Slippery Slope? Assessing the Economic Impact of the 2002 Winter Olympic Games in Salt Lake City, Utah

By

Robert A. Baade, Robert Baumann, and Victor A. Matheson

November 2008

COLLEGE OF THE HOLY CROSS, DEPARTMENT OF ECONOMICS
FACULTY RESEARCH SERIES, PAPER NO. 08-15*

Department of Economics
College of the Holy Cross
Box 45A
Worcester, Massachusetts 01610
(508) 793-3362 (phone)
(508) 793-3708 (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.

Slippery Slope? Assessing the Economic Impact of the 2002 Winter Olympic Games in Salt Lake City, Utah

By

Robert A. Baade[†]
Lake Forest College

Robert Baumann[††]
College of the Holy Cross

and

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

November 2008

Abstract

This paper provides an empirical examination of the 2002 Winter Olympic Games in Salt Lake City, Utah. Our analysis of taxable sales in the counties in which Olympic events took place finds that some sectors such as hotels and restaurants prospered while other retailers such as general merchandisers and department stores suffered. Overall the gains in the hospitality industry are lower than the losses experienced by other sectors in the economy. Given the experience of Utah, potential Olympic hosts should exercise caution before proceeding down the slippery slope of bidding for this event.

.

JEL Classification Codes: L83, O18, R53

Keywords: sports, Olympics, impact analysis, mega-event, tourism

---

[†]Robert A. Baade, Department of Economics and Business, Lake Forest College, Lake Forest, IL 60045, 847-735-5136 (phone), 847-735-6193 (fax), baade@lfc.edu

[††]Robert Baumann, Department of Economics, Box 192A, College of the Holy Cross, Worcester, MA 01610-2395, 508-793-3879 (phone), 508-793-3708 (fax), rbaumann@holycross.edu

[†††]Victor A. Matheson, Department of Economics, Box 157A, College of the Holy Cross, Worcester, MA 01610-2395, 508-793-2649 (phone), 508-793-3708 (fax), vmatheso@holycross.edu

I. Introduction

Governments have competed vigorously to host mega-events. Cities from no fewer than ten countries submitted applications to host the 2002 Winter Olympics of which four, Salt Lake City, Utah, United States; Quebec City, Quebec, Canada; Sion, Switzerland; and Ostersund, Sweden, were named finalists. Hallmark events are thought by civic leaders to bring not only prestige to a host community, but perhaps more importantly, an economic windfall – a promise that some economists dispute. This paper has two purposes. The first objective is to assess the economic impact of the 2002 Winter Olympic Games hosted by Salt Lake City, Utah. A second, broader objective is to determine if using specific tax data to assess the economic impact of a large sports event on a relatively smaller economy yields different results than previously derived by economists who have questioned the use of public subsidies for mega-events. Our final objective is to determine whether the 2002 Winter Olympic Games differed across industries. Since the Olympics brought a record number of tourism to the area, it is expected that the hotel and restaurant industries benefited greatly. But it is not clear whether gains in those industries came at the expense of losses in others.

Ex post analysis typically uses regression analysis to determine if a key dependent, economic-performance variable, such as real per capita income or the unemployment rate, experiences a statistically significant change during the time the event is held or as a consequence of it. The challenge, of course, is to isolate the effect of the mega-event on the performance variable in the presence of a myriad of other causal changes. Generally speaking a statistically significant economic impact is more likely to be found the larger is the event relative to the size of the economy and the narrower the time frame examined. Quarterly tax data exists

for Salt Lake City, and given the size of Winter Olympic Games relative to the Salt Lake City economy, if meaningful economic impact does exist, the 2002 Winter Olympic Games should provide an opportunity for identifying it.

The paper is organized as follows. This first section serves as an introduction to the subject. Part two provides a context for the research through identifying the tax data used and profiling the size of the Salt Lake City economy relative to variables that describe the scale of the Winter Olympic Games. The third part of this report summarizes the results of past analysis on the economic impact of the Winter Olympic Games particularly the 1994 Games in Lillehammer, Norway, the 1998 Games in Calgary, Canada, and the 2002 Games in Salt Lake City, Utah. The methodology employed in the report is discussed in the fourth section of the paper. The results are presented and discussed in section 5. Conclusions and policy implications are discussed in the paper's last section.

