

The Government's Role in China's Olympic Glory

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Abstract

This paper examines the determinants of China's Olympic success by drawing on provincial-level data. We find that it is government spending on sports, rather than per capita income, that has the greatest impact on this success. Our findings suggest that government involvement is still the most fundamental feature of sports organization in China.

JEL Classification: D2, H4, H7, O1, P5

1 Introduction

At the twenty-eighth Olympic Games in Athens, China impressed the world by winning 32 gold and 63 medals overall. For the first time, China superseded Russia to rank second in the gold medal table. Even more strikingly, China not only dominated table tennis, badminton, and diving, which have been its traditional strengths, but also won gold medals in tennis and hurdles, which had been previously unimaginable. The extraordinary performance of the Chinese athletes provoked great excitement in China in the summer of 2004.

This exceptional performance also caused a heated debate about the nature of such success. Some argued that the performance of Chinese athletes reflects the great economic achievement of China in the past two decades (*Washington Post*, August 28, 2004; Jiang and Xu, 2005), and that economic development has meant that more resources can be devoted to sports, which has in turn entailed the development of more Olympic-caliber athletes. The argument that the number of medals increases with per capita income is consistent with the findings of a cross-country study by Bernard and Busse (2000 and 2004). However, others have posited that the performance of Chinese athletes is a result of the huge resources that have been expended by the government, which may not be directly linked to per capita income (*San Francisco Chronicle*, August 29, 2004). Some provinces, such as Liaoning, which have a very low per capita income, have won more medals than their richer counterparts. Nevertheless, despite this debate, little is known empirically about the factors that affect Olympic success in China.

This paper examines the role of government in China's Olympic glory. Following Bernard and Busse (2000 and 2004), we examine whether the number of gold medal winners in a province is correlated with its population and per capita income by estimating an Olympic gold medal winner production function using provincial-level data from China. However, we diverge from their study by including a measure of government spending on sports to examine whether the improvement in per capita income or the increase in government spending has influenced Olympic success in a given Chinese province.¹ We find that

¹Although Bernard and Busse (2000 and 2004) use a dummy for planned economies, we examine the meaning of a planned economy to determine Olympic success.

per capita government spending on sports is a very important predictor of the number of gold medal winners. Moreover, when we include per capita government spending on sports in a province, we find that the per capita income of a province has no independent effect on the production of Olympic gold medal winners.² These results suggest that it is government spending on sports, rather than the living standards of ordinary Chinese people, that affects Olympic success.

Our paper has some important policy implications. Although market mechanisms have been introduced into the sports industry in China, the most important part of the industry—producing Olympic caliber athletes—is still owned and operated by the state. State ownership and production may well result in resource misallocation. For example, government officials may allocate government resources for political reasons, rather than for the welfare of its people. In this situation, a poor province that has poor public health and a low standard of living may have an incentive to allocate a lot of resources to sports to win many Olympic medals. Although Chinese people are still celebrating the glory of the last Olympic Games and will probably perform even better in the next games in Beijing, they should not forget the ultimate goal of sports that was stated by Mao Zedong in 1952, “Let us promote sports so that our people become healthier.”

The rest of the paper is organized as follows. Section 2 provides some background information to the Olympic movement in China. Section 3 describes the data and the simple correlation tests. Section 4 empirically tests the hypothesis and reports the results, and Section 5 concludes.

2 Background

China has been following the *whole-nation mechanism* in its administration of sport, which is a highly centralized, government-funded assembly-line system that was set up in the 1950s to produce high-caliber athletes (Wu, 1990). The shift from a planned economy to a market

²This differs from findings of Jiang and Xu (2005). They examine the determinants of medal performance in the Chinese National Games, and find that the share of total government spending does not have a positive effect on the medal performance. Our study differs from theirs in two key aspects. First, we examine the medal performance for the Olympic Games rather than the National Games. Second, we use the government spending on sports in the analysis, while they use the total government spending.

economy has not seen a corresponding change in sports administration: China's production of athletes is still a model of a state-run system. Under the well-operated recruitment mechanism, gifted children (usually under the age of nine) are picked by talent scouts from kindergartens and elementary schools and sent to full-time sports schools for systematic training.³ Only a selected few who survive the fierce competition make their way upward in the sports hierarchy from one level of accreditation to the next, where year-round intensive training and stronger competition await. For the best athletes, the journey ends with a place on the national team, which is selected from provincial teams and assembled in preparation for major international competitions, especially the Olympics.

