Air quality. The study demonstrates the existence of air pollution following tourism development because the value of air quality drops from 1.00 to 0.87 in Jade Valley and from 1.00 to 0.50 in Phoenix Valley. The majority of the local people consider automobile exhaust to be the culprit.

3.4.1.3.3. Soil quality. A reduction in farmland work has led to the practical disappearance of chemical fertilizers and pesticides in Jade Valley. Thus, soil quality increased from 0.57 to 0.94; however, in Phoenix Valley the soil quality has decreased to a small extent from 0.66 to 0.60. Local households who maintain working farms and harvest agricultural products and several indigenous inhabitants complained of beer cans, mineral water bottles and other trash strewn by tourists.

From local perceptions of environmental quality, the findings demonstrate that inhabitants of Phoenix Valley are not satisfied with tourism development and their attitude toward tourists is one that recognizes them as vital to their livelihood.

3.4.2. Physical capital

The study provides evidence that the local households of Jade Valley have benefited the most from physical capital. The value of household fixed assets and household durable goods were initially at 0.08 and 0.03, respectively, and are now at 1. The value of tourism infrastructure increased from 0.44 to 0.94. This result implies that infrastructure has improved to a great extent. For example, a total of 48 villa buildings were designed and rebuilt in Jade Valley in 2003. Resorts seem scattered throughout the valley with amenities such as tap water, cable TV, Internet access, telephones, road lighting, drainage systems and gardens. An enormous LED screen at the valley entrance acts as a general notice board and provides information for local households that also have the tools to browse the Internet. Local inhabitants have built their own websites for promotion and communication. Every household has updated their house for use as a guesthouse. According to set standards, each room must have air conditioning, a bathroom, a TV set and other necessary furniture. Poultry and livestock are banned except for pets. Every household possesses at least one car and several households have bought commodity houses in other cities.

In comparison to Jade Valley, despite an increase in the value of physical capital, the Phoenix Valley seems in un-ameliorated circumstances. The value of household fixed assets changed from 0.21

to 0.75; household durable goods were initially at 0 (poor) and reached 0.52 (average); the value of tourism infrastructure increased from 0.44 to 0.84 because tourism facilities only have been improved such as parking facilities, rest areas, and commercial craft booths. All complex facilities are designed entirely for tourist purposes. The guided tour is conducted solely in the area because it prevents local residents from soliciting tourists with goods. Many households still live in their old houses that are in a state of disrepair. There are no lighted paths in inhabited areas. The majority of local people still rear poultry and livestock. Many cellars have been set up for the sake of clean energy. Compared to the tourism infrastructure in the scenic spot, the sanitary conditions of the inhabited area are dire. The indigenous population of Jade Valley has always avoided the tourist area resulting in the loss of opportunity to share the benefits from the booming industry. The local dissatisfaction with tourist-targeted improvements is not quelled when the economic benefits derived from tourism are not fairly distributed throughout the community. Over 80% of households do not possess a computer, much less internet access, and information is spread by word of mouth. Few households own a truck or van for passenger or cargo transportation.

3.4.3. Human capital

A total of three indicators were selected for this study to describe human capital. The value of expert skill and knowledge has skyrocketed from 0.11 to 0.91, whereas the value for potential leadership has decreased from 0.11 to 0.06; the value for health status increased from 0.73 to 0.96.

3.4.3.1. Expert skill and knowledge. There are a total of 44 households and 246 inhabitants in Jade Valley. Approximately 22 individuals are over 90 years old and 90% of the elderly are illiterate; a total of 60 individuals are over 55 years old and 50% of them are illiterate; 80% of the individuals from 20 to 35 years old are high school graduates or possess a higher level of education. A total of 10 young individuals are undergraduate students. The CBT has an incentive policy for students who obtain college admission. Therefore, all young people are able to complete nine years of compulsory education and pursue a higher degree. Additionally, a total of 106 out the 246 inhabitants are employees of their collective-owned company (Fig. 5). A majority of the remainder of the local people work in a tourism-related capacity. The indigenous population is knowledgeable on local topics. As guesthouse hosts they know where and when to find various wild vegetables for the creation of unusual dishes; as tourist guides they recognize the characteristics of each season and are able to find rare animals in the mountain forest. Moreover, external immigrants bring new information and knowledge. The collective-owned company focuses on capacity building and provides training courses to improve local skills and knowledge that will advance tourism service quality. Group tours are organized on a biannual basis to facilitate community member learning from travel. Therefore, the value of expert skill and learning has been extensively promoted.

