

Research Article

The Investment Scale and Benefit Analysis of Public Sports Based on Quantitative Analysis

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Abstract: Along with the economic development and the improvement in the material and cultural living standard of the masses, the consumption demand of the sports is on the rise. In order to meet the increasing sports demand of the masses, it is feasible to increase the investment scale of the public sports; however, the resources are limited, especially for our country which is in development stage, the shortage of funds is an undeniable reality. In the existing conditions, the most practical and effective way is to make full use of limited public sport resources and maximize the output; i.e., continuously increase the investment benefit. This study mainly uses the quantitative analysis method to analyze the investment scale and investment benefit of the public sports in China, provide the evidence based on the concrete data and the powerful reference for the public sports investment in China, so as to promote the development of the public sports cause in China.

Keywords: Investment benefit, investment scale, public sports investment, quantitative analysis

INTRODUCTION

The 41st Article of Sports Law of the People's Republic of China stipulates: the people's governments at various levels above the county level shall list the sports expenditure and the funds of the sport capital construction into the financial budget at the corresponding level and the investment plan of the capital construction; and gradually increase the investment in the sports cause along with the development of national economy." This shows that the government is an important subject of the sports investment (Qinghua, 2012). For instance, in 1977, the financial appropriation for the expenditure of the national sports cause was 3.4 Billion; in 2000, the financial appropriation for the State General Administration of Sports has reached 5 Billion Yuan. The government's investment in sports is related to the public nature of the sports (Liu and Liu, 2012; Fabrice and Toni, 2008).

The continuously-increasing investment in the social public sports and the vigorous development of the social welfare sports cause is beneficial to improve the sports consumption structure and level of the social members, promote the sound development of the sports industry and sports market and increase the speed and quality of the national economic growth (Ruixue and Lina, 2012). In fact, the sports development and the national economic development are influenced and promoted each other. The development of the public sports can meet the demand for sporting life of the masses; which accords with the purpose of the economic development in our country (Toni and Tahlia, 2008). Meanwhile, along with the continuous

development of the public sports, the China's market environment becomes more favorable and provides the broad market platform for the development of the sports economy. In this way, the sustainable and sound development of China's social economy can be promoted (Jacquie and Maria, 2008). Therefore, through the increasing investment in the public sports, we can obtain the economic benefit and social benefit simultaneously, promote the coordinated development of the sports cause and social economy, constantly increase the level of social productivity, improve the overall national strength and improve the material and cultural living standard of all members of society and the research level of the management system reform of institutions in China; certainly, this is the common needs of the society to maintain the social survival and development beyond question (Huang, 2010).

However, how about the benefit from the investment of the government financial funds in the public sports? The scale of the government finance investment in the public sports can't be simply measured by the economic benefit, but considered from the social benefit; therefore, this chapter mainly takes the data in some city as the example to make the quantitative analysis on the scale and benefit from the public sports which are invested by the government finance (He, 2011).

THE ANALYSIS ON THE INVESTMENT SCALE OF THE PUBLIC SPORTS

Generally speaking, there are two methods which are used to analyze the scale of the government expenditure in some industry. One is the absolute scale

Table 1: The scale of the county government investment in the public sports from 1997 to 2011

Year	The total amount of the public sports expenditure (Million Yuan)	The total amount of the financial expenditure (Million Yuan)	The proportion of the public sports expenditure (%)
1997	5.09	60.98	8.35
1998	6.08	68.66	8.86
1999	4.10	79.07	5.19
2000	4.92	84.82	5.80
2001	5.20	99.52	5.23
2002	5.57	98.97	5.63
2003	6.09	114.58	5.32
2004	5.92	137.20	4.32
2005	4.93	162.43	3.04
2006	5.68	197.44	2.88
2007	5.96	223.70	2.66
2008	6.28	280.12	2.24
2009	6.87	336.46	2.04
2010	7.44	368.77	2.02
2011	7.42	484.40	1.53

of the government input in this industry and can be represented by the absolute amount that the government inputs in this industry in the same year (Feng, 2007). The other is the relative scale of the government input in this industry and can be represented by the proportion of the absolute amount that the government inputs in this industry to the total amount of the financial expenditure in the current year. In this section, the two aforementioned methods are intended to use in the analysis on the investment scale of the public sports. When the absolute scale of the government investment in the public sports is analyzed, the index of the absolute amount that the government finance invests in the public sports in the current year is used (Xu and Ke, 2010). When the relative scale of the government investment in the public sports is analyzed, the proportion of the absolute amount that the government finance invests in the public sports to the total amount of the financial expenditure in the current year is used to show the scale of the government expenditure in this industry:

- The analysis on the total investment scale of the public sports

C (the proportion of the sports expenditure) =

$$\frac{\text{the total amount of the public sports expenditure}}{\text{the total amount of the financial expenditure}} \times 100\% \quad (1)$$

This section mainly analyzes the related situation that the government in some county has invested in the public sports since the reform and opening-up policy. Due to the limitation of the data collection, in this section, the data from 1997 to 2011 are used to analyze the financial expenditure on the public sports.