II. Profiling the Scale of the 2002 Winter Olympic Games in Salt Lake City, Utah

Do the 2002 Winter Olympic Games in Salt Lake City qualify as a mega-event? The number of participants, absolute expenditures, and spending per capita would indicate that the 2002 Games rate hallmark status. Consider the following data. The Winter Olympic Games were held in Salt Lake City, Utah from February 8 to February 24. Seventy sporting events at ten venues involving 3,500 athletes were contested in 2002, which was more than any previous Winter Games (United States General Accounting Office, 2001). 1,800 officials from 80 countries participated, and the global television audience numbered over 2 billion (Coolattractions.com, 2000). The Games were estimated to have cost $1.9 billion; the United

States earned 34 medals, and the cost per medal, therefore, equaled $5.59 million (Sappenfield, 2002).

The City of Salt Lake has a population of 181,743 while the metropolitan area has approximately 1.2 million residents. The *Wasatch Front*, which includes Ogden and Provo (40 miles north and south approximately, respectively, of the Salt Lake Valley) has a population of 1.7 million according to the most recent population data. The State of Utah currently has a population of 2.7 million according to the most recent statistics (Salt Lake City Demographics, 2008), and presently the United States has a population of 301 million. Per capita expenditures for the Salt Lake City Games equaled $1,118 per metropolitan resident of Salt Lake City and approximately $6.30 per resident of the United States using current population data. By contrast, the Beijing Olympic Summer Olympic Games (the most expensive Olympic Games in history) were widely reported to have cost more than $40 billion, or about $2,300 per each of Beijing's 17.4 million residents, or roughly $30 per person in all of China. The United States General Accounting Office (GAO) reported that Atlanta, Georgia spent $2.4 billion on the 1996 Summer Olympic Games or approximately $661 per person in metropolitan Atlanta, which had a metropolitan population of 3.63 million in 1997. Using the current population, the Atlanta Games cost approximately $8 per U.S. resident. Referring to data for the Winter Olympic Games hosted by the U.S., the GAO reported that the 1980 Winter Olympic Games in Lake Placid cost $363 million or less than $2 per U.S. resident using the 1980 U.S. population.

These statistics for both the Summer and Winter Olympic Games indicate that by any absolute or per capita financial measure, the 2002 Winter Olympic Games in Salt Lake City qualify as a mega-event. Statistics relating to Olympic events hosted by the United States

indicate that although Salt Lake City has a large population relative to host cities for the Winter Olympic Games, expenditures per capita are high.

The financial burden on residents of Salt Lake City and Utah is actually higher than the figures above suggest. The Salt Lake City Organizing Committee (SLOC), the State of Utah, local government, and the Federal government spent $1.3 billion, $150 million, $75 million, and $342 million, respectively. The SLOC, State of Utah, and local government financed 82 percent of the costs of the 2002 Games (GAO, 2002). The United States Government, by contrast, financed 50 percent of the Lake Placid, New York Winter Olympic Games in 1980. It can be concluded that the 2002 Games were the largest, most expensive Winter Olympic Games ever conducted in the United States, and most of the financial burden was shouldered by residents of Salt Lake City and Utah. If the Winter Olympic Games can truly generate a statistically significant positive impact for the economy of the host community over and above the difficult to quantify international cachet the Games impart, the chances of that it will be identifiable for the Salt Lake City Games are high.

III. The Economic Impact of Past Winter Olympic Games

Those who support public financing of mega-sports events often cite Barcelona's experience with the 1992 Summer Olympic Games as evidence of the ability of a hallmark event to stimulate a host city's economy. The current mayor of the City of Barcelona extolled the virtues of the Games in a recent Organization of Economic Cooperation and Development (OECD) publication. Mayor Jordi Hereu observed at a commemoration the sixteenth anniversary of the 1992 Games:

> When we look back we can remember that the Olympic Games gave us an opportunity to think big and plan afresh, they provided the reason to do things on a large scale. The Games were also a great rallying initiative for the city, bringing the people, the business, and other institutions and the city government together in a consensus about the long term development of the city which has lasted for 16 years with great vitality. The Games created the unstoppable momentum for us (Clark, 2008)

