Economic Aspects and the Summer Olympics: a Review of Related Research

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ABSTRACT

As the Summer Olympics are growing with larger media coverage and sponsorship, host cities have started to attach great importance to the tourism and other likely economic effects that occur by staging such a special event. As a result, a number of studies have been conducted to consider the various economic implications on the hosts. This paper examines and evaluates methods and assumptions used by the economic studies. It also compares *ex-ante* models and forecasts with the *ex-post* approach. The aim is to improve the information available to policy makers and potential future hosts of Summer Olympics and other mega-events. Copyright © 2003 John Wiley & Sons, Ltd.

INTRODUCTION

The modern Olympic Games were first held in Athens in 1896. Over the years, the Games have survived many trials,

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including wars and boycotts, and each set of Games is held every 4 years. In recent years, the interest of countries and regions in staging a future edition of the Games has grown because of the perception that doing so would help attract tourists and generate income.

As well as the likely impacts on the socio-cultural and environmental areas, host cities place great emphasis on the economic implications of the Olympics and the tourism development. These implications have received increasing attention over the past two decades, involving economic studies to provide a measure of the net gains that hosting the Games may provide. Although economic impact analyses prepared by or on behalf of Olympic advocates have demonstrated economic advantages from hosting the Games, potential host communities pose the question of whether, in fact, the economic benefits of the Olympics are pragmatic and, if they are, the extent to which such benefits offset the costs (Haxton, 1999).

Much of the published literature on the Olympics emphasises long-term benefits such as newly constructed event facilities and infrastructure, urban revival, enhanced international reputation, increased tourism, as well as improved public welfare, additional employment, local business opportunities and corporate relocation (Ritchie and Aitken, 1985; Hall, 1987; Kang, 1988; Robin, 1988; Walle, 1996; French and Disher, 1997). In contrast, potential negative impacts include high construction costs of public sports infrastructure and related necessary investments (usually placing a heavy burden on the government budget), temporary crowding problems, loss of visitors,

property rental increases and temporary increases in employment and business activities (Hiller, 1990; Darcy and Veal, 1994; Mount and Leroux, 1994; Leiper, 1997; Spilling, 1998).

The objective here is to review existing literature that focuses on the economic impacts of the Summer Olympic the Games. No economic impact studies were found for Games before Los Angeles in 1984. Seven cases of the modern Games are examined, dated between 1984 and 2012. Thirteen studies are considered that investigate various economic variables related to the hosting of the Games and they have been categorised into *ex-ante* and *ex-post* economic impact assessments.

This review does not attempt to draw any conclusion as to which Games have the most favourable economic impacts. This would require a comprehensive study involving the review, comparison and justification of the models from both theoretical and empirical standpoints. Instead, our implicit objective is more modest. The goal is primarily to provide an overview and evaluation of the different approaches and demonstrate the differences that may appear in the results.

The remainder of this article is organised as follows. It begins by explaining the link between direct, indirect and induced economic effects, which is the principal theory embraced by economic impact studies. It then goes on to examine the alternative modelling approaches taken to ascertain the economic implications generated by the Summer Olympics. Finally, the article analyses each study in turn, evaluates the assumptions made and outlines directions for further research.

UNDERSTANDING THE OVERALL ECONOMIC EFFECT

When a city is awarded the Summer Olympics, a large amount of new money is expected to flow into the host economy and recirculate within it. An economic effect through hosting the Games arises because an inflow of funds, which have not been switched from elsewhere in the economy and probably would not otherwise have come without the Games, will enter the local, regional or national economy. This inflow of money stems from broadcasters, sponsors, Olympic family, athletes and digni-

taries as well as non-area travellers who would be defined as 'tourists' by those in the tourism business.

There has been a tendency to assess the economic impact of Summer Olympics using the 'multiplier' concept. Briefly, a multiplier estimates the number of times a unit of currency, once spent within an economy, is respent within the borders of that economy. The overall effect of the new money on the local/regional/national economy is broken down into three major elements.

(1) Direct effect: the first economic effect of the new money spent by outside visitors. As Figure 1 illustrates, new money is injected into the host economy in industries such as accommodation, food, transportation, etc.
(2) Indirect effect: the subsequent effects of the injected money within the economy, after allowing for leakages.
(3) Induced effect: the proportion of household income then respent in other businesses in the economy.