From Table 1 and Fig. 1, it can be seen that the growth of the investment scale that the county government has invested in the public sports since 1997 can be divided into two stages. Before 1999, the investment scale that the county government has invested in the public sports has been on the rise at a high speed based on a very high absolute amount. Since

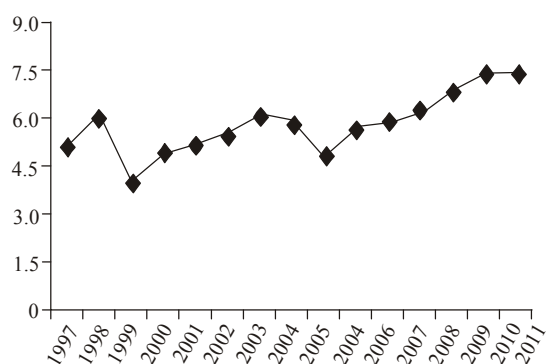


Fig. 1: The public sports expenditure of the county government from 1997 to 2011

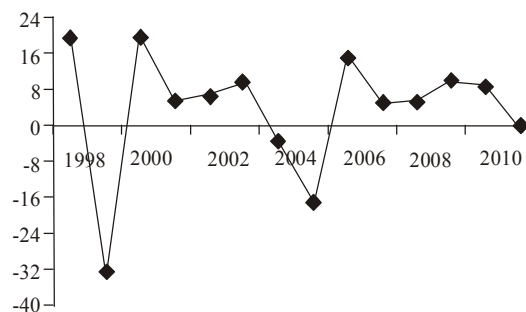


Fig. 2: The period-on-period growth situation of the county government expenditure on the public sports from 1997 to 2011

2000, the investment scale that the county government has invested in the public sports has dropped suddenly, but the overall trend was still on the rise, just the increment was slower. After 2008, China implemented the proactive fiscal policy and invested lost of funds from the national bonds in the public investment field, so that the financial investment in the public sports rose sharply. The total investment amount of the public sports and the corresponding period-on-period growth situation since 1997 is shown in Table 2 and Fig. 2. It is not hard to see that the country government investment

Table 2: The period-on-period growth situation of the county government expenditure on the public sports from 1997 to 2011

Year	The total amount of the public sports expenditure (Million Yuan)	The period-on-period growth rate (%)
1997	5.09	
1998	6.08	19.45
1999	4.10	-32.57
2000	4.92	20.00
2001	5.20	5.69
2002	5.57	7.12
2003	6.09	9.34
2004	5.92	-2.71
2005	4.93	-16.72
2006	5.68	15.21
2007	5.96	4.93
2008	6.28	5.37
2009	6.87	9.40
2010	7.44	8.30
2011	7.42	-0.27

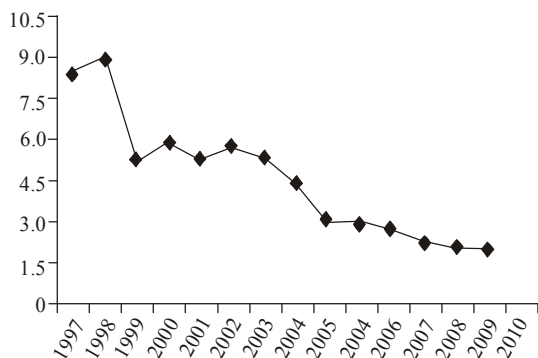


Fig. 3: The proportion of the public sports investment from the county government finance to the financial expenditure from 1997 to 2010

in the public sports has increased considerably from 1997 to 1999; however, from 2000, the country government investment in the public sports dropped substantially and the fluctuation in each year was bigger; the growth is sometimes fast and sometimes slow. Among which, the period-on-period growth rate in 1999 was the minimum and up to 32.57%; but in 2006, the growth rate reached to the current maximum in the 21st century. This shows that the county government begins to increase the investment in the public sports:

$$V_n (\text{Period-on-period growth rate}) = \frac{\text{the total amount of the public sports expenditure in the } n\text{-th year} - \text{the total amount of the public sports expenditure in the } (n-1)\text{-th year}}{\text{the total amount of the public sports expenditure in the } (n-1)\text{-th year}} \times 100\% \quad (2)$$

- The analysis on the proportion of the public sports investment to the financial expenditure

In order to reflect the share of the public sports investment to the financial expenditure, we use the investment expenditure of the public sports to analyze

the proportion of it to the financial expenditure. From Table 1 and Fig. 3, it can be seen that the share of the public sports investment to the financial expenditure of the county government has been on higher side before 2005; however, from 2005, the share of the public sports investment to the financial expenditure dropped year by year; it is thus clear that the financial expenditure has non-sports preference.