From 1984 onward when China fully rejoined the Olympic Games, it started to tilt its sports policy deliberately toward Olympic events, a policy that is known as the *Gold Strategy* (Ren, 1999), to gain prominence at international level. Training bases for the national team were established for targeted Olympic sports, and the National Sports Commission (now the Sport Bureau), which is the highest body in sports administration, has been investing heavily in accommodating and training the national team. It is said that the Chinese government will spend 200 million USD to prepare its athletes for the 2008 Beijing Olympics (*Newsweek*, August 16, 2004).

An Olympic tryout is held one or two years before each Olympic Games, in which athletes from the provinces are selected for the national team. The Olympic tryouts are highly competitive amongst the provinces, which usually try their best to get more athletes on the national team than their counterparts.⁴ Being a part of the national team not only means that athletes receive better training, but is also the only way for them to bring Olympic glory home.

Other than the pride and honor that Olympic champions bring to their hometown,⁵

³In particular, those who are deemed to be exceptionally promising are deprived of formal academic

local governments are motivated in many ways to promote their athletes to try and reach the Olympics. Because the Chinese central government has been eager for Olympic success, which not only bolsters the image of the nation but also intensifies the national awareness of its people,⁶ winning Olympic gold medals has become a political goal for provincial leaders. Furthermore, the development of sport, and especially the development of Olympic gold athletes, is one of the criteria by which local officials are evaluated (*China Youth Daily*, August 20, 2004).⁷ Second, a province can expect more funds from the central government if its athletes perform well in the Games. Thus, for both political and financial reasons, local government officials have a strong incentive to invest in the development of high-caliber athletes.

To get more local athletes selected to the national team to win Olympic medals, local governments invest in sports facilities and personnel even when they have a huge fiscal deficit. As has been shown by previous literature (Bernard and Busse, 2000 and 2004; Johnson and Ali, 2000), facilities and personnel are critical for the nurturing of elite athletes. Some provinces also spend money on “buying” athletes from other provinces, and many provinces provide pecuniary rewards for Olympic medal winners, especially gold medal winners.⁸

3 Data

The data that is used in this paper come from two main sources: Olympic medal/athlete counts and socioeconomic indicators. We only study the six Summer Olympics from 1984 to 2004 in which China participated. We obtained the name lists of medal winners from the official website of the General Administration of Sport (www.sport.gov.cn), and then traced the home province of each athlete by searching on Google and other search engines. We then calculated the number of medals and medal winners for each of China’s 30 provinces.⁹ In

by the provincial government.

⁶See Li Qihong, “How heavy are the Olympic gold medals? - The nationalistic significance of Chinese sports development”, *Ming Pao Monthly*, August, 1996. Similarly, the Soviet bloc nations had been funneling money into sport to “showcase the virtues of socialism” (*Washington Post*, August 28, 2004).

⁷See Li and Zhou (2005) and Chen, Li and Zhou (2005) for more information about the personnel control and mobility of Chinese government officials.

⁸See *Washington Post*, August 28, 2004 and *Sanlian Life Weekly* (*Sanlian Shenghuo Zhoukan*), August 30, 2004.

⁹We exclude Chongqing, which was recently separated from Sichuan.

total, we have 180 province-year observations. The socioeconomic measures are from various issues of the Statistical Yearbook of China and the Local Fiscal Statistical Yearbook. Due to data constraints, we only have data on government fiscal spending on sports for four years (the data for 1984 and 1992 are not available).

In this paper, we concentrate on gold medals and gold medal winning athletes for two reasons. First, Chinese people are extremely enthusiastic about gold medals, and care much less about silver and bronze winners. This is reflected by China's medal tallies. In the six Olympics, China won 286 medals in total, 40 percent of which were gold medals. The percentage of gold medals in the two most recent Olympics was as high as 50 percent. Second, because little attention is paid to silver and bronze winners, we were not able to find out the hometowns of all of athletes who had won Olympic silver or bronze in team events such as women's basketball, soccer, and handball.

