Going for the Gold: Who Will Win the 2004 Olympic Games in Athens

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Even with the opening ceremony of the 2004 Athens Olympic Games more than two weeks away, we already know who will win. Building on their remarkably accurate medal forecasts for the 2000 Sydney Olympics, Professors Andrew Bernard of the Tuck School of Business at Dartmouth and Meghan Busse of the Haas School of Business at UC Berkeley have once again predicted Olympics medal totals for 34 countries.

The professorial pair uses a combination of economics, statistics, and history to forecast overall medal totals and gold medal totals by country. The winner will once again be the United States, with 93 medals overall and 37 gold medals. However, the Olympic riches will be more widely distributed than ever before as the number of medals going to the top countries declines.

Rather than merely forecasting the finishing order of countries, Bernard and Busse have made precise medal count predictions. The United States is forecast to win 93 medals, followed by Russia (83), China (57) Germany (55) and Australia (54). The same five countries are expected to win the gold medal race with a slight change in ordering, US (37), Russia (29), China (27), Australia (14), and Germany (13). Bernard and Busse offered a similar prognostication before the last summer games in Sydney with 96% accuracy, exactly matching the U.S. overall medal total of 97 *and* the U.S. gold medal count of 39.

	Predicted Medals in Athens	Medals won in Sydney
U.S.	93	97
Russia	83	88
China	57	59
Germany	55	58
Australia	54	57

In an article recently published in the *Review of Economics and Statistics*, the authors describe the details of their medal prediction method.[1] Bernard and Busse 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

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).[2] The researchers explain that 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 who 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 low per capita income. Brazil and Spain won almost the same number of medals in Sydney because of the large population of Brazil (more than four times greater) and the higher per capita income of Spain (more than three times greater).

Past performance is another powerful, yet not perfect, predictor of Olympic success. Countries with above average performances in Sydney are likely to continue to take home medals in the Athens games. This bodes well for Australia, China, Russia, and the United Kingdom, all of whom did well in the Sydney Games.

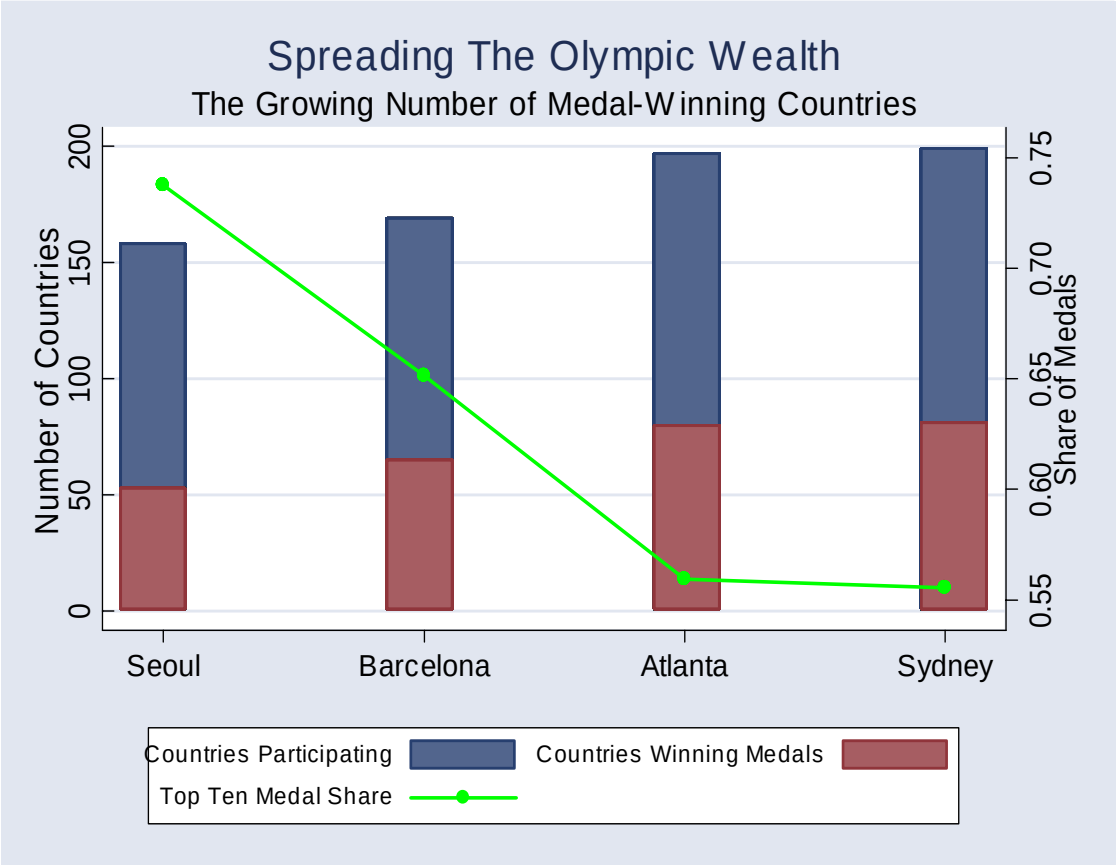
The host effect is an important determinant of medal counts. Bernard and Busse predict that Greece will win 27 medals, more than doubling its haul of 13 medals in the 2000 games. Using the home court to its advantage in Sydney, Australia was able to greatly increase its overall medal total from 41 in 1996 to 58 in 2000. The good news for Australia is that this past Olympic achievement is likely to carry over to this summer's Games in Athens; Bernard and Busse predict that Australia will win 54 medals in 2004.

Professors Bernard and Busse predict a third straight decline in total medals for the U.S. in the 2004 Games and a lower total for the top ten medal-winning countries. The

[1] 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.

[2] 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.

researchers find that the dominance of the largest and wealthiest countries has eroded over time. Indeed, looking back as far as the 1960 Olympics, the concentration of medal-winning among the top countries has generally been falling. In 1960 the top 10 countries won 78% of the awarded medals, compared with the top 10 in 2000 winning only 55% of the awarded medals. This is consistent with poorer countries over the same time having improved their standard of living and thereby having improved their chances of sharing in Olympic glory. This trend has led to a greater number of countries winning medals and lower medal shares for the top countries such as the U.S. and Russia.



The professors also identify countries that systematically underperform and overachieve relative to their populations and incomes. Both Japan and Canada have lagged far behind what would be expected given their resources. Japan typically wins far fewer medals than France or Italy, two countries with half the population of Japan *and* lower per capita income. To match Italy's performance, Japan would have to almost double its medal output in Athens. Similarly, Bernard and Busse argue that Canada continues to fall short in the Summer Games, winning fewer medals than the Netherlands or South Korea, countries with smaller populations and smaller economies.

	Predicted Total Medals in Athens	Predicted Gold Medals in Athens
United States	93	37
Russian Federation	83	29
China	57	27
Germany	55	13
Australia	54	14
France	37	12
Italy	33	12
United Kingdom	27	10
Greece	27	10
South Korea	27	7
Cuba	25	7
Romania	23	8
Netherlands	21	9
Ukraine	20	1
Japan	19	6
Hungary	14	5
Belarus	13	0
Canada	13	2
Poland	12	4
Brazil	12	1
Spain	11	3
Sweden	11	2
Bulgaria	10	1
Norway	8	1
Switzerland	8	0
Czech Republic	6	0
Mexico	6	1
Indonesia	6	1
Ethiopia	5	1
Kazakhstan	5	0
Denmark	5	0
Kenya	4	0
Jamaica	3	0
Georgia	3	0

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