THE ANALYSIS ON THE INVESTMENT BENEFIT OF THE PUBLIC SPORTS

There are many methods to evaluate the investment benefit of the public sports; such as the combination of the qualitative and quantitative analysis, the combination of the unity and technicality, the combination of the advance evaluation analysis and post-analysis evaluation, the combination of the periodic evaluation and regular evaluation. The combination of the qualitative and quantitative analysis is used in this study.

- **Economic benefit:** According to the influence degree of financial public sports funds on each component of the sports economy income, the net operating income of the sports venues is mainly selected to make an analysis in this study. The public sports investment from the government can't be simply analyzed from the economic benefit; therefore, the quantitative analysis in this section is to use the relation between the public sports investment from the government and the operating income of the sports venues to make the empirical analysis by stages.
 - **The change of the net operating income of the sports venues:** From Table 3 and Fig. 4, it can be seen that the net operating income of the sports venues in this county has been in upward trend from 1997 to 2007 and the average growth rate was 10.88%. Especially in 2004, the net operating income of the sports venues in this county increased by 49.76% in comparison with the previous year and reached the maximal growth rate since 1997, so that the net operating income of the sports venues in this county exceeded one hundred thousand Yuan. In 2007, the net operating income of the sports venues in this county reached the maximum -167,778 Yuan. In 2008, the net operating income of the sports venues showed the negative growth, reached the minimum throughout the historical record in 2009 and started to increase from 2010; however, in comparison with the consumption and income of the residents, the growth is too slow.
 - **The change of the public sports investment from the county government:** From Table 3 and Fig. 4, it can be seen that since 1997, especially the 1990s,

Table 3: The situation of the net operating income of the sports venues and the government financial expenditure on the sports from 1995 to 2011

Year	The net operating income of the sports venues (Yuan)	The total amount of the public sports expenditure (Million Yuan)	The growth rate of the net operating income of the sports venues	The growth rate of the public sports investment
1995	35546	3.80		
1996	38673	4.93	8.80	29.74
1997	41066	5.09	6.19	3.14
1998	44044	6.08	7.25	19.45
1999	50965	4.10	15.71	-32.57
2000	53891	4.92	5.74	20.00
2001	56028	5.20	3.97	5.69
2002	60359	5.57	7.73	7.12
2003	70224	6.09	16.34	9.34
2004	105167	5.92	49.76	-2.71
2005	123437	4.93	17.37	-16.72
2006	141901	5.68	14.96	15.21
2007	167778	5.96	18.24	4.93
2008	165248	6.28	-1.51	5.37
2009	159658	6.87	-3.38	9.40
2010	161780	7.44	1.33	8.30
2011	167619	7.42	3.61	-0.27

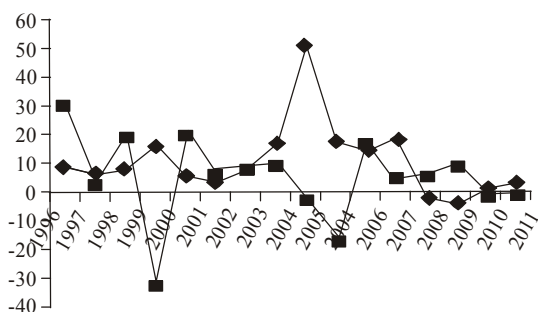


Fig. 4: The growth rate situation of the public sports investment from the county government and the net operating income of the sports venues from 1996 to 2011

the fluctuation of the increase and decrease of the public sports investment from the county government is quite large. In 1996, the growth rate of the public sports investment from county government was up to 384.79%; the data is so massive; it is thus clear that the county government begins to realize the importance of public sports and practically strengthen the investment in the public sports. However, since 2006, the growth rate of the public sports investment from county government has not been very large, especially in 2011, the negative growth appeared. The sports cause in China has entered into a new stage of development and the county government shall increase the investment in the public sports and bring the government's financial strength into play, so as to propel the public sports to a new level and help the masses to further improve the sports attainments:

$$W_n \text{ (the growth rate of the net operating income of the sports venues)} = \frac{\text{the income in the } n\text{-th year} - \text{the income in the } (n-1)\text{-th year}}{\text{the income in the } (n-1)\text{-th year}} \times 100\% \quad (3)$$

$$T_n \text{ (the growth rate of the public sports investment)} = \frac{\text{the investment in the } n\text{-th year} - \text{the investment in the } (n-1)\text{-th year}}{\text{the investment in the } (n-1)\text{-th year}} \times 100\% \quad (4)$$