Phoenix Valley features a total of 38 households with a total of

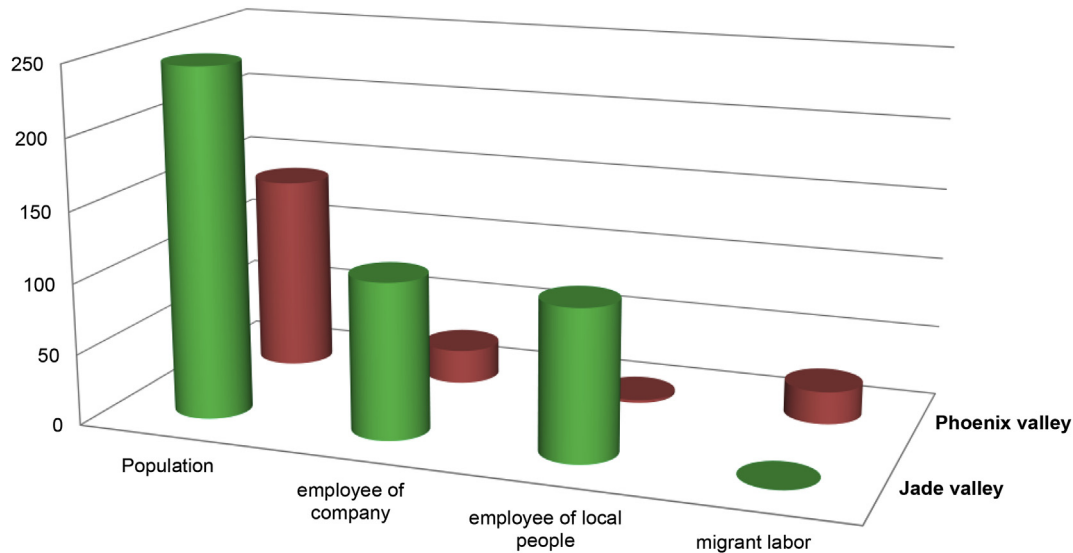


Fig. 5. List of employment in Jade Valley and Phoenix Valley.

138 people. The majority of young couples live apart from their parents. Approximately half of the local households house young people who work as external migrant workers. Over one half (55%) of the area's population above 55 years old is illiterate. Approximately 70% of the population below 35 years old has graduated from secondary technique school, and seven young people are undergraduate college students. All of the young people with high-level degrees leave their hometown. Only 26 local individuals were worked related to the LOT in roles such as dooly carrier, the dustman and the storekeeper. Therefore, the value of expert skill and knowledge has not changed and remains at the significantly low level of 0.08, which is a negative influence on sustainable development.

3.4.3.2. Potential leadership. The CBT Company has a set of explicit rules that everyone must abide by. Individuals simply fulfill their role and perform their duty; others operate their own guesthouse without the threat of competition. The potential leadership value is therefore at a low level. In Phoenix Valley, because several individuals acted as leaders to develop their own tourism business before their lease contract allowed them, all of them failed. Although many of these individuals are not satisfied with the performance of LOT, they lack the confidence to try again. Therefore, the value of potential leadership has not changed and remains at consistently low levels.

3.4.3.3. Health status. The study demonstrates that the value of health status in Jade Valley improved from 0.73 before tourism development to 0.96 after development, whereas the value of health status in Phoenix Valley was 0.53 before tourism development and 0.61 after development. This result implies that the physical condition of the local people has improved as a result of the rural medical insurance policy and living standard enhancements.