The indirect and induced effects together are collectively referred to as *secondary impact* (Crompton, 1995).

The multiplier analysis has been a common form of estimating the respending impact of an initial inflow of money in an economy. Adopting this approach, if errors occurred in estimating the direct effect then those errors of calculation are compounded in estimating the secondary effect. Therefore, an accurate calculation of the direct spending is essential in order for the economic impact estimates to be reliable (Baade and Matheson, 2002).

The three most commonly reported multipliers are those of sales, income and employment (Crompton, 1995). *Sales* or *Transactions multipliers* measure the direct and secondary effect of the injected money on the business activity and turnover. *Household Income multipliers* concentrate on the direct and secondary effects on the household income. *Employment multipliers* measure the number of new full-time jobs resulting from the money injected in the economy.

Although the sales multiplier is the one most often used in the economic impact studies, Crompton (1995) argues that the household income multiplier is the most relevant for assessing the economic impact of hosting a
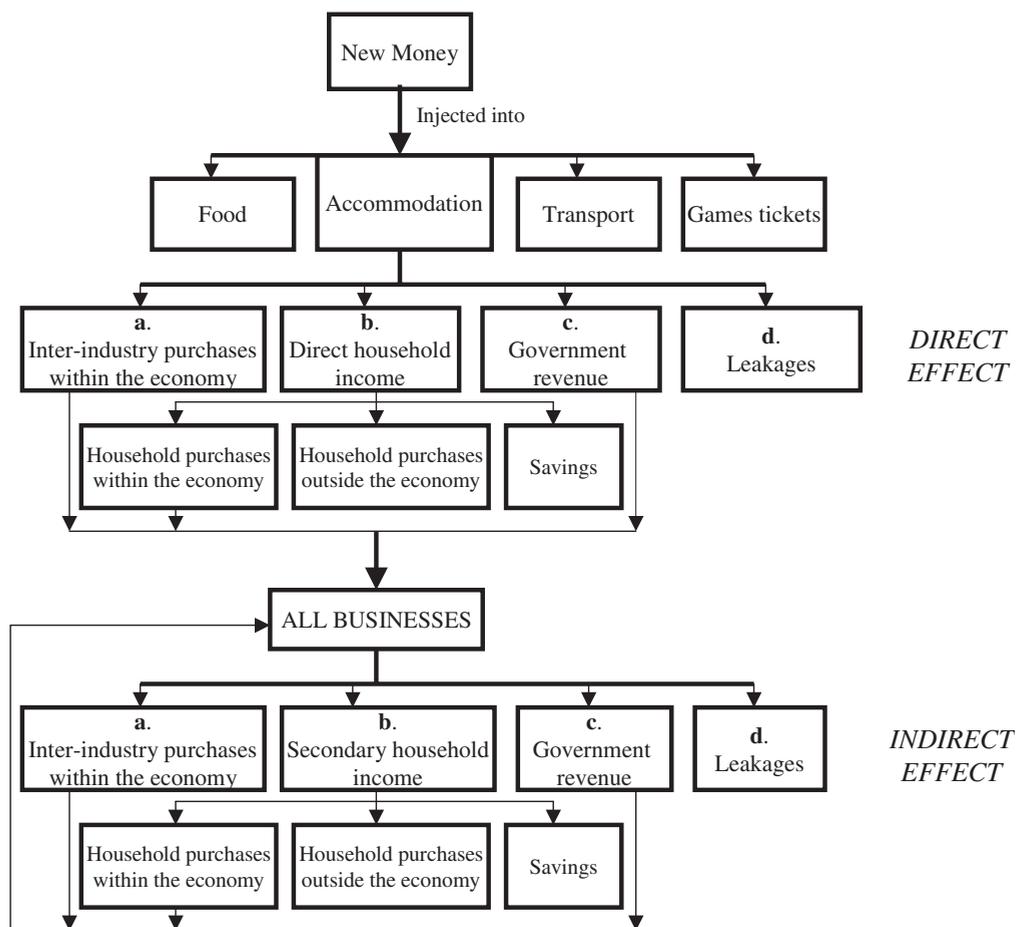
Figure 1. Schematic diagram of the 'multiplier' approach, based on Liu and Var (1982) and Crompton (1995). 'Accommodation' is chosen to show how the multiplier concept operates, but should be similarly implemented for 'food', 'transport' and 'Games tickets'. The three direct recipients of the injected money, after allowing for leakages, subsequently spend this money in the same four ways, generating the *indirect effect*. Leakages occur because some money could be spent outside the host economy. Moreover, some of the household income could leak out of the economy by the purchase of products from outside, or would not stimulate economic activity because it was invested in savings.

