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Economic Impact Analysis Versus Cost Benefit Analysis: The Case of a Medium-Sized Sport Event

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Abstract

This paper empirically illustrates the difference between a standard economic impact analysis (EIA) and a cost-benefit analysis (CBA). The EIA was conducted using an existing (input-output) I-O model (STEAM). The benefit side of the CBA included non-local visitor spending, the revenue of the local organizing committee (LOC), the consumer surplus, and public good value of the sport event for the local residents. The cost side of the CBA was estimated based on the opportunity costs related to the construction of the stadium (including labor costs and the cost of borrowing), imports, and ticket sales to locals. The EIA indicated that the 2005 Pan-American Junior Athletic Championships generated a net increase in economic activity in the city of \$5.6 million. The CBA showed a negative net benefit of \$2.4 million. Both methods presented challenges and limitations, but CBA has the distinct advantage that it identifies the net benefits associated with hosting a sport event.

Keywords: cost-benefit analysis, economic impact analysis, event attendees, expenditures, local residents, spectators, sport event visitors

Pitfalls, misinterpretations, and miscalculations of economic impact studies are well documented in the literature (e.g., Baade & Matheson, 2006; Crompton, 1995; Hudson, 2001; Késenne 1999; Putsis, 1998). Often times, economic impact studies

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yield a gross overestimation of the net benefits that cities receive in hosting sports events (e.g., Baade & Matheson, 2001; Coates & Humphreys, 1999, 2002; Dwyer et al., 2005; Lee, 2001; Matheson, 2009; Porter & Fletcher, 2008; Schaffer, Greer, & Mauboules, 2003). Authors therefore propose to use other techniques to estimate the economic value and/or benefit of sport events, such as cost-benefit analysis (CBA; e.g., Késenne, 2005), computable general equilibrium (CGE; e.g., Dwyer, Forsyth, & Spurr, 2006a), or contingent valuation techniques (CVM; e.g., B. Johnson & Whitehead, 2000; B. K. Johnson, Grootuis, & Whitehead, 2001). The purpose of this paper is to contrast and compare the outcomes of a standard economic impact analysis (EIA) based on input-output (I-O) modeling with a CBA for a medium-sized international sport event. The event under investigation is the Pan-American Junior Athletic Championships, which was hosted in a medium-sized city in a Canadian province.

Challenges of Economic Impact Studies

Economic Impact Analysis (EIA)

Standard EIA is often based on multiplier analysis, using I-O modeling. The multiplier analysis converts the total amount of additional expenditure in the host city to a net amount of income retained within the city after allowing for leakages through the local economy (Gratton & Taylor, 2000). Major criticisms of standard EIA based on I-O relate to the usage of inappropriate and overinflated multipliers (e.g., Matheson, 2009), and/or negative effects being ignored (e.g., Barget & Gouguet, 2010; Dwyer et al., 2005, 2006a; Késenne, 2005; Porter & Fletcher, 2008). Porter and Fletcher (2008) argued that I-O models are long-run models and are, therefore, inadequate to predict the impacts of the demand shock of short-term events. Dwyer et al. (2005, 2006a, 2006b) endorsed the criticisms of standard EIA and suggested using the CGE approach, which incorporates positive as well as negative impacts for the economy as a whole. The authors further argued that, for smaller events in small cities, I-O analysis may be appropriate to assess local impact because the overestimations are “not likely to be too large at this level of analysis” (Dwyer et al., 2006a, p. 61).

The size of the event plays a role; negative impacts of large events in other parts of the regional and national economy are more obvious than the negative effects of smaller events. For instance, it is unlikely that the Pan-American Junior Athletic Championships, as a medium sized sporting event, affected exchange rates and/or other import and export competing industries. Mondello and Rishe (2004) supported this idea, based on the fact that smaller scale events require less additional expenses compared to mega-sporting events. Therefore, small and medium sized sport events may have the potential to benefit the local community. In the same line, Matheson (2006) argued that smaller sporting events are (a) less likely to induce a crowding out effect, (b) carry fewer security costs, (c) cause fewer deviations from normal business patterns (supporting the idea that multiplier analyses are more accurate than for mega-events), and (d) cause fewer incentives to produce inflated results.

While the above provides an argument why it is still acceptable to perform a standard EIA for an event such as the Pan-American Junior Athletic Championships, it is clear that this type of analysis does not distinguish which of the money streams are to be considered as costs and/or benefits. It is therefore argued that CBA provides a more

accurate and realistic picture of the actual cost and benefits of hosting a sports event (e.g., Barget & Gouguet, 2010; Késenne 2005; Mules & Dwyer, 2005).