- The influence that the county government investment in the public sports has on the net operating income of the sports venues. The government investment in the public sports has a great influence on the net operating income of the sports venues. It can be seen from Table 3 and Fig. 4 that the growth rate of the public sports investment from the county government since 1997 has a strong correlation with the growth rate of the net operating income of the sports venues.

The aforementioned data are the examples that aim at the earnings of the sports venues and used to discuss the investment benefit of the public sports. However, they are only a small portion of the economic benefit of the sports investment. The economic benefit of the sports investment includes two aspects- the microscopic economic benefit and macroscopic economic benefit. The microscopic economic benefit of the sports investment is to make an investigation from the perspective of the sports enterprises (sports organizations) and operators (individuals). For the sports enterprises and the operators that take the benefit acquisition as the target, the microscopic economic benefit of the sports investment reflects in comparison between the operating income and cost of the sports. In the process of organizing the sports activities and providing the sports products and service, the sports enterprises will spend money, manpower and material resources (cost, expenses); meanwhile, based on providing the sports products and services and meeting the sports demand of the sports consumers, the sports enterprises will obtain the corresponding returns. The macroscopic economic benefit of the sports investment means to start from the whole of the national economy

and investigate the contributions of some sports investment to the entire national economy: The internal benefit and internal expense of the this sports investment needs to be considered and the external effect of the sports investment (i.e., the external expense and external benefit of the sports investment) also needs to be considered-the external expense refers to the price that the society pays for the sports investment, but this part is unnecessarily paid in the sports investment. The external benefit refers to the part that the sports investment contributes to the society but can't obtained the benefit in itself; the external effect of the sports investment is reflected in other departments of the national economy; for instance, the investment in the construction of the sports venues will certainly involve with the mining, metallurgy, iron and steel, cement, brick-making, the labor insurance supplies and other service industries; the investment in holding the sports events can promote the development of the local tourism, catering and entertainment.

- **Social benefit:** Here, the author will talk about the social benefit of the public sports investment. The social benefit of the sports investment refers to the contributions that the sports investment makes to the social development and social justice; including improving the sports level, strengthening the national physique, enriching the social culture and life, constructing the spiritual civilization and promoting the employment.
- **Promote the employment:** The sports industry is a service-oriented comprehensive industry and characterized by the high capacity of the labor force. It can provide lots of job opportunities with different types of work for the society in different departments from the construction, transportation, food, hotels and so on. According to the statistics, in 2008, the job opportunities that were provided by the sports industry in China have reached 300,000. Chinese economists pointed out that the national unemployment rate in China dropped by 5% and the numbers of the unemployed dropped by 156,000 from October, 2007 to October, 2008 through hosting the Olympic Games in 2008.
- **Improve the national physical fitness:** Sports can strengthen the physical fitness and promote the physical and psychological health; this is the well-known common sense. Sports also can prevent diseases and reduce the social health-care burden. From the perspective of the labor force, sports can improve the quality of the labor force, reduce the absence rate and increase labor productivity.
- **The influence on the social psychology:** The social psychological refers to the general psychological phenomenon of the social groups, or the general psychological phenomenon that the people show in the social situation. The influence

that the sports investment has on the social psychology can strengthen the social cohesion, improve the people's sense of pride and the civilized norms, as well as the confidence in the future; also can enhance the mutual understanding among people, improve the interpersonal relationship, enhance the friendship, strengthen the unity, promote the social stability, improve the social morality and build the spiritual civilization, etc; however, the influence can cause some problems at the same time; for instance, the riot of the football fans may cause the public security problem.