sport event. The reason for this is because it focuses particularly on the effect of the injected money on residents' income and their standard of living. In other words, the host community is not interested in knowing how many sales are attributable to the hosting of the Summer Olympics, but rather what proportion of these sales will end up as residents' income.

In contrast, the employment multipliers are the least reliable among the others (Fletcher and Snee, 1989; Crompton, 1995). Their basic assumption of full utilisation of existing employees may creates errors in calculating the increase in the level of employment, par-

ticularly for 'one-time' mega-sports events such as the Summer Olympic Games. The short duration of the Games does not necessarily justify the hiring of new employees, the generation of permanent full-time jobs and the sustainability of the employment effects. Entrepreneurs will probably exhaust other alternatives such as asking existing employees to work overtime or perform other tasks, before hiring additional work force to satisfy the temporary high demand (Crompton, 1995).

A short review of the literature reveals that the multiplier is a particularly contentious measure. A study by Hunter (1988, p. 16)

argues that 'economic impact studies based on multipliers are quite clearly an improper tool for legislative decision-making'. In contrast, Crompton (1995, p. 34) comments that despite its shortcomings, this technique can be valuable 'if it is implemented knowledgeably and with integrity'.

In event economic studies, problems usually arise when researchers do not clearly identify what type of multiplier (sales or income) is used in their methodological approach, and as a result misleading conclusions can be derived from the data. Because sales multipliers include higher numbers compared with income multipliers, they tend to be attractive tools for advocates of sport events to use in their attempt to justify the economic benefits of hosting the events (Crompton, 1995). In addition, misapplication of the data may arise when spending generated by local residents or which occurred outside is included in the overall economic effect. Furthermore, it is crucial to exclude both spending by tourists who rescheduled a previously organised trip to coincide with the Games or by those who visit the host for other reasons but also end up attending from an economic impact study (Howard and Crompton, 1995).

TYPES OF MODELLING APPROACH

In order for economists to identify and quantify the economic consequences of hosting an event, such as the Summer Olympic Games, a modelling approach must be adopted. In the published literature examined, two main approaches have been used under the broad label of the input–output (I–O) and the computable general equilibrium (CGE) framework.

The I–O method is a long-established technique originated by Leontief in the 1940s and since then it has been very widely applied in economics. Classic I–O models are structured around input–output tables and their production or price categories, but make little or no use of regression-based behavioural equations. The disaggregation of classic I–O models is limited by the disaggregation of the published input–output table. As these models account for intermediate exchanges, they are useful for assessing industry level impacts for changes in

final demand, indirect tax rates or commodity price shocks (West, 1995). However, projections normally are made by specifying final demands (consumption, investment, exports and imports) exogenously. Intermediate consumption, prices and income are determined with strict identities. Consequently, there is no integration between final demand and prices or income and no guarantee that there will be economic consistency among, for example, consumption, prices and income (Werling, 1992). Moreover, attempts to build 'dynamic' I–O models by endogenising investment based on the capital equipment 'requirements' for future output often lead to severe instability problems (Almon, 1966; Steenge, 1990).

Studies that adopted the I–O analysis to evaluate the total economic impact of hosting a mega sporting event made use of linear assumptions. They calculated a set of multipliers suggesting particular proportions of consuming the inputs and used them intact, regardless of the scale of the injected funds and the surge in the economic activity. As a result, they failed to take into account economies of scale, production close to full capacity and price adaptations to demand changes. Ignoring these factors tended to result in miscalculating the multiplier values.

The shortcomings described above apply to the regional input–output modelling system (RIMS II), a computer program often used by studies examined the Summer Olympics in the USA. The RIMS II has been proven to be successful for measuring effects at several levels of industrial aggregation, when initial tourist spending is known, but fails to examine the effect on nearby areas, because it is a single-region model (Humphreys and Plummer, 1995). An alternative I–O computer program, also developed in the USA, is IMPLAN (IMpact analysis for PLANning).