Cost-Benefit Analysis (CBA)

CBA is founded on the principles of welfare economics. It sorts out what the net benefits for the local population are by indicating which of the money flows in EIA are a cost and which are a benefit (Barget & Gouguet, 2010; Késenne, 2005). The data requirements to perform a CBA are extensive, and only a few studies have been found so far which actually applied CBA for evaluating sport events (e.g., Mules & Dwyer, 2005; Schaffer, Greer, & Mauboules, 2003). Schaffer et al. presented a *multiple account valuation* of the costs and benefits of the 2010 Winter Games to counteract the grossly exaggerated claims of “over \$10 billion in provincial GDP and more than 200,000 jobs” (p. 6) generated through a standard EIA. A CBA looks at the broader question of what society gains and loses as a result of staging an event.

A CBA needs to incorporate all costs and all benefits in order to determine whether there are any net benefits. On the cost side, the opportunity cost, and not the actual financial cost, must be taken into account. On the benefit side, the increase in value of consumption of local residents, including the public good value of the event and the consumer surplus, needs to be taken into account. One way to measure benefits is through willingness to pay valuation techniques (e.g., Barget & Gouguet, 2010; B. Johnson & Whitehead, 2000; B. K. Johnson, Groothuis, & Whitehead, 2001; Mules & Dwyer, 2005; Walton, Longo, & Dawson, 2008).

The consumer surplus is an important component of the benefit side (Campbell & Brown, 2003; Dwyer, Forsyth, & Spurr, 2006b). The consumer surplus refers to the benefits experienced by the local population and can be calculated by measuring the difference between the willingness to pay of the locals to attend the event, and the actual amount they spent. According to Mules and Dwyer (2005), only the consumers' surplus of local residents who attend the event are relevant. Following Falconieri and Palomino (2004), it can be shown that, under a few reasonable assumptions regarding the consumer demand curve and the applied pricing rule, the consumer surplus is 50% of consumer spending. So, the consumer surplus can be calculated approximately as half the total spending of locals (see also Kesenne, 2005). In the case of event types where local spectators outnumber non-local visitors, this can become quite a large amount. Moreover, in CBA it is not only necessary to collect information on the residents' expenditures to estimate the consumer surplus, but this information is also essential to estimate the crowding out effect for local business (cost factor). Obviously, the definition of *local population* depends on the area under investigation (i.e., a city, a region, a country). In summary, calculations of the opportunity costs, as well as the consumer surplus and the public good value of the event, are complex and challenging to implement in practice. However, they are essential components of the CBA and this paper contributes to this exercise.

The Pan-American Junior Athletic Championship

The Pan-American Junior Athletic Championships were the subject of a larger research project that included (a) the analysis of motives and identities of events attendees, including both local and non-local spectators (excluding participants; Snelgove,

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Taks, Chalip, & Green, 2008), and (b) tourism behavior in the context of event strategy sustainability, only including non-local event attendees (both, spectators and participants; Taks, Chalip, Green, Kesenne, & Martyn, 2009). However, the Pan-American Junior Athletic Championships also offer a unique opportunity to perform different types of economic impact analyses and to compare and contrast their outcomes. There are two elements that made this event very special for the local community. First, a new stadium was built at the University of Windsor to host the event. It included 2,100 seats and additional grass seating. Second, the city of Windsor has a strong tradition in track and field, thus it was expected that the event would generate a high level of interest from the local community.

The Pan-American Junior Athletic Championships are hosted bi-annually in various countries under the auspices of the International Association of Athletics Federations (IAAF) and the Pan-American Athletics Commission (PAC). The 2005 edition was hosted in Windsor from July 28-31. Thirty five countries were represented. It attracted 443 athletes, 144 coaches, and over 600 volunteers. Gratton and Taylor (2000) define this type of event as a *Type C* sporting event (i.e., an irregular, one-off major international spectator/competitor event generating limited economic activity). It is a type of event in which a large contingent of non-local visitors are the competitors and/or participants when compared to non-local spectators; it is also an event in which local spectators outnumber the non-local spectators. In the typology of Barget and Gouguet (2007), the Pan-American Junior Athletic Championships are defined as an occasional or sporadic (as opposed to regular), ordinary (as opposed to mega) event, organized under the auspices of official sports authorities (as opposed to private corporations).

