

Going for the Gold: Who Will Win the 2008 Olympic Games in Beijing

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Even with the opening ceremony of the 2008 Beijing Olympic Games more than a month away, it is possible to predict which countries will come home winners. Using an original model based on economics and a dash of statistics and with no knowledge of individual sports or athletes, it is possible to accurately forecast both the number of medals and the number of gold medals that the top countries will win.

The forecasting model includes four factors to predict country total and gold medal shares. The factors include measures of available resources, population and per capita income, as well as the share of medals in the most recent Summer Olympics and a host effect. The track record of the forecasting model is quite remarkable with 96+% accuracy in predicting the outcomes in both the Sydney and Athens games.

The top five total and gold medal countries are given in Tables 1 and 2 respectively. The countries at the top remain unchanged with the overall medal winner being the United States with a predicted total of 105 medals. Following the U.S., are Russia, China, Germany and Australia.

The most interesting result from the model is in the gold medal totals. Due a powerful home field advantage China is expected to just edge out the US for the gold medal top spot. Building on its surprisingly strong outcome in Athens, Japan is expected to join Russia and Australia at the top of gold medal standings.

Tables 3 and 4 give the models predictions for a wider range of countries: all those predicted to win 6 or more total medals and 4 or more gold medals. It is worth noting that of the 10 largest countries in terms of population, five are missing from the ranks of top medal winners – India (1 in Athens), Indonesia (4), Pakistan (0), Bangladesh (0) and Nigeria (2). Similarly relatively high-income countries such as Luxembourg, Ireland and Iceland all missed out on medals in 2004. Neither population nor income alone is sufficient to gain a place on the medal podium.

Table 1: Top 5 Medal Winning Countries

	Predicted Total Medals in Beijing	Total Medals won in Athens
U.S.	105	102
Russia	92	92
China	81	63
Germany	51	49
Australia	49	49

Table 2: Top 5 Gold Medal Winning Countries

	Predicted Gold Medals in Beijing	Gold Medals won in Athens
China	37	32
U.S.	36	36
Russia	25	27
Japan	17	16
Australia	16	17

The Modeling Framework

In an article published in the *Review of Economics and Statistics* jointly authored with Meghan Busse of the University of California – Berkeley, I describe the details of the medal prediction method.² We show that over the last 40 years, national Olympic medal totals have been driven by four distinct factors: population, per capita income, past performance, and a host effect. During the Soviet era there was a substantial additional boost for the Communist bloc, an effect which had completely dissipated by the Sydney games.³

Size Matters

Countries such as the US and Germany win large numbers of medals because they have both large populations and high per capita income (Gross Domestic Product per capita). Population matters because it gives a country more chances to have an athlete with the extraordinary natural ability that is necessary to become an Olympic champion. Income per capita matters because countries that are wealthier are more likely to have individuals or organizations that are willing to devote the financial resources necessary to develop Olympic medal contenders. For example, China wins more medals than France because its huge population more than compensates for its lower per capita income. Ethiopia and Sweden won the same number of medals in Athens because of the large population of Ethiopia (more than nine times greater) and the higher per capita income of Sweden (more than 200 times greater).

History Will Repeat

Past performance is another powerful, yet not perfect, predictor of Olympic success. Countries with above average performances in Athens are likely to continue to take home medals in the Beijing games. This bodes well for the U.S. China, Russia, and

² Andrew B. Bernard and Meghan R. Busse, (2004) “Who Wins the Olympic Games: Economic Resources and Medal Totals”, *Review of Economics and Statistics*, Vol. 86, no.1.

³ In fact, from 1960-1992, there was a large role played by the government of non-market economies such as the Soviet Union and East Germany. Each Soviet satellite state was able to increase their medal share by almost 3 percentage points above the predictions of the four factor model. This effect is no longer important in determining country medal counts.

Japan; all exceeded expectations in the Athens Games and their success should carry over into Beijing. On the downside Australia, Germany, and France all came in below expectations in 2004 and are likely to see similar lower medal totals.

The Gold Goes to the Host

The host effect is typically an important determinant of total and gold medal counts. China stands ready to greatly benefit in terms of its overall medal count and especially its coveted gold medal total. The model predicts that China will win 81 medals, 18 more than its already substantial haul of 63 medals in the 2004 games. One caveat is Greece showed no evidence of a host bounce in the Athens games.

The real boon for China will come in the form of gold medals. China is expected to add 5 gold medals to its already hefty total due to its role as host. The cheering crowds may make the difference in the sprint to the finish.

Setting Expectations

Perhaps the best use of the model is to set expectations for the upcoming games for each country. National Olympic committees are often excessively optimistic in advance of the Games, promising a large haul of total medals and gold medals from their athletes. As a result, many countries leave the Games disappointed in their performance. The model gives an unemotional benchmark for individual country performance. It tells us what we should expect from the leading medal-winning countries based on their resources and past performance and gives us a useful benchmark for national Olympic success or disappointment.

Table 3: Predicted Total Medals

(shown for countries winning 6 or more total medals)

	Predicted Total Medals in Beijing
United States	105
Russian Federation	92
China	81
Germany	51
Australia	49
Japan	40
France	34
Italy	33
United Kingdom	31
Korea, Rep.	31
Cuba	25
Netherlands	22
Ukraine	22
Spain	20
Romania	17
Hungary	15
Greece	15
Canada	13
Belarus	11
Brazil	11
Turkey	10
Poland	9
Bulgaria	9
Denmark	8
Thailand	8
Sweden	7
Austria	7
Czech Republic	6
Argentina	6
Kazakhstan	6
South Africa	6
Iran	6

Table 4: Predicted Gold Medals
 (shown for countries winning 4 or more gold medals)

	Predicted Gold Medals in Beijing
China	37
United States	36
Russian Federation	25
Japan	17
Australia	16
Germany	14
France	12
Italy	10
United Kingdom	10
Korea, Rep.	9
Ukraine	7
Cuba	6
Hungary	6
Romania	6
Brazil	6
Greece	5
Canada	4
Norway	4
Netherlands	4
Sweden	4
Spain	4

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