Although a comparatively large number of the referenced economic studies have been carried out in an I–O framework (see Table 1), studies of the Sydney Olympics turned towards the use of CGE models. The CGE frameworks are disaggregated representations of the economy, which use input–output structure for the production side of the economy. The CGE models include sectoral-level production functions and disaggregated demand

Table 1. Economic Impact Studies of the Summer Olympic Games (1984–2012)[a]

State/country	Host/bid city	Year	Reference	Analysis	Type of approach
District of Columbia	Washington–Baltimore bid	2012	Fuller and Clinch, 2000	*Ex-ante*	I-O (IMPLAN)
Texas	Houston bid		Airola and Craig, 2000	*Ex-ante*	I-O (RIMS II)
Greece	Athens	2004	Balfousia-Savva *et al.*, 2001	*Ex-ante*	Macroeconometric
			Papanikos, 1999	*Ex-ante*	Multiplier
Australia	Sydney	2000	Arthur Andersen, 1999	*Ex-ante*	CGE (MMRF)
			NSW Treasury, 1997	*Ex-ante*	CGE (MMRF)
			KPMG Peat Marwick, 1993	*Ex-ante*	I-O
Georgia	Atlanta	1996	Baade and Matheson, 2002	*Ex-post*	Econometric
			Humphreys and Plummer, 1995	*Ex-ante*	I-O (RIMS II)
Spain	Barcelona	1992	Brunet, 1995	*Ex-ante*	No modelling
			Brunet, 1993	*Ex-ante*	No modelling
South Korea	Seoul	1988	Kim *et al.*, 1989	*Ex-ante*	No modelling
California	Los Angeles	1984	Economics Research Associates, 1984	*Ex-ante*	I-O (RIMS II)

[a] Apart from the official reports, no economic impact studies were found for Moscow (1980), Montreal (1976), Munich (1972), Mexico City (1968), Tokyo (1964), Rome (1960) and Melbourne (1956).

functions for consumption, imports, investment, etc. They combine input–output structure and behavioural functions. Normally, however, behavioural parameters are not estimated with regression analysis but are deduced from the single year's set of data or specified exogenously (Werling, 1992). In the determination of prices, CGE models assume flexible prices that move to clear all the markets simultaneously (although some CGE models will assume some sticky prices, such as in the labour market).

Earlier CGE models were used to estimate different static equilibriums under Walrasian general equilibrium theory. Most contemporary CGE models have been expanded to incorporate dynamic adjustment. The MMRF (Monash multi-regional forecasting) model, used by Australian studies to measure the economic impact of the Sydney Olympics, is an example of a dynamic CGE model.

The MMRF used the so-called 'bottoms-up' approach. A number of regional economic models are included and then are linked using interregional flows of commodities, factors of production and population. The bottoms-up approach allows the modelling of economic agents' behaviour at the regional level and then their aggregation is attempted. Although MMRF explicitly distinguishes the economies of Australia's eight states and territories and generates results for all regions in a steady multiregional accounting framework, its size limitation hinders the application of a similar model to larger countries compared with Australia.

Owing to vague technical details often found in the economic studies, a deep penetration proved to be a difficult task. The economic models rely on assumptions that reduce the economy to a level of simplicity so that it can be analysed. Each technique is subject to its own limitations defined by its assumptions. Most of the theoretical assumptions used in MMRF, such as perfect competition in product markets, zero pure profits and constant returns to scale production functions, labour market equilibrium, are not always valid for the Australian States. It is therefore important to consider whether these assumptions may have a significant impact on the Games modelling results.

In the case of I–O analysis the assumption that the I–O coefficients remain unchanged or can be extrapolated into the future in a reliable manner is of particular importance. This is still more so when the I–O model is being used to analyse the impact of major structural changes or shocks such as that of hosting a mega sporting event. The import coefficients have particular relevance in this case. A further consideration, pertinent perhaps to all forms of analysis, is differentiating between the short-term and the long-term impact of hosting the Games. For example, the examination of the extent to which the employment generated is sustainable in the long run. From the short overview, however, it is our understanding that the I–O model has been comparatively more popular, because it might be cost effective and simple in comparison with CGE models.