Method

Questionnaire and Data Collection

Visitor spending of spectators and participants. Data on local and non-local visitor spending¹ were collected through a written questionnaire. *Non-locals* were defined as visitors living outside the region under investigation (i.e., Windsor-Essex County). There were some minor differences between the spectator and the participant survey. For instance, the spectator survey enquired about the spectators' role in the event (related to any of the event participants or not), place of residence (to distinguish between locals and non-locals), purpose of the visit (primary, casual), daily spending of their party during the visit (tickets and admission fees, transportation, food, lodging, shopping, entertainment, other), length of stay (number of nights), the number of people in the party, and type and location of accommodation. The question about daily expenditures for spectators requested actual spending for one day.

The participant survey queried about the participants' role (athlete, coach, administrator, official, journalist/media, other), their involvement in athletics (number of years and specialty), place of residence (to distinguish between locals and non-locals), the number of accompanying people (relatives or friends), their estimation of their personal daily spending during the visit (expenditure categories similar to those of the spectators except for tickets and admission fees), and length of stay (number of

nights). Because of the Pan-American context, the questionnaire was available in English and Spanish.

During the opening night, and subsequent 3 full days of the event, as many spectators as possible were approached by surveyors, at the front gate and in the stands, and were invited to participate. Spectators were asked to fill out the survey and were provided with a pencil and an envelope. Accompanying each survey was a letter of information regarding the study that indicated respondents' ethical rights and the approximate length of time (10 min) it would take to complete the survey. The respondents were instructed to return the completed survey in the envelope to the research booth located at the track and field event venue in exchange for a frisbee with the event's logo. Event participants (i.e., athletes, coaches, and officials) received the questionnaire in their welcome package. They were asked to return the questionnaire to the research booth and were invited to participate in a drawing for a prize.

Operational costs of the local organizing committee (LOC) were collected through document analyses (i.e., the LOC business plan and final report; Local Organizing Committee, 2005).

Capital costs related to building the new stadium were retrieved via document analyses of the physical plant department of the University of Windsor, which was in charge of building the stadium.

Sample

Of the 2,829 questionnaires that were distributed to the spectators and participants, 1,564 were returned (i.e., response rate of 55.28%), of which 1,379 were usable. The total number of usable questionnaires from the spectators was 1,168 (local spectators, *n* = 850; non-local primary spectators, *n* = 217; non-local casual spectators, *n* = 101). The participants were all from out-of-town; the number of usable participants' questionnaire was 211 (athletes, *n* = 123; coaches, *n* = 32; officials, *n* = 38, and "other participants," *n* = 18).

The population numbers of non-local event participants were available from the local organizing committee (Local Organizing Committee, 2005). Accurately estimating the number of non-local spectators is essential (Mules & Dwyer, 2005) but proved

Table 1. Non-Local Visitor Spending (in \$ CDN)

	Average \$/day	# nights	# individuals outside WEC ¹	Total expenditure
<i>Athletes</i>	107	5.56	442	263,814
<i>Coaches</i>	282	5.61	143	225,972
<i>Officials</i>	144	4.35	65	40,676
<i>Others</i>	223	5.4	47	56,533
Participants				586,997
Spectators	95*	2.39	1694	384,761
Total				971,759

*This table excludes ticket sales of spectators to avoid double counting (ticket sales as revenue for LOC).

¹ WEC = Windsor Essex County

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to be more complicated. The numbers of spectators at opening night was approximately 4,000 with another 4,000/day for the subsequent 3 event days, totaling 16,000 spectators. However, this number includes double counting. The average attendance of the spectators was 1.7948 ($SD = 0.86$) days. The number of *unique* spectators is thus estimated to be 8,915. According to our survey, 19% of the spectators were non-local visitors whose primary purpose was to attend the Pan-American Junior Athletic Championships. The total number of non-local primary spectators was therefore estimated to be 1,694. The population numbers of non-local residents are presented in the fourth column of Table 1.

Data Analysis

Economic impact analysis. As is generally accepted in EIA, residents' and casual visitors' expenditures were excluded (e.g., Crompton, 1999; Robinson & Gammon, 2004), and only expenditures of non-local visitors, whose primary purpose was to attend the event, were taken into account. For the purpose of this study, the Sport Tourism Economic Assessment Model (STEAM) Pro model was used to calculate the economic impact of the Pan-American Junior Athletic Championships. STEAM is created by the Conference Board of Canada (CBC) in collaboration with the Canadian Sport Tourism Alliance (Canadian Sport Tourism Alliance, 2006). The model is based on the Canadian Tourism Research Institute's (CTRI) TEAM model. It is a pre-eminent, computer based economic impact assessment model. It uses sophisticated I-O methodology and econometric modeling techniques. The latest data from Statistics Canada are included and it incorporates the local and provincial tax structure of the community. After inputting visitor, operational, and capital expenditures, the results show the impact on the Gross Domestic Product, employment, and total tax revenues for the federal, provincial, and municipal levels. The results can be retrieved for visitor, operational, and capital expenditures separately or combined. For the purpose of this study, the combined results are provided since the stadium was built for the purpose of the event and therefore should be included in the EIA. It should be noted that the appropriateness of the STEAM model itself remains unclear, and underlying assumptions and working principles of the STEAM model have not been revealed to the authors. It is, however, an easy, accessible, and user-friendly, computer-driven, regional I-O model (Canadian Sport Tourism Alliance, 2006).