There are three ways to count the gold medal winners. Our first measure, gold medal winners, includes every athlete who has won a gold medal in an Olympic event. An athlete who has won more than one gold medal will be counted as many times as the number of gold medals that they have won. The second measure, gold medal winners in non-team events, counts only the gold medals that have been won in individual or pair events, but not in team (more than two athletes) events. The last measure, gold medal count, includes individual or pair events, and gives a weight of 1 to individual winners and a weight of 0.5 to each winner in a pair event. Although we use gold medal winners as our main measure of the Olympic success of a province, the three measures are actually highly correlated with each other (correlations larger than 0.9). The three measures at the national level are summarized in Table 1. Table 1 shows that China has been performing better over time, except for a temporary setback in 1988.¹⁰

Table 2 summarizes the other variables that are used in this paper. Note that the per capita government spending on sports is a rather small number compared with the per capita income. The per capita government spending of a province is on average 5 *yuan*,

¹⁰This was due to the unexpected success of China in the 1984 Olympic Games, which were boycotted by the Soviet Union and other socialist nations.

which is only 0.04 percent of the per capita provincial income. However, a comparison of the averages may be misleading here. Table 3 shows that per capita government spending on sports is highly correlated with all three gold counts, with all three correlations being larger than 0.3 and highly significant. In contrast, per capita income is not significantly correlated with any of the three gold counts, and the correlations are negative. These simple correlation tests suggest that it is government spending but not per capita income that has the most significant impact on China's Olympic success. In the next section, we will employ multiple regressions to check whether the same results hold.

4 Empirical Analysis

Following Bernard and Busse (2000 and 2004), we estimate a gold winner production function with the number of gold medal winners as the dependent variable, and log population, log per capita income, and year dummies as independent variables. However, we diverge from the study of Bernard and Busse (2000 and 2004), who use a central-planning country dummy to capture the effect of the forced mobilization of resources by the government,¹¹ in that we use the direct input of government resources in the form of local government spending on sport to test our hypothesis that a province's Olympic success increases with the amount that its government spends on sports development. As some provinces had no Olympic gold medal winners in some of the Olympic Games, we employ the tobit model.

We start with a simple specification that uses the log population and year dummies as the only independent variables. This simple regression (column 1 in Table 4) shows that the number of gold medal winners in a province increases with its population. The coefficient that pertains to log population is positive and significant at the one percent level. In column 2, we add the log per capita income as an additional independent variable. The inclusion of a measure of provincial income substantially improves the fit and the log likelihood. Both the log population and log per capita income are positive and significant at the one percent level. Interestingly, the magnitude of the coefficient of the log population more than triples

¹¹Likewise, Shughart and Tollison (1993) argue that China's improved performance at the Barcelona Olympics is attributable to its adoption of a Soviet-style government sponsorship of sports.

after the level of per capita income is controlled. These results seem to support the view that both population and economic resources are determinants of a province's Olympic success.

In model 3, we include the log per capita government spending on sports as an independent variable. The regression shows that government spending has a positive impact on a province's Olympic performance. The government spending on sports variable is positive and significant at the one percent level. Interestingly, the coefficient of the log per capita income becomes insignificant with the addition of this new variable. This result suggests that in China, government spending on sports is more important than per capita income in determining Olympic performance.

One concern about the government spending variable is that it is a flow variable. The stock variables of facilities, personnel, and high-caliber athletes may also be important in determining Olympic success. More importantly, if this flow variable is correlated with the omitted stock variables then the flow variable will become endogenous. To deal with this concern, we follow Bernard and Busse (2000 and 2004) and include the lagged medal total as an independent variable to capture the effect of the stock variables. Unsurprisingly, the coefficient of the lagged medal total is positive and highly significant, which suggests that past performance is a good predictor of current performance. The coefficients of population and government spending remain highly significant with the addition of this new variable.

To check whether these results are sensitive to the dependent variable, we carry out estimations using other dependent variables, including gold medal winners in non-team events, gold medal count, medal winners in non-team events, and total medal count. The regression results using these alternative dependent variables show an even stronger positive effect of government spending on Olympic success. As these results are similar, we do not report them in the tables.

5 Conclusion

In this paper, we employ a unique dataset to examine the determinants of China's Olympic success. We find that government spending on sports, rather than per capita income, has

the most significant effect on Olympic success. Our findings suggest that government involvement is still the fundamental feature of sports organization in China. Although the government can easily mobilize resources and may even be efficient in its production of Olympic athletes, it may also have an incentive to misallocate resources.

