

Economic Multipliers and Mega-Event Analysis

Victor A. Matheson

June 2004

COLLEGE OF THE HOLY CROSS, DEPARTMENT OF ECONOMICS
FACULTY RESEARCH SERIES, WORKING PAPER NO. 04-02*



Department of Economics
College of the Holy Cross
Box 45A
Worcester, Massachusetts 01610

(508) 793-3362 (phone)

(508) 793-3710 (fax)

<http://www.holycross.edu/departments/economics/website>

*All papers in the Holy Cross Working Paper Series should be considered draft versions subject to future revision. Comments and suggestions are welcome.

Economic Multipliers and Mega-Event Analysis

Victor A. Matheson[†]
College of the Holy Cross

June 2004

Abstract

Critics of economic impact studies that purport to show that mega-events such as the Olympics bring large benefits to the communities “lucky” enough to host them frequently cite the use of inappropriate multipliers as a primary reason why these impact studies overstate the true economic gains to the hosts of these events. This brief paper shows in a numerical example how mega-events may lead to inflated multipliers and exaggerated claims of economic benefits.

JEL Classification Codes: L83

Keywords: economic impact, sports, sport economics, mega-events

[†]Victor A. Matheson, Department of Economics, Box 157A, College of the Holy Cross, Worcester, MA 01610-2395, 508-793-2649 (phone), 508-793-3710 (fax), vmatheso@holycross.edu

Introduction

Independent economists often criticize economic impact studies that purport to show that mega-events such as the Olympics or national conventions bring large benefits to the communities “lucky” enough to host them. These scholars frequently cite the use of inappropriate multipliers as one of the primary reasons why these impact studies overstate the economic gains to the hosts of these events (Siegfried and Zimbalist, 2000). The purpose of this paper is to demonstrate one example of how multipliers may be misused in these analyses.

Economists use two differing conventions in reporting multipliers. One method calculates the multiplier = (indirect benefits / direct benefits), so that a multiplier = 1 results in total benefits being double that of the direct benefits. Others, such as Humphreys (1994), report the multiplier = (indirect benefits + direct benefits) / direct benefits, so that instead a multiplier = 2 implies a doubling of direct benefits. The second convention seems more natural and more widespread, so it will be used in the remainder of this paper.

Economic impact analysis is generally done by estimating attendance at an event, surveying a sample of visitors as to their spending associated with the game or convention, and then applying a multiplier to account for money circulating through the economy after the initial round of spending. For example, an economic impact analysis for the American football championship game, Super Bowl XXVIII, in Atlanta in 1994 estimated 306,680 visitor days with a typical visitor spending \$252 per day for a direct impact of \$77.3 million. An economic multiplier of 2.148 is then applied for an indirect impact of \$88.7 million and a total economic benefit of \$166 million (Humphreys, 1994).

The economic multipliers used in these analyses are calculated using complex input-

output tables for specific industries. One commonly used model in the United States is the Bureau of Economic Analysis' Regional Industrial Multiplier System (RIMS II) that provides final-demand output multipliers for 473 detailed industries, including hotel accommodations, eating and drinking establishments, and arts, entertainment, and recreation. These multipliers in RIMS II (or other multiplier models) are based upon inter-industry relationships within regions based upon an economic area's normal production patterns. During mega-events, however, the economy within a region may be anything but normal, and therefore, these same inter-industry relationships may not hold. Since there is no reason to believe that the usual economic multipliers are the same during mega-events, any economic analyses based upon these multipliers may, therefore, be highly inaccurate. Indeed, there is substantial reason to believe that during mega-events, these multipliers are highly overstated, and therefore their use overestimates the true impact of these events on the local economy. This concept is best explored through a numerical example.

A numerical example

Suppose the hotel industry, an industry that accounts for up to half of all visitor spending during mega-events, is characterized by a situation where hotel service is provided by combining capital, which can be supplied either locally or by national or international capital markets, and labor, which is supplied exclusively by local workers. Income earned by capital owners (or stockholders) who do not live in the city in which the hotel is located is unlikely to be re-spent in the local economy in comparison to wages earned by local labor.

In particular, suppose that a hotel typically supplies 75 rooms at a price of \$150 per night

requiring the use of 75 workers earning \$100 per day. Any revenues in excess of labor costs accrue to capital owners as profit. The multiplier effect from hotel expenditures depends on how labor and capital spends their respective earnings in the local economy. If both the laborers and hotel owners are local, assume that 50% of their earnings are re-spent on local goods and that a multiplier equal to 2 is applied to any subsequent rounds of spending. The direct and indirect impact of hotel spending is shown in Table 1, line 1.1 Alternatively, if the hotel is part of a nationally owned chain, the workers are still local, but the capital owners are national, and therefore income earned by capital will not re-circulate in the economy as shown in Table 1, line 2.1.

Scenario 1

Suppose the mega-event increases the number of rooms sold to 100 while leaving the room prices unchanged. The hotel hires 100 workers (instead of 75) in order to accommodate the higher demand. The corresponding direct and indirect earnings from the event if the hotel is locally owned is shown in Table 1, line 1.2, while the figures for a nationally owned hotel are shown in line 2.2. As seen in the table, as long as the higher demand from the mega-event results in labor and capital equally sharing in the increased revenue, then the multiplier remains unchanged.