Cost-benefit analysis. On the benefit side, we considered the non-local visitor spending, the revenue of the LOC, the consumer surplus for the local spectators, and the public good value of the sport event for the local residents. Information to estimate the expenditures of spectators (locals and non-locals) was available through the survey results. Based on Falcioni and Palomino (2004) consumer surplus was calculated as half of the total ticket spending of the locals. The revenue of the local organizing committee was retrieved through the final report of the LOC (Local Organizing Committee, 2005). The public good value of the event for the local residents was estimated, borrowing a willingness to pay (WTP) value of \$6.00 per household from a CVM approach of Johnson and Whitehead (2000). This WTP value was then multiplied by the number of households in Windsor ($N = 88,465$ in 2005; CityData.com, n.d.).

On the cost side, we consider opportunity costs related to building the stadium (including labor costs and the cost of borrowing), imports, and ticket sales to locals

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(money no longer being spent in other industries of the local economy). The opportunity costs related to labor costs were estimated based on labor market information. The costs of borrowing were obtained through billing reports provided by the Finance Department of the University of Windsor. Crowding-out effects from imports were retrieved from the STEAM model. According to CBA, only indirect and not-induced effects should be considered (Campbell & Brown, 2003). Ticket sales to the locals were available from the survey data. Thus, net benefits were calculated by subtracting the cost from the benefits. If this result is positive, the benefits outweigh the costs and vice versa. We were somewhat limited in the availability of data to perform a full-blown CBA; therefore, we can only present a back-of-the-envelope calculation of the net benefits, keeping in mind that the aim of this exercise is only to show clearly the important difference between an EIS and a CBA of hosting a sports event.

Table 2. Economic Impact Summary: Combined Total (Visitor/Operational/Capital) for the City of Windsor in \$ CDN (Results from the STEAM model; Canadian Sport Tourism Alliance, 2006)

Initial expenditure:			
Visitor spending		\$971,759	
Organization		\$544,521	
Construction		\$9,506,883	
			\$11,023,162
<hr/>			
GDP			
Direct impact		\$3,189,312	
Indirect impact		\$1,188,264	
Induced impact		\$1,240,105	
Total impact			\$5,617,681
Employment (Full-year jobs)			
Direct impact		35.8	
Indirect impact		16.6	
Induced impact		23.4	
Total impact			75.8
Wages and salaries			
Direct impact		\$1,859,540	
Indirect impact		\$ 777,813	
Induced impact		\$759,172	
Total impact			\$3,396,524
Imports			
Direct impact		0	
Indirect impact		\$1,948,368	
Induced impact		\$547,974	
Total impact			\$2,496,342

Results

Economic Impact Analysis

Total non-local visitor spending was \$971,759 CDN with the 60% of the money spent by the event participants (see Table 1). A budget analysis of the LOC indicated that the organization spent \$544,521 CDN within Windsor/Essex County for the organization of the event. This relates to cash only and excludes any value in kind. Money spent outside the local community, such as intercity transportation and other travel costs (i.e., crowding out), was excluded to perform the EIA. The final profit for the LOC of \$4,125 CDN was put into a university scholarship fund. The total cost for the construction of the stadium was \$9.580 million, of which \$8.848 million was attributed to contractors based outside Windsor/Essex County. However, the majority of the work (an estimated 90%) was subcontracted to local businesses, who, in their turn, used local people to do the job. In total there were 43 subcontractors, of which 23 were local companies (i.e., from within the Windsor Essex County region). However, even the other 20 subcontractors partially used people from within the region. Corrections were made for expenditures that were not specifically related to the event, like relocation of dirt and putting up a fence. This brings the final capital expenditure to \$9,506,883. The results of the EIA based on the STEAM model are presented in Table 2.