EX-ANTE AND *EX-POST* ECONOMIC IMPACT ASSESSMENTS

The importance of the relationship between tourism and the Summer Olympics has gained increased recognition in recent years. The tourism effect is one among several that bid and host cities seek, arguing that the international media coverage preceding and during the Games presents a tremendous opportunity to advertise themselves in the global marketplace.

In an attempt to assess the likely growth in tourism as well as other economic effects, *ex-ante* assessments have been carried out to forecast the impacts of the Summer Olympics. Table 1 shows that a number of *ex-ante* economic analyses have been conducted, but the research significantly lacks *ex-post* impact assessments. An *ex-post* analysis examines the economic situation of the geographical influence zone before and after the event and manages to isolate the event from other factors that may run at the same time and may have contributed to the economic impact (Baade and Matheson, 2002).

The majority of studies listed in Table 1 were commissioned by proponents of the Olympic process, and the reader must bear in mind that the report writers were potentially motivated to come up with a favourable result (Baade and

Matheson, 2002). This interpretation could more likely be the case when reports were prepared to justify an Olympic bid. A good way to provide some balance to these views would be to read economic impact studies prepared by 'anti-Olympics' groups, but there are none currently available. There is, however, a growing non-affiliated literature that can be used as a counterweight.

For example, the anti-Olympic alliances 'Bread not Circuses' (BNC) and 'People Ingeniously Subverting the Sydney Olympic Farce' (PISSOFF), based in Toronto and Sydney respectively, made use of the Internet to promote their Olympic critique (current addresses are www.breadnotcircuses.org and www.cat.org.au/pissoff). The main argument of BNC was that the public money spent for the Games would be taken from other more important sectors (e.g. education, health, environment, prosperity). Now with almost every potential Olympic city's bid there tends to be the creation of an anti-Olympic alliance such as the recent example from Vancouver's bid for the 2010 Winter Games. In the case of Vancouver, 'The Impact of the Olympics on Community Coalition' (IOCC) defines itself as a community watchdog rather than an anti-Olympic group and aims to ensure that the environmental, social, economic and civil rights issues remain outstanding and the Olympic benefits apply to everybody.

On the other side, the bidding process itself has gained attention. In his book, Hill (1996) described the experience of the unsuccessful bids by Birmingham and Manchester to host the 1992 and 2000 Olympic Games respectively, focusing especially on the politics involved, and Hiller (1999) has discussed the strategy used by Cape Town in its bid to host the 2004 Olympic Games. Further dimensions of the bidding process, however, have been revealed by assertions of bribery and corruption. Books such as 'Lords of the Rings' (Simson and Jennings, 1992) and 'New Lords of the Rings' (Jennings, 1996) criticised intensively the legitimacy of the bidding process, claiming that IOC members corruptly requested bribes and accepted generous gifts from potential host cities in return for their votes. In addition, the Salt Lake scandal further emphasised the need to address such problems (McIntosh, 2000) and virtually prompted a revamping of the IOC's rules with respect to the host-city bidding process.

The review will now analyse the studies mentioned in Table 1 with reference to a specific question: What are the economic implications of the Summer Games on the host?

Three studies commissioned for the Sydney Olympics predicted the event would generate substantial extra revenue for Australia, and New South Wales (NSW) in particular. Table 2 shows the predictions made by each study.

Although KPMG Peat Marwick (1993) adopted a different modelling approach, its figures broadly concurred with those released by Andersen (1999) and NSW Treasury (1997). The I–O framework used in the study by KPMG Peat Marwick (1993) ignored supply-side constraints and therefore made its estimates questionable. More specifically, supply-side constraints such as investment crowding out, price increases owing to resource scarcity and public financing of infrastructure expenditures are of great importance

Table 2. Sydney Games impact summaries. Sources: KPMG, 1993; NSW Treasury, 1997; Andersen, 1999

Projected figures	Andersen[a]	NSW Treasury[a]	KPMG[b]
Sponsor of analysis	Sydney OOC	NSW Treasury	Sydney Bid Committee
Addition to Australian GDP	A$6.5 billion	A$6.4 billion	A$7.3 billion
Addition to NSW's GDP	A$5.1 billion	A$6.3 billion	A$4.6 billion
International arrivals in Australia	1.5 million	2.3 million	1.3 million
Additional tourist spending	A$2.7 billion	A$4.3 billion	A$3.0 billion
New Jobs (Australia)	90 000	98 700	156 198
Period	1994–2006	1994–2006	1991–2004

[a] 1996 values.
[b] 1992 values.

in the study of the Summer Olympics and the consulting firm should take this into consideration.

