# PREDICTING THE PERFORMANCE OF CHINA IN THE BEIJING OLYMPIC GAMES 2008

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## INTRODUCTION

This paper is concerned with predicting the performance of China when it hosts the 2008 Olympic Games in Beijing. China has a relatively recent history as a member of the Olympic family as demonstrated by the fact that it first took part in the summer Olympic Games in Los Angeles 1984. China quickly announced its arrival on the global sporting scene in 1984 by winning 15 gold medals (32 medals in total) and finishing in fourth place in the medals' table. It might be argued that this was an artificially impressive performance as the 1984 Olympic Games were blighted by an Eastern bloc boycott which had the effect of reducing competition such that medals were less difficult to win than under normal circumstances. Perhaps not surprisingly, in Seoul 1988 China did not perform as well as in Los Angeles winning five gold medals (28 medals in total) and finishing in seventh place.

Since 1992 China has won at least 50 medals in each edition of the summer Olympic Games and the number of gold medals won between 1992 and 2004 has doubled from 16 to 32. In the same period, China's final medals table ranking has improved from fourth place to second place. Furthermore China has also performed positively on two other indicators of Olympic sporting success. First, China's 'market share', a standardised measure of the totality of achievement in sport events (De Bosscher et al) has increased from 5.2% to 7.9% during a period in which the number of events contested has grown from 221 in 1984 to 301 in 2004. Second, China has increased the number of sports / disciplines in which it has won medals from 10 in 1984 to 20 in 2004. This ability to develop medal winning capability across such a wide range of sports and disciplines is particularly noteworthy and highlights China as a nation pursuing a strategy of diversity rather than focus. One clear trend which is emerging from China's performance in the summer Olympic Games is that it has steadily narrowed the gap between itself and the first placed nation in terms of gold medals won as shown in Table 1.

*Table 1: How China has narrowed the gap.*

| Year | China Gold Medals | First Placed Nation Gold Medals | Variance |
|------|------|------|------|
| 1984 | 15 | 83 | -68 |
| 1988 | 5 | 55 | -50 |
| 1992 | 16 | 45 | -29 |
| 1996 | 16 | 44 | -28 |
| 2000 | 28 | 40 | -12 |
| 2004 | 32 | 35 | -3 |

There is now sufficient information in the public domain to be able to use simple regression analysis to extrapolate how China might be expected to perform in 2008. However, rather than rely solely on regression analysis in isolation, we also consider two environmental factors which may assist or constrain China's rate of improvement. These factors are: first, home advantage; and second, the scope to improve on a linear basis given the constraints to the number of events being fixed and the 'global sporting arms

race' (Oakley and Green 2001) resulting in diminishing returns to scale. These points are developed in the methodology and results.

## METHODS

This research has been conducted primarily using an extensive programme of desk research as outlined in UK Sport (2002) to provide the raw data for the regression analysis. The raw data was then subjected to simple linear regression using two scenarios. The first scenario uses six observation points from 1984 to 2004, whereas the second scenario is based on five observations and discounts 1984 because of the potential data contamination caused by the Eastern bloc boycott. Further desk research was conducted on the value of home advantage to host nations and the implications of the qualifying rules for each sport / discipline contested at the summer Olympic Games.

## RESULTS

The results of the regression analysis suggest that there is a 'high correlation' ($r^2$= 0.71) (Cohen and Holliday 1979) between the number of gold medals won by China and time using all six observations from 1984 to 2004. The strength of this relationship increases to a 'very high correlation' ($r^2$= 0.94) when the 1984 data is discounted. Analysis of home advantage reveals that since 1988 the host nation has won between 2 (Greece) and 11 (Spain) gold medals more than it did in the edition before hosting the Olympic Games. However, the figures of 2 and 11 are outliers and the more typical values are 6 (Korea) and 7 (USA and Australia). Examination of individual sports and disciplines reveals that in certain sports China is already winning a very high percentage of the gold medals available and that room for improvement is constrained. Notable amongst these sports are diving (6/8 gold medals won in 2004), badminton (3/5) and table tennis (3/4).

## DISCUSSION

Extrapolating the findings from the six observation regression suggests that China will win 3 more gold medals in 2008 than it did in 2004 (32) i.e. a total of 35. However, this extrapolation does not take into account the data contamination of 1984, or the benefits of home advantage. Using the five observation regression to extrapolate to 2008, we predict that China will win 39 gold medals or 7 more than it did in 2004. We consider this to be a more robust predictor of performance as it discounts 1984 and is also consistent with our analysis of home advantage which shows a typical gain of six to seven gold medals over the previous edition. As a cautionary note, we also suggest that unless China is able to maintain its dominant position in certain sports from which it already derives a disproportionate amount of its success; then improvement might not be as great as predicted by both the regression analysis and the trends in the performance of host nations.

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