The combined total of visitor (\$971,759), capital (\$9,506,883), and operational spending (\$544,521) as a result of hosting the Pan-American Junior Athletic Championships were estimated to total \$11,023,162. These expenditures generated a net increase in economic activity in the City of Windsor of \$5,617,681. The event provided a total of 75.8 jobs for the city (and 33.2 jobs for the remainder of the province, not shown in Table 2). The total impact from wages and salaries was estimated to be \$3,396,524, and total imports added up to \$2,496,342. The total level of taxes (not shown in Table 2) supported by the event was estimated at about \$3.2 million. Of this, a little over \$1.5 million (or almost half) was allocated to the federal government, \$1.2 million to the provincial government, and \$416,343 to the municipal governments across the province. The level of municipal taxes supported within Windsor was estimated to be \$254,430. The input of the city of Windsor was \$8,000 in money and support with transportation.

Cost Benefit Analysis

In the CBA, the benefits are made up of the non-local visitor spending, the revenue of the LOC, the consumer surplus, and the public good value (Table 3). Initial non-local visitor spending is \$971,758 (excluding ticket sales). According to our estimation, 76% of the spectators were locals and 24% were non-locals (19% whose primary purpose was to attend the event and 5% casual visitors). In order to avoid double counting, some corrections had to be made by taking out the portion of non-local visitor spending from the revenue lines of the LOC. Corrections were made accordingly for merchandising, concessions, programs, and parking (minus 24% each). Note that, from the \$105,117 revenue for ticket sales, 76% or \$79,889 is from local spectators and \$25,328 is from non-local spectators. Based on Falconierie and Palomino (2004), the consumer surplus is, therefore, \$39,944 (or half of the total spending for locals). The public good value of the sport event is valued at \$530,790, based on an average WTP

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of \$6.00 (Johnson and Whitehead, 2000), multiplied by the number of households in Windsor in 2005 ($N = 88,465$; CityData.com, n.d.).

The opportunity costs include imports, labor and capital, and ticket sales to locals. The import's indirect impact (\$1,984,368; see Table 2) is a leakage (i.e., a crowding-out effect). The new stadium was an initiative of the University of Windsor and privately financed; the public sector was not solicited to invest in the construction of the stadium. Obviously, the labor and capital costs for construction of the sports infrastructure, including the cost of borrowing, are serious cost factors; however, in CBA it is not the actual cost that is taken into account but the opportunity cost, which can be positive or negative depending on the business cycle and level of unemployment in the region. For instance, the financial costs for building the new stadium can be very high, but the opportunity costs can be low if there is a considerable underutilization of capital and labor prior to commencement of construction. If mainly unemployed workers are hired to build the sport stadium, the benefits for the country or region from not building the stadium are low (e.g., a high rate of unemployment). The opportunity cost might even become negative (i.e., a benefit) if unemployment allowances are being paid. The government no longer has to spend taxpayers' dollars for unemployment allowances, and the money can now be used elsewhere to benefit the local pop-

Table 3. Cost-Benefit Analysis (in \$ CDN)

<u>Benefits</u>		<u>Costs</u>	
Non-Local Visitor Spending	971,759	Opportunity Cost of Labor	0
LOC-Revenue		Opportunity Cost of Borrowing	2,500,000
Ticket sales ¹	105,117	Imports (Indirect)	1,948,368
Merchandise ²	3,613	Ticket Sales to Locals	79,889
Concession revenue ²	2,302		
Program ads and sales ²	3,171		
Parking ²	7,285		
Grants	203,100		
Sponsorship	113,907		
Coaching seminar	1,799		
Accommodation	90,522		
Other	34,062		
	564,878		
Consumer Surplus	39,944		
Public Good Value	530,790		
Total (a)	2,107,371	Total (b)	4,528,257
Net benefits (a-b)		-2,420,886	

Note. ¹ 76% of tickets sold to non-locals; ² corrected: 24% revenue from non-locals is subtracted to avoid double counting.

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ulation. If more previously employed workers are hired to build the stadium[em dash]and are therefore removed from other, possibly more productive jobs[em dash]the opportunity cost will be higher. The latter scenario illustrates how more output and income are lost elsewhere. (e.g., Dwyer et al., 2005).