Mayor Hereu's observations suggest that the whether the Games serve as a catalyst for economic development may well rest with their ability to bring diverse segments of a community together to fashion a plan for growth and development. Not only a blueprint for development created, but the creation of infrastructure necessary for its execution identified and funded. Mayor Hereu noted:

> Barcelona used the Olympics as the organizing idea for a new kind of strategic planning, one that looked deep into the future, and long back at our past, and enabled us to believe that we could be a leading city once again. The Games also left a very tangible legacy of improved architecture, infrastructure, and new development potential, as well many (sic) new amenities and facilities which we managed in ways that enabled ordinary citizens to enjoy and use fully (Clark, 2008).

Do the Winter Olympic Games generate enough excitement among diverse social groups to allow for the coalescence necessary to create and execute a plan for growth and development similar to that described by Mayor Hereu? Can the Games absent its role as a social galvanizer and architect for the revitalization of infrastructure induce a spike in economic activity sufficient to justify the costs of the event both short and long term? The evidence is mixed. Olympic Stadium in Montreal, Canada, site for the opening ceremonies and athletics (track and field events) for the 1976 Summer Olympic Games, was just paid off this past year. That serves as a sober reminder that the potential exists for creating a legacy of debt as well as the potential for

economic advancement from hosting the Games.

The ability of the Winter Games to stimulate economic development has similar mixed results. Turin has gambled that the $3.4 billion spent on hosting the 2006 Winter Olympics will replicate on a smaller scale the Barcelona experience. Too little time has passed to determine if the Torino Games have stimulated the Turin economy enough to justify the costs (Wilkinson, 2006).

The experience with regard to the 1994 Winter Olympic Games in Lillehammer does not support the idea that the Winter Games have the capability of transforming host communities. Olav R. Spilling of the Eastern Norway Research Institute in Lillehammer concluded:

> For some time the economic impacts caused by the Olympics were very significant, and major parts of the regional industries have been affected in one way or another. However, the Olympics have mostly caused an industrial intermezzo. With the exception of significant growth in the tourism industry, the long-term economic benefits fro the region have turned out to be fairly modest and out of proportion to the huge costs of hosting the Games (Spilling, 1996).

Jon Teigland also provided a sober appraisal of the Winter Olympic Games to serve as a catalyst for economic development. Teigland observed:

> After hosting the 1994 Winter Olympics, the Norwegian national and local authorities expected a 'big boom' in tourism; the actual effects have been less than, and different from, the predictions, and 40% of the full-service hotels in Lillehammer have gone bankrupt (Teigland, 1999).

Does the experience of Salt Lake City resemble Barcelona more than Lillehammer and Montreal? The methodology employed to ascertain the economic impact of the 2002 Winter Olympic Games on the Salt Lake City economy is discussed in the next section of the paper.

IV. Methodology and Model

Economists who study the impact of mega-events on local economies are quick to point out that *ex ante* economic impact studies tend to suffer from several important theoretical deficiencies that place the accuracy of such estimates in doubt. For example, the organizers of the 1996 Summer Games estimated that the event would generate 77,000 jobs for the city of Atlanta. Baade and Matheson's (2002) *ex post* analysis of the event, however, found that employment in the region had increased by as few as 3,467 jobs with even their most optimistic estimates identifying employment growth only around half that which was predicted. Other studies of international mega-events such as the World Cup (Baade and Matheson, 2004; Hagn and Maennig 2007a; 2007b) and Summer Olympics (Jasmand and Maennig, 2007) similarly find little or no impact on real economic variables from hosting these events.

At least two reasons appear to explain much of the divergence between the boosters' preliminary estimates of the economic benefits of these events and the economic gains that are actually realized. The "substitution effect" occurs when local residents alter their consumption patterns in the presence of a mega-event, and the "crowding out effect" occurs when both local residents and regular visitors are displaced by sports fans attending the event. Although an affair such as the Winter Olympics may generate a great deal of economic activity, if a similar level of economic activity is deterred by the Games, the economy as a whole may not benefit from the event. Any gains in one part of the economy, such as the hospitality sector, may simply come at the expense of other businesses.