3.4.4. Financial capital

The number of visitors to Huangshan Mountain area and the two valleys has increased in the past decade. Gate receipts of Jade Valley have increased from USD 0.7 million in 2000 to USD 8.7 million in 2014 (85% annual increase, Fig. 6). Despite shocks such as SARS and seasonal conditions (in the winter when the temperature

is unusually low and the environment frozen the valleys closed for safety reasons), the revenues from tourism for the local community seem stable. With respect to Phoenix Valley, the benefit derived from the LOT process, which exhibited growth from USD 0.03 million in 2000 to USD 0.34 million in 2008 has remained at the same level since 2008. Based on the revenue from tourism development conducted with different rules of distribution, the benefit of local households from tourism differs. The dividends of Jade Valley have increased from USD 147.0 in 2005 to USD 1691.2 in 2014 per person. At the same time, the dividends of Phoenix Valley have not changed from USD 102.9 in 2005 to USD 102.9 in 2014 (Fig. 6). The wages of security guards and cleaners are USD 176.5 per month in Jade Valley and USD 110.3 per month in Phoenix Valley. Based on their advice and appeal, and after several rounds of negotiation, the outside investor increased employee salaries from USD 102.9 to USD 125.0 and, finally, to USD 169.1 but these employees are required to work weekends and holidays and their wages are deducted if the employees do not show up to work. Moreover, the wage and benefits in Jade Valley are stable, whereas the wages and benefits in Phoenix Valley are unstable because local households take turns in the work roles offered by LOT; every four or five years one person from each household can work for the LOT organization.

With respect to local household expenditure, the main item in Jade Valley is operational cost and communication cost. The reason for higher operational costs is that local people intertwined daily living costs with operational costs because their daily life has been involved in tourism services. The data demonstrate that the majority of the indigenous population desire additional investment in education. Although the central governance has a toll-free policy for nine-year compulsory education, a lack of high quality kindergartens, primary schools or middle schools in this area results in the majority of children in Jade Valley attending private school. The average cost of kindergarten is USD 1029.4 per year and the tuition fee for primary and secondary school is approximately USD 2941.2 per year. Additionally, most residents of Jade Valley have purchased their own commercial insurance to complement the endowment insurance and medical insurance that is collectively purchased by their CBT Company. The majority of the local people possess stock exchange investment knowledge; however, because the risk is substantial, it no longer holds interest.

In Contrast, in Phoenix Valley, although the majority has

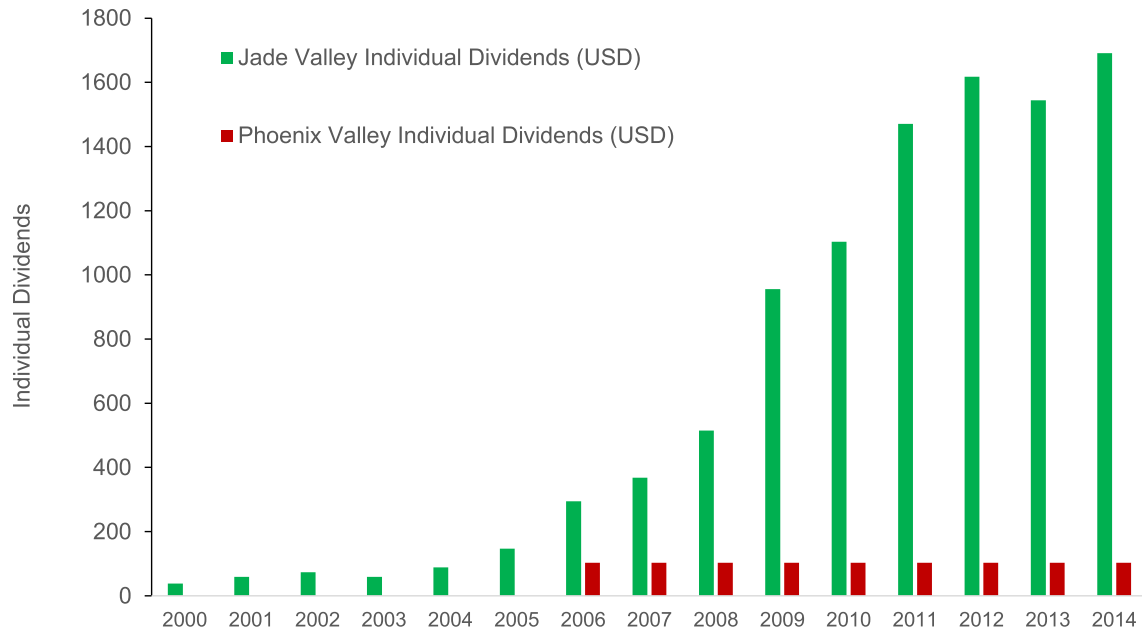


Fig. 6. Individual dividends under two governances of tourism development (2000–2014).