There were 6,400 construction workers employed in Windsor in 2005 (Lefebvre, Arcand, Sutherland, Armstrong, & Wiebe, 2008). The Construction Sector Council (2008) reported an unemployment rate in the construction industry (all trades) of 10.5% in South Western Ontario in 2005. This was higher than the general unemployment rate for Windsor in 2007 (i.e., 7.9%; Employment Ontario, 2007). Thus, there were about 750 construction workers unemployed. The average number of workers at the stadium was no more than 100 over the 15 month period (Contractor Company, personal communication, June 9, 2008). Therefore, the total number of construction workers needed to build the stadium was less than the total number of unemployed construction workers in the area. However, it can be expected that not only unemployed construction workers were hired for the job. A percentage of the hired employees were probably more qualified workers, previously employed and taken away from other jobs; this obviously causes some crowding out. We assume, however, that this opportunity cost of labor is fully compensated by the unemployment transfers that were saved when the previously unemployed workers were hired for the construction of the stadium. So, for simplicity reasons—and also in order not to be accused of overestimating the costs—the opportunity cost of labor is set at zero.

The opportunity cost of borrowing can be estimated by the actual value of all interests paid and all interests not received over the borrowing period. Students paid \$2,000,000 (over time) at bond rate of 5.37%; the bond term was 40 years, but the student payments are expected over 10 years. Pledges amounted to \$2,000,000 at an internal rate of Prime less 1.75% over 10 years. An internal loan of \$4,399,000 was provided at an internal rate of Prime less 1.75% over 14 years. Furthermore, \$1,181,000 was fundraised at no interest (DE, personal communication, June 6 & 14, 2011). Based on this information, the cost of borrowing for the student loan is \$1,016,409.73 (Royal Bank of Canada, 1995). An average interest rate of 3.5% was used to calculate the cost of borrowing for the pledges and the internal loan (Average Prime Rate, 2008), adding up to \$370,422.83 and \$1,162,632.06 respectively. This raises the total cost of borrowing to \$2,549,464.62, or approximately \$2.5 million (in current terms).

If locals spend their money on tickets to go to the event, this amount of money (\$79,889) is no longer available for spending in other local business, thus crowding out other business in the local economy. When the overall costs of approximately \$4.5 million are subtracted from the overall benefits of approximately \$2.1 million, the outcome is a negative net benefit of \$2.4 million. These high numbers essentially accrue because of the building of the stadium. Since it was not funded with public money, the University of Windsor, or its students, will have to cover these losses one way or another. In many cases however, it is the government, and thus the taxpayers, who pay these deficits—like the taxpayers of Montreal after the 1976 Olympics who had to pay a special yearly tax until 2007.

Discussion

Data available from the 2005 Pan-American Athletic Junior Championships hosted in Windsor (Ontario, Canada) allowed us to perform a standard EIA, as well as a rudimentary CBA. While this is a medium-sized sport event in a medium-sized city, the money streams are quite substantial and so is the difference between the EIA and the CBA. The substantial streams of money are, in part, a consequence of including construction of the stadium in the analyses. This was based on the rationale that the stadium was specifically built for the event (LOC, personal communication, December 3, 2010). Not surprisingly, the results show completely different outcomes. What is important here is not so much the actual numbers, but the range of, and relative difference in, the outcomes.

Both, the EIA and CBA presented challenges and limitations. The major issue with the EIA was that the underlying assumptions, multipliers, and working principles of the STEAM model used to compute the economic impact of the Pan-American Athletic Junior Championships were not revealed. This makes it difficult to accurately interpret the outcomes. Nevertheless, some level of credibility can be expected since the STEAM model is specifically developed for Canada by a group of highly recognized organizations (i.e., CBC, CTRI, and CSTA). It is continuously updated and frequently used among event organizers in Canada (Canadian Sport Tourism Alliance, 2006). The outcomes generated by this model are the ones that are usually reported to the public.

As suggested by Dwyer et al. (2006a), the focus of the EIA of this medium-sized event was on the city of Windsor (and not on the larger region or province); however, the money flows generated by the event, as presented by the EIA, do not distinguish between costs and benefits, creating a false impression that all money flows are beneficial to the host city. This is why sport economists have argued that a CBA is more appropriate at determining if an event is worthwhile and at assisting decision makers with making their choice about the opportunity of bidding for an event (e.g., Barget & Gouguet, 2010; Kesenne, 2005).

The CBA performed in this study—with opportunity costs, the consumer surplus, and public good value for the local residents—can be considered a realistic/conservative scenario; however, the net benefit is negative, which is in strong contradiction with the results from the standard EIA. Performing a full-blown CBA is a complex mission since it requires an extensive amount of specific data which are often missing and very challenging to collect. For instance in our example, the CBA did not take into account hidden costs/and benefits, such as university employees devoting work time (as well as free time) to the Pan-American Junior Athletic Championships (taking away from their regular work). Only \$84.84 actual salary-overtime costs were included in the stadium costs. It is obvious that this does not reflect the actual effort from the many university employees. Should this be considered as a cost to the University?