The substitution and crowding out effects have been clearly identified and isolated at

least twice previously in the sports economics literature. Baumann, Matheson, and Muroi (2008) examine flight arrival data in Japan and present evidence that the Honolulu marathon, which attracts tens of thousands of runners from Japan, reduces the number of American tourists to the Islands during the race weekend. More directly related to the topic at hand, Leeds (2007) finds that taxable sales in Colorado ski resort communities grew during the months in which their next door neighbors in Utah were hosting the 2002 Winter Olympics. Leeds attributes this rise to the displacement of tourists from resorts in the Salt Lake City region. This paper directly examines taxable sales in Utah for evidence of displacement effects. Unlike Leeds (2007), which examined the reshuffling of economic activity between regions as a result of the Games, this paper analyzes the reapportionment of economic activity between different industries within the state of Utah as a result of the 2002 Winter Olympics.

In order to identify shifts in spending patterns quarterly taxable sales from 1982 and 2006 for Salt Lake, Davis, Morgan, Summit, Utah, Wasatch, and Weber counties are examined. Even though the 2002 Olympics were hosted by Salt Lake City, we included the surrounding counties for two reasons. First, the Olympic events were spread out throughout northern Utah. Second and more importantly, including the surrounding counties allows us to distinguish between the gross and net effects of the 2002 Winter Olympics. For example, the Olympics probably attracted visitors from nearby areas to Salt Lake City. But this likely decreased spending in those areas, which is an example of the substitution effect. Our geographic range accounts for money that is redirected to Salt Lake City from adjacent counties. We use the western U.S. consumer price index to convert taxable sales data to 2006 dollars.

Table 1 presents summary statistics for six taxable sales categories. The mean of total

real taxable sales per quarter in the region examined is about $3.365 billion, so it is possible that the effects of a large event like the Olympics may not be observable. In addition, as noted previously, hosting the Olympics is not likely to benefit all industries equally. For these reasons, examine overall real taxable sales as well as five subsets of total real taxable sales: eating and drinking establishments, hotels, amusement firms (such as movie theaters, bowling alleys, and arcades), and general merchandise stores which primarily includes department stores. We also use quarterly taxable sales for the skiing industry, but these are only available for the entire state and the sample frame is smaller: 1995 to 2006. All subsets of total taxable sales have significantly smaller means, and their inclusion allows us to test whether the benefit of hosting the 2002 Winter Olympics differs across industries.

All models use an ARMA(P,Q) model

$$y_t^* = \beta_0 + \sum_{p=1}^{P} \Phi_p \; y_{t-p}^* + \sum_{q=0}^{Q} \Theta_q \; \varepsilon_{t-q} + \lambda year_t + \mu quarter_t + \gamma gdp_t + \alpha oly_t + \varepsilon_t$$

where y_t^* is taxable sales in time period t, P is the number of lagged values of y_t^* in the model known as the autoregressive (AR) dimension of the model, ε_t is an error term, and Q is the number of lagged values of the error term representing the moving average (MA) dimension of the model. gdp_t is a the nationwide real gross domestic product, which accounts for national economic trends that impact northern Utah. It is particularly important to account for the general business cycle as the 2002 Games occurred shortly after the end of the 2001 recession, and taxable sales in the state are likely to be affected by the negative economic climate. oly_t is a dummy variable that equals one for the quarter of the Salt Lake City Olympics, first quarter 2002. We also include a vector of dummy variables for each year ($year_t$) and quarter ($quarter_t$).

The yearly dummy variables account for year-specific effects and the quarterly dummy variables correct for seasonality. Maximum likelihood estimates $\beta_0, \Phi_p, \Theta_q, \gamma, \beta,$ and σ, which is the standard deviation of the white noise error ε_t for each category of taxable sales. Finally, we estimate the model for each type of taxable sales.

Dickey-Fuller and Phillips-Perron tests do not reject the existence of a unit root for all six categories of taxable sales in levels, but reject the unit root using the first difference in each case. For this reason each dependent variable, gdp_t, and oly_t are first-differenced to produce the correct marginal effects. The optimal autoregressive and moving average dimensions of each model are determined the Akaike Information Criterion.