Note: Data obtained through interviews. We were unable to obtain the hard copies of the report for citation.

complaints concerning the quality of education, most children in Phoenix Valley study in national schools that require no tuition fees. Only one household sends their daughter to private school and paid about USD 1470.6 per year to buy commercial insurance. In this valley, the local residents are required to pay endowment insurance for rural cooperative medical services themselves. With the exception of wages, there is no additional welfare for local residents. Thus, when the local people compare their situation with that of their neighbors, they are resentful towards outside investors.

3.4.5. Social capital

3.4.5.1. Kinship. The value of kinship for both valleys is 1, or good; however, there are certain differences. All the residents of Jade Valley are members of four clans. They are relatives and are suitable candidates for collective-choice with a high level of mutual trust and an ability to work together and expand their access to wider institutions. The most powerful clan has controlled the local community committee and the community-owned tourism company. The majority of Phoenix Valley residents were refugees who fled areas of conflict during the 1930s. The indigenous population has been isolated in the mountain for an extended time, without kinship and clan and with a lack of money. They lack information and science knowledge. Although their interrelationships have strengthened through marriage, collective choice is difficult for them because of a lack of trust and a failure to collect money from each household at the beginning of tourism development. The population has underestimated the value of tourism as a resource because of a lack of expertise and the only reason for them accepting such a lease is that there is no need to pay anymore by themselves.

3.4.5.2. Membership of CBT or LOT. According to the data, there is no difference in community membership between the two valleys. Each household in Jade Valley has at least two family members employed by the community-owned company and who receive the opportunity for skills training two to four times per year. Additionally, community members are given the opportunity at least

twice a year to travel all over the country to other famous scenic spots. They are provided with relaxation and enjoyment in addition to a learning experience from others who are involved in tourism management. The residents of Jade Valley also have the right to participate in rules-planning. A majority of the rules for governance are based on group discussion and are improved through practical experience.

In contrast, the outside investor in Phoenix Valley has excluded local people from management; however, the outsider investor allows the indigenous people to take turns in gaining employment from the LOT. The obvious motivation for the local community to lease their valley is to improve employment opportunities and incomes (Judith & Geoffrey, 1993). The LOT Company only requires local, satisfactory employees without skills and commitment. The local people can only fulfill roles of a servile nature and with low remuneration such as security guards and cleaners. Moreover, the company conducts decision making without consulting local people. The company does not disclose detailed accounting statements that relate to local community dividend distribution. Therefore, the local households resist cooperating with rules and resentment between local people and the outside investor is inevitable. This dynamic has a destructive effect on local tourism sustainable development.

3.4.5.3. Capacity training and community participation. The data provide evidence that the CBT in Jade Valley has provided more opportunities for training to improve the overall level of tourism service quality. Moreover, the community member has the right to take part in rules-planning according to their company constitution. Contrastingly, the LOT in Phoenix Valley excluded the indigenous population from the process of decision making and the private investor does not want to invest in capacity building. The two values of capacity training and community participation are on a decline in Phoenix Valley. This phenomenon is also disadvantageous for sustainable development.

3.4.5.4. Additional factors concerning social networks. In addition to internal kinship and membership, tourism culture cannot be

overlooked. Jade Valley has created its own brand culture that possesses a national reputation. A popular story is that 20 of the 36 young people were married as a result of their adventure in Jade Valley. All of them were from Shanghai and, unfortunately, they became lost in the valley. Despite the more concerning nature of their experience with the area, the CBT Company advertises it as Valentine's valley: If your lover is here then you will love each other for ever. The tourism facilities reflect the theme of romance. Moreover, the largest group wedding takes place according to the lunar calendar on July 7 every year, which is also the peak of the tourist season at the Mountain Huangshan area. All these factors have resulted in Jade Valley becoming one of the most successful tourism destinations in China.