Potential future benefits for the University of Windsor were not calculated. The University had generated a lot of positive publicity, valued at \$350,000 CDN (TV broadcast and written press; Local Organizing Committee, 2005). This, combined with the construction of the new stadium, created a positive image which may have attracted new students in the following years, thus creating a return on investment for the University.

More than 600 volunteers helped out during the Championships. Should this be considered a cost (crowding out) or a benefit (added value, more experienced volunteers)? The high level of community involvement through the many volunteers has its positive effects in that it strengthens pride and offers pleasure (e.g., Downward, Lumsdon, & Ralston, 2005; Downward & Ralston, 2006), but how do we measure this? The crowding-out effect relating to sponsorship—another opportunity cost—was not taken into consideration since we were unable to retrieve data that indicated if sponsorship money was taken away from other organizations and/or projects.

Given the fact that CBA attempts to measure a net gain in welfare, Barget and Gauguet (2007) correctly argue not to limit CBA to market costs and benefits but to include positive externalities (e.g., social peace and social cohesion) and negative externalities (e.g., hooliganism and doping) as well—that is, since they respectively increase or decrease the real value of the event. Intangible cost or benefits—such as environmental impact, social impact, city image, civic pride, and/or future tourism—were not included in the current CBA as these impacts are difficult to value. We did, however, include a “feel good” component by adding the public good value of the event, an intangible benefit, measured through CVM (e.g., Barget & Gauguet, 2010; B. Johnson & Whitehead, 2000; B. K. Johnson, Grootuis, & Whitehead, 2001; Mules & Dwyer, 2005; Walton et al., 2008). For the purpose of this study, we borrowed a value previously estimated by Johnson and Whitehead (2000) for the construction of a stadium in a medium-sized city. Intuitively, it could be expected that the public good value of a stadium is higher than that of an event because of the legacy effect of the former. In essence, however, the Pan-American Athletic Championships created a comparable legacy because a stadium was built for the event. It should be noted that the stadium was built solely with private funding. Since no tax dollars were used for the staging of the event, nor for the construction of the stadium, the public value of the event—and thus the benefits—might be underestimated. On the other hand, it can be argued that not everybody in the city may find value in a new stadium, which leads to an overestimation of the public good value. Therefore, we assume that the \$6.00 is an acceptable compromise. However, as Walker and Mondello (2007) note, the use of CVM to measure intangible benefits of stadiums and teams remains controversial. Sustained changes that accompanied hosting the Pan-American Junior Athletic Championships include the stadium, the increased experience of event managers, officials, and volunteers, and the potential to host future track events.

In addition, for the sake of simplicity, the consumer surplus was not measured relative to an income-compensated demand curve (e.g., Willig, 1976), but the opinions differ regarding whether this is necessary to estimate the consumer surplus (e.g., McKenzie, 1979). Given the difficulty to develop a reliable estimation of any demand curve, the demand curve in this empirical example was assumed to be linear where the optimal price is set at the unitary elastic point.

With regard to the opportunity costs, it could be acknowledged that there is always an opportunity cost of using labor and capital, even when inputs are idle. It is indeed possible to use labor from unemployed people to build a hospital instead of a sports stadium. It is, however, not uncommon to assume positive opportunity costs in an environment with high levels of unemployment when a new opportunity to build a stadium arises without an alternative (e.g., building a hospital) being on the horizon.

The standard EIA, based on the I-O model, accounts for leakages. It might be argued that we overestimated costs in the CBA because a portion of the ticket sales to locals might not be costs in the local economy—a share of those expenditures could have leaked away had locals spent that same money locally if the event had not taken place. There is, of course, no empirical evidence suggesting that local ticket sales prevented leakage from the local economy. Therefore, we decided not to account for potential leakages for these expenditures from locals on ticket sales, crowding out other businesses in the community. However, one could rightly argue that the same holds true for casual visitors attending the event since they too could have spent their money elsewhere other than on buying tickets for the event. While the casual visitors only represented 5% of the spectators, not including them here represents an underestimation of the crowding out of local businesses. Thus, in future analyses, we suggest that expenditures of casual attendees should be incorporated as opportunity costs (i.e., crowding out other local businesses).

A similar line of thought applies for the consumer surplus. The consumer surplus was calculated as half the locals' expenditures on ticket sales. However, it could be argued that we overestimated the consumer surplus since we should only include the difference in consumer surplus with the forgone alternative. We, therefore, acknowledge that it remains a rough estimation and taking only half instead of the full amount is a conservative compromise in this regard.