Reference

Bernard, Andrew B., and Meghan R. Busse, "Who Wins the Olympic Games: Economic Development and Medal Totals," National Bureau of Economic Research working paper no. 7998 (2000).

Bernard, Andrew B., and Meghan R. Busse, "Who Wins the Olympic Games: Economic Resources and Medal Totals," *The Review of Economics and Statistics*, 86 (February 2004), 413-417.

Jiang, Minghua and Lixin Colin Xu, "Medals in Transition: Explaining Medal Performance and Inequality of Chinese Provinces." *Journal of Comparative Economics* 33, 158-172.

Johnson, Daniel K. N., and Ayfer Ali, "Coming to Play or Coming to Win: Participation and Success at the Olympic Games," Wellesley College mimeo (2000).

Li, Hongbin and Li-An Zhou, "Political turnover and economic performance: the incentive role of personnel control in China," *Journal of Public Economics* 89(9-10), 2005, 1743-1762.

Chen, Ye, Hongbin Li and Li-An Zhou, "Relative Performance Evaluation and the Turnover of Provincial Leaders in China," *Economics Letters* 88(3), 2005, 421-425.

Ren, Hai, "China and the Olympic Movement," (pp. 202-213), in James Riordan and Robin Jones (eds.), *Sport and Physical Education in China* (London; New York : E & FN Spon, 1999).

Shughart, William F., and Robert D. Tollison, "Going for the Gold: Property Rights and Athletic Effort in Transitional Economies," *Kyklos* 46:2 (1993), 263-272.

Wu, Zhongyuan, "Development of Competitive Sports," (pp. 107-122), in Howard G. Knuttgen, Qiwei Ma, Zhongyuan Wu (eds.), *Sport in China* (Champaign, Ill.: Human Kinetics Publishers, 1990).

Table 1: Gold Medals and Gold Medal Winning Athletes by Year

| Year | Gold medal winners | Gold medal winners in non-team events | Gold medal count |
|------|--------------------|--|------------------|
| 1984 | 26 | 14 | 15 |
| 1988 | 6 | 6 | 5 |
| 1992 | 18 | 18 | 16 |
| 1996 | 19 | 19 | 16 |
| 2000 | 38 | 34 | 28 |
| 2004 | 53 | 40 | 32 |

Note: Gold medal winners include all of the athletes who have won a gold medal in any Olympic event. An athlete who has won more than one gold medal is counted as many times as the number of gold medals that he/she has won in an Olympic Games. Gold medal winners in non-team events includes only the gold medals that have been won in individual or pair events, but not in team (more than two athletes) events. Gold medal count includes only individual and pair events, and gives a weight of 1 to individual winners and a weight of 0.5 to each winner in a pair event.

Table 3: Correlations of Gold Medals and Gold Medal Winning Athletes with Independent Variables

| | Gold medal winners | Gold medal winners in non-team events | Gold medal count |
|--|--------------------------|---------------------------------------|--------------------------|
| Log population | 0.3336*** (<0.01) | 0.3052*** (<0.01) | 0.3338*** (<0.01) |
| Log per capita income | -0.0476 (0.53) | -0.0139 (0.85) | -0.0307 (0.68) |
| Log per capita government spending on sports | 0.3121*** (<0.01) | 0.3622*** (<0.01) | 0.3110*** (<0.01) |

Note: The number of observations is 119; the p-value are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Tobit Estimation of the Olympic Gold Medal Winner Production Function of China's Provinces

| Dependent Variable: Gold medal winners | | | | |
|--|--------------------|--------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) |
| Log population | 1.661*** (4.83) | 5.894*** (6.26) | 4.334*** (3.92) | 3.509*** (3.39) |
| Log per capita income | | 3.540*** (5.33) | 1.018 (1.01) | 0.902 (0.98) |
| Log per capita government spending on sports | | | 2.167*** (3.23) | 1.760*** (2.82) |
| Lagged gold medal winners | | | | 0.548*** (3.22) |
| Year dummies | Yes | Yes | Yes | Yes |
| Pseudo R ² | 0.10 | 0.17 | 0.21 | 0.24 |
| LR Chi-squared | 49.65*** | 81.94*** | 72.74*** | 82.03*** |
| Observations | 179 | 179 | 120 | 119 |

Note: The absolute t-statistics are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.