Investigating the tourism impacts of the Games, Andersen (1999) and NSW Treasury (1997) gave little consideration to the likely loss of visitors as a result of hosting the 2000 Games. This subject is of particular interest in light of the argument put forward by Leiper (1997), which mentions that although mega-events such as the Summer Olympics may encourage new tourists, the holiday-makers, business travellers or even local residents will be diverted elsewhere to escape expected disturbances and congestion problems.

A number of *ex-ante* studies are also available for the next Summer Olympics, which will be taking place in 2004 in Athens, Greece; prominent amongst these are the studies by Balfousia-Savva *et al*. (2001) and Papanikos (1999). Balfousia-Savva *et al*. (2001) had the advantage of utilising the most recent estimates of the direct impacts of the Games (Table 3), including updated estimates for the Olympics budget. However, scepticism is raised regarding data estimates related to the level of induced tourism, total Olympic construction expenditures and Olympics operating profits.

Despite major methodological differences between the studies by Papanikos (1999) and Balfousia-Savva *et al*. (2001), their results do not differ significantly, with both suggesting growth in tourism and revenue. The macro-econometric model utilised in the Balfousia-Savva *et al*. (2001) study implied different scenarios in macroeconomic settings, but failed to take into account possible resource constraints. On the other hand, Papanikos 'borrowed' the value of multipliers from other studies in related cities. This probably happened because the direct estimation of the value could be both complicated and costly. However, it might affect his results, because economic relationships may be different between communities. Both studies make predictions on a national level and lack an explicit spatial dimension in assessing the impact of the Games. The choice of the nation as a reference area is doubtful, because as Howard and Crompton (1995) illustrated, the larger the assessed area, the smaller the leakages that are likely to happen and then the larger the multi-

plier is likely to be. It is noteworthy to mention that difficulties were experienced in providing a further evaluation of the Balfousia-Savva *et al*. (2001) model as there are few published details relating to its theoretical structure.

Other *ex-ante* studies that have looked at the economic impact of Summer Olympic Games are those of Brunet (1993, 1995) and Kim *et al*. (1989). Quantifiable data describing expenditures, contracts, jobs, investments and tourism were based almost exclusively on secondary research and the studies did not provide any predictions using a form of modelling. Rather they were more theoretical in their approach aiming to identify and collate evidence of the economic benefits of the Barcelona and South Korea Games respectively. It is our understanding that the studies were conducted with a view to capturing and aggregating disparate pieces of evidence regarding the economic activities flowing from the conduct of the Games.

An attempt to offer an *ex-post* economic impact analysis of the Summer Olympics was made by Baade and Matheson (2002). Their aim was to assess changes in employment in Los Angeles and Atlanta that were attributable to the staging of the 1984 and 1996 Olympics respectively. In other words, their *ex-post* approach was targeted to estimate the level of employment in the Games' absence. To achieve this, they constructed an econometric equation including as independent variables those of population, real per capita personal income, wages, taxes as well as dummy variables for the occurrence of the Olympics and the oil boom. Using standard regression analysis techniques, Baade and Matheson (2002) found that the coefficient for the Olympics variable was insignificant. The econometric equation was then used to estimate changes in employment and isolated the contribution of the Games by comparing this estimated value with the actual employment levels.

Their results for employment growth were more divergent by far than those released by *ex-ante* studies of Economic Research Associates (1984) and Humphreys and Plummer (1995) and have brought to light possible over-estimation reported by the latter studies. Another key finding was that the economy virtually returned to its 'normal' pattern after-