Table 2 presents the results from all six dependent variables. The 2002 Winter Olympics reduced overall taxable sales by $130.9 million although this coefficient is not statistically significant. This suggests that, despite record levels of tourism, at best there was not a statistical net increase in total taxable sales during the quarter of the 2002 Winter Olympics and at worse taxable sales may have fallen. However, the Olympics had a positive and statistically significant net effect on some industries in northern Utah. Hotels enjoyed an estimated $51.9 million net increase in taxable sales, while net taxable sales for eating and drinking establishments increased by an estimated $18.7 million. Both of these estimates are statistically significant at any reasonable significance level. The net effect on the hotel industry is particularly notable since the estimate ($51.9 million) is nearly as large as the sample mean ($59.2 million).

These gains in hotels and eating and drinking establishments, however, are offset by losses in other industries. Sales tax collections at general merchandise stores have an estimated net loss of $167.4 million during the quarter of the 2002 Winter Olympics, which is statistically

significant. Ski resorts and other amusement firms also had estimated net losses, though they are not statistically significant.

While it is not possible with this data to conclude with certainty that the drop in sales at department stores is a direct consequence of the Olympics (or, for that matter, to conclude that the increases in the hospitality sector are direct results, either), the fact remains that outside of hotels and restaurants, the economy of Utah does not seem to have prospered as a result of the Games. The substitution and crowding out effects can explain these otherwise counterintuitive results, which come as no surprise to those who have examined the economic impact of mega-events in the past.

V. Conclusions

Hosting a mega-event is a costly but potentially rewarding affair. Cities aggressively compete with rivals for the right to host events such as the quadrennial Winter Olympics. Our examination of the 2002 Salt Lake City Games shows that the Olympics produced some clear winners in the hospitality industry. The data also show, however, that not all sectors of the economy benefited equally from the Games. Indeed, general merchandise stores, a sector accounting for roughly one-fifth of all taxable sales in the state exhibited statistically significant drops in their receipts. It should be noted, furthermore, that the statistically significant gains in the hotel and restaurant industry, a combined $70.6 million, are less than half the dollar level of the reported losses in the general merchandise industry of $167.4 million. A point estimate for the overall figures suggests a fall in taxable sales of $130.9 million although care must be take in attributing meaning to coefficients that are not statistically significant. Given the experience of

Utah, potential Olympic hosts should exercise caution before proceeding down the slippery slope of bidding for this event.

REFERENCES

.

Baade, Robert A. and Victor A. Matheson. 2002. Bidding for the Olympics: Fool's Gold?. In *Transatlantic Sport: The Comparative Economics of North American and European Sports*, edited by Carlos Pestana Barros, Muradali Ibrahimo, and Stefan Szymanski. London: Edward Elgar Publishing, 127-151.

Baade, Robert A. and Victor A. Matheson. 2004. The Quest for the Cup: Assessing the Economic Impact of the World Cup. *Regional Studies*, 38(4): 343-354.

Baumann, Robert, Victor A. Matheson, and Chihiro Muroi. 2008. Bowling in Hawaii: Examining the Effectiveness of Sports-Based Tourism Strategies. *Journal of Sports Economics*, forthcoming.

Clark, Greg 2008, "Local Development Benefits from Staging Major Events," *OECD.*

CoolAttractions.com 2000, "In 2002 Salt Lake City, USA Will Host the Winter Olympic Games," http://www.saltlakecity.coolattractions.com, Accessed on September 30, 2008.

Hagn, Florian and Wolfgang Maennig. 2007a. Labour Market Effects of the 2006 Soccer World Cup in Germany. International Association of Sports Economists Working Paper Series, No. 07-16.

Hagn, Florian and Wolfgang Maennig. 2007b. Short-term to long-term employment effects of the Football World Cup 1974 in Germany. International Association of Sports Economists Working Paper Series, No. 07-21.