In essence, all short term and long term costs and benefits should be included in a CBA. However, reliable data on long-term costs and benefits are usually not available when a CBA is performed shortly after the event. That being said, in the framework of a CBA, it is not correct to include potential future benefits of the stadium since investments in alternative projects (e.g., schools, residences) could have generated equal or even higher benefits. These, in turn, should be considered opportunity costs of the stadium.

It is clear that some missing components in the CBA, as discussed above, underestimate the benefits and thus overestimate the costs and vice versa. By not including components such as positive publicity, increased experience of volunteers, or the potential to recruit new students or hosting future events, we have underestimated the benefits; by not including components such as, for example, crowding out effects of volunteers and/or sponsorship or the free use of university employees, we have underestimated the costs. The question remains, will these omissions partial each other out?

While it is important to know the ratio between total costs and total benefits of a sports event for the host city or region, it is of equal importance to know who bears the costs and who runs off with the benefits. In this case, winners are the workers who were previously unemployed with a low unemployment benefit and who have now earned an income as a construction worker building the new stadium. Other winners are the public authorities who no longer need to pay employment insurance to these formerly unemployed construction workers. Then, there are the local spectators with their consumer surplus and the local residents with the public good value of the event, which includes the legacy of the stadium. Among the losers are the local businesses that lose income because locals have spent their money on tickets; note that the majority of the spectators were local residents. On the other hand, the sport event stimulated spending in the local economy of non-local event attendees (e.g., Chalip, 2004;

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Wilson, 2006). A previous analysis of redistribution effects indicated that different sectors in the local economy benefited from the different types of event attendees visiting the region (Taks, Green, Chalip, Kesenne, & Martyn, in press). The hospitality industry (i.e., lodging and accommodation), restaurants, and private transportation (rental and operation) benefited from the spending of the non-local primary spectators, while retailers and merchandise providers thrived on spending from the participants. Analyzing redistribution across and within local communities assists in exploring which sectors in the local economy benefit or lose from hosting the event (Preuss, Seguin, & O'Reilly, 2007; Putsis, 1998). Usually, however, if the total costs of a sports event are larger than the total benefits, it will be the government who has to finance the deficit so that, at the end, the taxpayer turns out to be the biggest loser.

Conclusion

This paper presented a standard EIA and a CBA for a medium-sized sport event in a medium-sized city. Since a standard EIA only provides generic information on—often grossly over-estimated—money streams, sport economists often prefer a CBA over a standard EIA. A CBA provides a more accurate and realistic picture of the actual cost and benefits, and thus allows for identifying the actual net benefits of hosting a sports event (e.g., Barget & Gouguet, 2010; Kesenne 2005; Mules & Dwyer, 2005).

We purposefully opted for a medium-sized sport event in a medium-sized city because there is support in the literature that performing standard EIAs for smaller events in smaller cities are appropriate because over-estimations are less likely to occur (e.g., Dwyer, 2006a; Matheson, 2006; Mondello & Rische, 2004). However, from this study, it is clear that both the EIA and the CBA posed many obstacles and challenges. At first glance, performing the EIA looks simpler for two reasons. First, EIA uses primary data which are relatively easy to collect (visitor spending, operational cost, and capital costs). Second, EIA most often use existing I-O models. However, the underlying assumptions and multipliers of these models are seldom revealed. This was also the case for the STEAM model used in this study, which raises concerns for the outcome of the EIA. In addition, the EIA only provides us the generic picture of the money streams generated by the event.

While CBA is a more preferred option, performing a full-blown CBA is very complex because of the enormous amount of information it requires. Therefore, we presented a back-of-the-envelope calculation of the net benefits with the information we had available. We made several assumptions about opportunity costs and borrowed a public good value from another study. We have also elaborated on the many costs and or benefits that were not taken into account because data on these components are difficult to obtain. Whether these omissions neutralize themselves cannot be answered at this stage. Nevertheless, costs and benefits were more clearly identified in the CBA. Future studies should further develop techniques how to adequately measure these costs and benefits.

In the end, what is important here is not so much the actual numbers that were calculated through the EIA and the CBA but more so the range of, and relative difference between, the outcomes. This contribution was an exercise in showing the important difference between an EIS and a CBA of hosting a sports event. While both methods

presented challenges and limitations, it is clear that the CBA has the distinct advantage or identifying the net benefits associated with hosting a sport event.

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Endnote

ⁱ Since the study was performed in Canada, all dollar amounts are reported in Canadian dollars. At the time of the survey \$1 CDN = \$0.808 USD

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