A second important fact can be shown from comparing lines 2.1 and 2.2. Even if all hotel revenues during a specific period can be attributed to a particular event, while the gross hotel revenues associated with the event are high, the marginal revenues are much lower because the event visitors crowd out the regular hotel business. In line 2.2, the gross direct hotel revenues are

15,000; however, the net direct impact of the event is only the difference between hotel revenues during the event and revenues typically, or 3,750.

Scenario 2

Suppose the mega-event increases the number of rooms sold to 100 while leaving the room prices unchanged. In this scenario, however, the hotel does not hire additional workers in the face of the higher demand. The existing workers are simply expected to work harder or more efficiently to order to meet the customers' needs in the crowded hotel. The corresponding direct and indirect earnings from the event if the hotel is locally owned is shown in Table 1, line 1.3, while the figures for a nationally owned hotel are shown in line 2.3. As seen in the table, when capital and labor are both locally supplied, the multiplier is unaffected by the distribution of the proceeds from the event among the factors of production since both will re-spend the same fraction of their earnings locally. When the hotel is nationally owned, however, the change in the portion of the hotel's revenue that accrues to capital reduces the multiplier. Indeed, the mega-event results in no marginal increase in indirect spending whatsoever. A typical impact analysis would apply the usual multiplier of 1.67 to the 15,000 in direct hotel spending to arrive at an estimate of a 25,000 gain from the event. Instead, the gross total impact is only 22,500, and the net total impact is a mere 3,750. Furthermore, the marginal effect of the event on the income of local citizens is actually zero since none of the increase in hotel revenues accrues to local residents.

Scenario 3

Finally, suppose the mega-event leaves the number of rooms sold and workers hired constant at 75, but the price of a room doubles to \$300. The corresponding direct and indirect earnings from the event for a locally and nationally owned hotel are shown in Table 1, lines 1.4 and 2.4, respectively. Again, the increase in room price increases hotel profits while leaving labor's income unchanged resulting in a lower multiplier and no marginal increase in indirect spending when the hotel is not locally owned.

Adding Government

It must be noted that the presence of local hotel taxes does serve to ensure that at least some portion of the hotel's windfall is retained locally. Suppose that the local government imposes a 10% tax on room fees and that the incidence of the tax falls entirely on the consumer. Furthermore, tax collections recirculate through the economy at the same rate as other local income so that the multiplier on this tax revenue is 2. Table 1, rows 3.1 through 3.4 show the direct and indirect revenues for the base case and scenarios 1 through 3 for a nationally owned chain. As seen in the table, the presence of government taxation serves to raise the multiplier as compared to the situation without taxation.

Conclusion

In estimating economic impacts from mega-events, analysts frequently use multipliers derived from input-output tables based on the normal state of the economy even though the presence of a large temporary tourist attraction such as a World's Fair, the Olympics, or the

World Cup indicates a departure from this normal state. Mega-events are characterized by high utilization rates and increased prices for tourism related industries. While labor may benefit to some extent through increases in hours worked or higher tips, the main recipient of this windfall is likely to be business owners. Expenditures in industries dominated by nationally-owned chains such as large hotels, rental car agencies, and airlines, and to a lesser extent motels, restaurants, and general retailers may rise significantly due to a mega-event, but local incomes will not increase substantially. Since the benefits accrue to non-local capital owners leading to higher than normal leakages of income, the money generated from these events is unlikely to recirculate through the economy, and any multipliers applied are therefore probably inflated. Cities routinely offer to spend large sums of money in order to attract these events in large part based upon these exaggerated claims of an economic bonanza, but a skeptical public should beware of economists bearing reports showing great benefits from mega-events.

REFERENCES

Humphreys, J. (1994) The Economic Impact of Hosting Super Bowl XXVIII on Georgia,

Georgia Business and Economic Conditions, May-June, 18-21.

Siegfried, J. and Zimbalist, A. (2000) The Economics of Sports Facilities and Their

Communities, Journal of Economic Perspectives, 14:3, 95-114.

Table 1: Economic Impact Estimates

Model	Direct Economic Impact				Indirect Economic Impact				Mult.
	Labor	Capital	Gov.	Total	Labor	Capital	Gov.	Total	
1.1	7,500	3,750	-	11,250	7,500	3,750	-	11,250	2.00
1.2	10,000	5,000	-	15,000	10,000	5,000	-	15,000	2.00
1.3	7,500	7,500	-	15,000	7,500	7,500	-	15,000	2.00
1.4	7,500	15,000	-	22,500	7,500	15,000	-	22,500	2.00
2.1	7,500	3,750	-	11,250	7,500	0	-	7,500	1.67
2.2	10,000	5,000	-	15,000	10,000	0	-	10,000	1.67
2.3	7,500	7,500	-	15,000	7,500	0	-	7,500	1.50
2.4	7,500	15,000	-	22,500	7,500	0	-	7,500	1.25
3.1	7,500	3,750	1,125	12,375	7,500	0	1,125	8,625	1.70
3.2	10,000	5,000	1,500	16,500	10,000	0	1,500	11,500	1.70
3.3	7,500	7,500	1,500	16,500	7,500	0	1,500	9,000	1.55
3.4	7,500	15,000	2,250	24,750	7,500	0	2,250	9,750	1.39