Jasmand, Stephanie and Wolfgang Maennig. 2007. Regional Income and Employment Effects of the 1972 Munich Olympic Summer Games. International Association of Sports Economists Working Paper Series*, No. 07-12.*

Leeds, Michael. 2007. "Do Good Olympics Make Good Neighbors?" *Contemporary Economic Policy*, 26:3, 460-467.

Salt Lake City Demographics. 2007. http://www.saltlakecityutah.org/salt_lake_demographics.htm, Accessed on September 30, 2008.

Sappenfield, Mark, "The Games Were Great. Now about that $1.9 Billion…," *Christian Science Monitor,* http://www.csmonitor.com/2002/0226/p03s01-ussc.html, Accessed On September 30, 2008.

Spilling, Olav R. 1996, "Mega event as strategy for regional development: The case of the 1994 Lillehammer Winter Olympics," *Entrepreneurship & Regional Development,* Volume 8, Issue 4, October, 321-344.

Teigland, Jon 1999, Mega-events and impacts on tourism; the predictions and realities of the Lillehammer Olympics, *Impact Assessment and Project Appraisal,* Volume 17, Number 4, 1 December, 305-317.

United States General Accounting Office 2001, "Olympic Games: Costs to Plan and Stage the Games in the United States, November.

Wilkinson, Tracy 2006, "Turin Hopes Its Pricey Olympic Makeover Lasts," *Los Angeles Times,* February 5. http://articles.latimes.com/2006/feb/05/world/fg-turin5, Accessed on October 1, 2006.

Table 1: Summary Statistics
(standard deviations in parenthesis)

	Sample Mean
Total Taxable Sales	$3,365,102,848 ($2,185,387,264)
Eat/Drink Taxable Sales	$219,415,024 ($141,062,608)
Hotel Taxable Sales	$59,234,912 ($37,491,812)
Amusement Taxable Sales	$71,802,336 ($57,320,616)
Merchandise Taxable Sales	$558,294,024 ($442,058,592)
Ski Taxable Sales	$35,832,424 ($32,834,512)

Note: All values are in 2006 dollars using the western U.S. consumer price index..

Table 2: ARMA Results
(standard errors in parentheses)

	Total	Eat/Drink	Hotel	Amusement	Merchandise	Ski
Olympics	-130,937,266 (99,253,512)	18,707,276** (2,428,307)	51,937,932** (5,202,097)	-2,411,612 (2,236,289)	-167,352,135** (55,488,008)	-3,443,486 (5,659,698)
real GDP	434,918 (352,728)	19,568 (14,898)	24,010 (19,761)	7,858 (10,604)	-245,212 (125,852)	12,492 (23,084)
quarter 2	273,115,879** (51,636,108)	-14,648,898* (7,690,765)	-52,615,660** (5,611,243)	-68,028,918 (40,940,936)	90,474,326** (31,381,394)	-124,112,576** (11,569,930)
quarter 3	233,074,235** (46,111,548)	-3,645,899 (2,844,881)	-20,434,086** (4,395,502)	24,138,495 (27,663,622)	74,418,575* (32,302,358)	-48,160,142** (5,821,742)
quarter 4	233,376,365** (37,773,904)	-18,539,160* (6,923,299)	-33,040,962** (4,607,811)	84,250 (39,516,800)	119,970,810** (34,051,444)	-38,520,493** (6,756,262)
constant	-167,327,060** (39,348,892)	10,267,875* (5,896,680)	27,665,668** (6,911,542)	-12,357,163 (21,464,978)	-90,318,863** (31,434,942)	52,938,068** (5,364,688)
AR(1)	-0.463* (0.122)	-	-	-0.323* (0.174)	-	-0.775** (0.217)
AR(2)	-0.549* (0.134)	0.222** (0.111)	-	-0.294* (0.170)	-	-0.378* (0.193)
AR(3)	-	-	-	-0.249 (0.162)	-	-
AR(4)	0.211 (0.129)	0.641* (0.132)	-	0.709** (0.164)	-	-
MA(4)	-	-	0.778** (0.044)	-	0.735** (0.176)	-

Note: (1) Year dummies are included in each model but omitted from Table 2 for brevity. Full results are available upon request.

(2) ** and * represent statistical significance at the one percent and ten percent levels, respectively.