An additional factor that positively affects the destination of Jade Valley is the Academy Award-winning movie, "Crouching Tiger Hidden Dragon" that was filmed in the area, swept the continent of North America and shocked Western people. Many tourists visit from the far corners of the world to see the film location, Jade Valley. These intangible assets play a key role in the tourism development of Jade Valley.

With respect to aid, although there is no external organization that provides aid, the Jade Valley maintains effective relationships with professional institutes that assisted them in the design of the new guesthouse village and the tourism facilities; the institutes involved consider it necessary for nature generation.

However, the LOT Company possesses a contract to operate tourism in Phoenix Valley for a limited time of 30 years. The outside investor does not wish to invest without payback in the short term. The only way to attract tourists is to reduce the admission price, which is disadvantageous for the sustainable development of tourism in Phoenix Valley.

3.5. Vulnerability context

Vulnerability is a key concept related to livelihood sustainability. It includes shocks, trends, seasonality, institutions, and tourism external market risks such as terrorism and disease (DFID, 1999; Shen, Hughey, & Simmons, 2008; Morse & Bennett, 2008; Lim & Mansur, 2015). During the case study research period, the American economic subprime mortgage crisis (2007) and the disease of SARS (2003), Avian influenza (2005) and A/H1N1 influenza (2009) occurred. The study demonstrates a slow climb in gate receipts from about USD 0.3 million in 2000 to USD 0.5 million in 2005 because the tourism industry was recovering from the Asian financial crisis and had been struck by SARS. The influenza of 2005 and 2009 seemed to have no negative influence on tourism income.

The related data for 2006 and 2007 for Jade Valley could not be found during field work. There are no account documents for 2006 and 2007 because the main manager of CBT was guilty of corruption. The committee of Jade Valley has re-elected a new manager of their company. The economy ceased to develop during this period. However, not all vulnerabilities are disadvantageous for local household livelihoods and tourism development. For instance, seasonality should be a shock, but with the accumulation of wealth in Jade Valley, it cannot adversely affect local peoples' assets and their choice of livelihood.

In Phoenix Valley, although the vulnerability context is similar to that of Jade Valley, the vulnerabilities seem to exert negative effects on the outside investor only. During the interview, the outside investor complained of fierce competition and attempted to explain the shared benefits to the local people from tourism development. Because the majority of local people are still suffering from poverty, they do require stable revenues from tourism development.

4. Conclusion

Tourism development has increasingly become a policy tool for poverty alleviation in the rural areas of China. With strong support from the central government of China, various governance systems of tourism development have been introduced but however, their success and contribution to poverty alleviation remains little understanding. We assessed the local livelihood improvement in two valleys in the Huangshan Mountain world heritage site, namely the Jade and Phoenix valleys, where two governance systems have been introduced. We assessed local livelihood in terms of natural, physical, human, financial, and social capitals according to 15 indicators under the CBT and LOT governance systems. We found that CBT has resulted in significant increase in annual incomes and dividends compared to that under the LOT. Weighted values of the five capitals for CBT were higher than that for LOT suggesting that local livelihood have improved under the CBT. Therefore, CBT is suitable as a policy tool for tourism development in the rural areas in China.

CBT might not be possible in the remote area, where infrastructures are required at the early stage of tourism development. In such a case, the LOT might be suitable but its decision making process and benefit sharing need to be transparent to all stakeholders. When transparent management system is in place, incomes and dividends for local people should not be fixed as currently practiced. LOT may need to provide incentives for local people to work at their community after completing higher education. Otherwise, LOT might not be sustainable on the long run.

Not only tourism development affect by governance systems, natural disasters or vulnerability can occur any time during the tourism development course. It is important that local community is trained to face the decline of tourists due to natural vulnerabilities such as the outbreak of diseases, earthquakes, and floods. Further research on the assessment of adverse effects of natural vulnerabilities on tourism development would provide useful information for the planning of tourism development and mitigation measures in the rural areas.

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