Table 3. Summer Olympics impact summaries

Summer Olympics	Sponsor of analysis	Reference	Total economic impact	Tourists	New jobs	Period
Washington–Baltimore bid, 2012	Greater Baltimore Alliance/Committee Greater Washington Board of Trade/Initiative	Fuller and Clinch, 2000	US$5.3 billion[a]	1.3 million	69 758 Washington–Baltimore metropolitan area	2012
Houston bid, 2012	None	Airola and Craig, 2000	US$4.3 billion[a]	0.8 million	64 216 Houston metropolitan area	2012
Athens, 2004	Centre of Planning and Economic Research	Balfousia-Savva et al., 2001	GRD 2850 billion[a] (medium scenario)	4.8 million	300 400 Greece	2000–2010
	Greek Hotel Chamber's Tourism Research Institute	Papanikos, 1999	US$15.9 billion[b] (medium scenario)	5.9 million	445 000 Greece	1998–2011
Atlanta, 1996	None	Baade and Matheson, 2002	Not examined	Not examined	42 448 State of Georgia	1994–1996
	Atlanta OOC	Humphreys and Plummer, 1995	US$5.1 billion[c]	1.1 million	77 026 State of Georgia	1991–1997
Barcelona, 1992	Supreme Sports Council of Spanish Government/Olympic and Sports Studies Centre	Brunet, 1993, 1995	US$0.03 billion	0.4 million	296 640 Spain	1987–1992
Seoul, 1988	Seoul OOC	Kim et al., 1989	WON 1846.2 billion (income effect only)	n.a.	336 000 South Korea	1982–1988
Los Angeles, 1984	None	Baade and Matheson, 2002	Not examined	Not examined	5043 Los Angeles	1984
	Los Angeles OOC	Economics Research Associate, 1984	US$2.3 billion[d]	0.6 million	73 375 Southern California	1984

[a] 2000 values.
[b] 1999 values.
[c] 1994 values.
[d] 1984 values.

wards and any increase in economic activity attributable to the Games was temporary. However, Baade and Matheson's (2002) conclusions rest heavily on the model being correctly specified, which invites one to wonder how sensitive these results are to alternative specifications.

Covering the period of 1984 through to 2012, all the *ex-ante* economic studies indicate the significant role of the Summer Olympic Games in the promotion of the host economy. They highlighted the extension of the Games economic impact well beyond the actual period of the event occurrence itself. Economic growth, increased tourism and additional employment were some of their major findings.

However, the high expectations released by most of them could be considered to be potentially biased, because the ambition of those commissioning the studies is to favour the hosting of the Games. This issue has received a great deal of attention from scholars investigating the Games and other mega-events (Mills, 1993; Crompton, 1995; Howard and Crompton, 1995; Kesenne, 1999; Porter, 1999; Preuss, 2000; Baade and Matheson, 2002). Nevertheless, it is our opinion that if the estimation process is made transparent, then the findings are reliable. Taking into account the strengths and weaknesses of all the methods and techniques used, the discussion here shows that *ex-ante* models and forecasts were not confirmed by *ex-post* analyses and this therefore prompts the need for improved theory.

Research in this field needs to further consider a substantial element, which is the opportunity cost involved in hosting the Summer Olympic Games or other mega-events. Host communities often pose the question of whether financing the Games is the most effective and efficient use of public money. In other words, if the public funds spent on the Games were used in a different way, would the host economy receive a greater return than it does when these funds are spent on Games investments? To answer this one needs to look no further than Kesenne's argument (1999) that even though a mega-event does create net benefits, public funding should occur only if the mega-event yields higher net benefits from an alternative project. In reality, of course, it is not feasible to measure the net benefits of all pos-

sible alternative projects; however, some important opportunity cost elements can be investigated further (Kesenne, 1999).

In addition, another aspect to be considered in subsequent research is the potential economic retreat after the completion of the Games. When the level of income and investment falls after the event, then the multiplier also follows. To illustrate this point, findings from broader mega-event literature could be utilised to demonstrate that 'one-time' events have no lasting post-event effects in new business activities or employment (Mount and Leroux, 1994; Spilling, 1998).

It is important, therefore, that prospective researchers be inspired by a recognition of the shortcomings found in earlier *ex-ante* and *ex-post* studies and that they concentrate on areas that most need the effort. This will help planners and potential hosts of mega-events to improve their forecasting and decisions.

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REFERENCES

Airola J, Craig S. 2000. *The Projected Economic Impact on Houston of Hosting the 2012 Summer Olympic Games*. Houston Working Paper, University of Houston.

Almon C. 1966. *The American Economy to 1975*. Harper and Row: New York.

Arthur Andersen. 1999. *Economic Impact Study of the Sydney 2000 Olympic Games*. CREA: Centre for Regional Economic Analysis/University of Tasmania: Australia.