- Meet the demands of the sports consumption, meet the requirements of the people's fitness, leisure and recreation, enrich the peoples' culture and life and improve the people's living quality.
As a kind of social activity that the masses take active part in, sports not only can strengthen the people's physique, but also can cultivate the people's strong character, the challenging willpower and excellent character of transcendental ego and the risk-taking courage; meanwhile, sports can cultivate the people's team spirits, competitive consciousness and concept of fairness.
- **Promote the national and regional economic development:** Economics tells us that the investment has the multiplier effect on the growth of the national economy. The reason why the increase of investment has the multiplier effect is that all economic sectors are correlated. An investment in some sector will not only increase the income of the section, but also will cause chain reaction in all sectors of the national economy and increase the input and output of the related sectors accordingly and promote the continuous growth of the national income finally. The sports industry is an industry with strong correlation; in 42 sectors of American economic structure, the correlation intensity of the sports industry is ranked in the 8th. The sports activities can't be hold without the sports equipment, sports venues, sports wear, etc. Therefore, the development of the relevant industries in China, including the machinery manufacturing and processing industry, the building construction materials industry, clothing design and manufacturing industry, will be driven; meanwhile, the activities, including the physical fitness, sports events and sports leisure and recreation, will develop accordingly and the development of the business, tourism, finance, service and other industries will be driven accordingly. It is thus clear that the sports investment has stronger penetration and diffusion effect due to the correlation of the sports industry and plays a very strong promotion role in the regional and national economic development.

According to the related data from the National Bureau of Statistics, GDP in Beijing increased 2~4 % each year due to the host of 2008 Olympic Games and the growth rate of China's economy also increased by 0.3 ~ 0.4% each year.

- **Promote the social civilization and progress:** Sports are not only symbol of social development and the progress of human civilization, but also the important embodiment of the comprehensive national strength and the social civilization degree in a country. However, the sports investment is an inevitable approach to promote the sports development.
- **Environmental benefit:** Environment refers to the aggregate of the natural factors which affect the human development and experience the artificial transformation, including the atmosphere, ocean, land, mineral resources, forest, grassland, wild animals and natural relics, nature reserves, scenic spots, cities and villages. The environment benefit of the sports investment refers to the contributions that are made by the sports investment to the environmental protection and the ecological equilibrium, including the pollution control, the regional environmental quality, the use of natural resources, the regional ecological equilibrium, etc. Take the host of the large-scale sports games as an example, the facilities construction in the sports venues, the use and abandonment of the building materials, the aquatic project, the domestic garbage and noises will have an impact on the environment. In order to build the golf course, a host country of the Olympic Games has ever cut down a large stretch of forests and occupied lots of farmlands and green lands and caused the serious consequences. Therefore, it is essential to pay attention to the environmental protection and resource conservation during the sports investment. When the sports venues are constructed, it is essential to carefully choose the location of the new sports venues, keep away from the water source, nature reserves and wildlife sanctuary and try to avoid using unexploited land. Meanwhile, it is essential to use the temporary buildings. Moreover, the permanent buildings shall be designed based on the concept of the long-term use and made by the environmentally-friendly and renewable materials; so as to save energy and reduce pollution. In addition, it is also essential to pay attention to the protection of the natural landscape. In the 2008 Olympic Games, the presentation of "Green Olympics" just reflected that the organization committee attached the importance to the environmental benefit and the sustainable development.

The benefit of the public sports investment is the combination of the benefits in three aspects, the Outline of Development for Sports Industry (1995-2010) pointed out that the guiding ideology of the sports industry development is to establish the tenet of serving the people, combine the social benefit with the economic benefit and put the social effect in the first place.

CONCLUSION

- The application fields of quantitative analysis is very extensive; in this study, the quantitative analysis is applied into the analysis on the investment scale and benefit of the public sports; the scale of the public sports investment from the county government and the corresponding benefit is effectively analyzed and the effective information in the aspect of the public sports investment is extracted in this study; the quantitative analysis is feasible.
- In our country, the activity of the public sports investment is blind in a long term due to the state system and concept; and some problems appeared, including the waste of the idle resources and the low investment benefit. Analyzing the influence of the sports investment benefit, exploring the way of improving the sports investment benefit and the transition from the extensive growth mode to the intensive growth mode is an urgent task that we have to face. The sports investment benefit is restricted and affected by various factors; the decision of the sports investment, the scientific degree of the sports investment management, the talent quality of the sports management and the degree of the technical innovation will affect the sports investment benefit. We shall set about seeking the way to improve the sports investment benefit from many aspects.
- The quantitative analysis is a widely-used and knowledge-based approach which is used to make concrete analysis and research. In respect of the investment benefit, the study shows the operating data of the sports venues and has a certain restriction. Therefore, all the efforts in this study are only a very tiny part in the investment scale and benefit research of the public sports; many aspects still need to be further improved; and a lot of work in many aspects are still worthy of study.

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