Baade RA, Matheson V. 2002. Bidding for the Olympics: fool's gold? In *Transatlantic Sport:*

the Comparative Economics of North America and European Sports*, Barros CP, Ibrahimo M, Szymanski S (eds). Edward Elgar: London; 127–151.

Balfousia-Savva S, Athanassiou L, Zaragas L, Milonas A. 2001. *The Economic Effects of the Athens Olympic Games*. Centre of Planning and Economic Research: Athens. (In Greek.)

Brunet F. 1993. *Economy of The 1992 Barcelona Olympic Games*. International Olympic Committee: Lausanne.

Brunet F. 1995. An economic analysis of the Barcelona '92 Olympic Games: resources, financing, and impact. In *The Keys to Success*, Miquel MD, Botella M (eds). Autonomous University of Barcelona: Barcelona; 203–237.

Crompton JL. 1995. Economic impact analysis of sports facilities and events: eleven sources of misapplication. *Journal of Sport Management* **9**(1): 14–35.

Darcy S, Veal AJ. 1994. The Sydney 2000 Olympic Games: the story so far. *Australian Journal of Leisure and Recreation* **4**(1): 5–14.

Economics Research Associates. 1984. *Community Economic Impact of the 1984 Olympic Games in Los Angeles and Southern California*. Los Angeles Olympic Organizing Committee: Los Angeles.

Fletcher J, Snee H. 1989. Tourism multiplier effects. In *Tourism Marketing and Management Handbook*, Witt SF, Moutinho L (eds). Prentice Hall International: England; 529–531.

French SP, Disher ME. 1997. Atlanta and the Olympics: a one-year retrospective. *Journal of the American Planning Association* **63**(3): 379–392.

Fuller SS, Clinch R. 2000. *The Economic and Fiscal Impacts of Hosting the 2012 Olympic Games on the Washington–Baltimore Metropolitan Area*. George Mason Working Paper, George Mason University.

Hall CM. 1987. The effects of hallmark events on cities. *Journal of Travel Research* **26**(2): 44–45.

Haxton PA. 1999. *The Perceived Role of Community Involvement in the Mega-Event Hosting Process: a case study of the Atlanta 1996 and Sydney 2000 Olympic Games*. Unpublished PhD Thesis, Sydney University of Technology.

Hill CR. 1996. *Olympic Politics. Athens to Atlanta 1896–1996*. Manchester University Press: Manchester.

Hiller HH. 1990. The urban transformation of a landmark event: the 1988 Calgary Winter Olympics. *Urban Affairs Quarterly* **26**(1): 118–137.

Hiller HH. 1999. Mega-events and urban social transformation: Human development and the 2004 Cape Town Olympic bid. In *The Impact of Mega-events*, Andersson TD, Persson C, Sahlberg B, Strom LI (eds). ETOUR: European Tourism Research Institute, Sweden; 109–120.

Howard DR, Crompton JL. 1995. *Financing Sport*. Fitness Information Technology: Morgantown.

Humphreys JM, Plummer MK. 1995. *The Economic Impact on the State of Georgia of Hosting the 1996 Olympic Games*. Selig Center for Economic Growth: Georgia.

Hunter WJ. 1988. *Economic impact studies: inaccurate, misleading, and unnecessary*. Study 21. Heartland Institute: Chicago.

Jennings A. 1996. *The New Lords of the Rings: Olympic Corruption and How to Buy Gold Medals*. Pocket Books: London.

Kang HB. 1988. Accelerating the future-state: urban impact of hosting the 1988 Seoul Olympic Games. In: *Hosting the Olympics: the Long-Term Impact, Conference Report*. East Asian Architecture and Planning Program, MIT and Graduate School of Environmental Studies, Seoul National University: Seoul; 17–32.

Kesenne S. 1999. Miscalculations and misinterpretations in economic impact analysis. In *The Economic Impact of Sports Events*, Jeanrenaud C (ed.). Centre International d'Etude du Sport: Switzerland; 29–39.

Kim JG, Rhee SW, Yu JC, *et al.* 1989. *Impact of The Seoul Olympic Games on National Development*. Korea Development Institute: Seoul.

KPMG Peat Marwick. 1993. *Sydney Olympics 2000: Economic Impact Study*. Sydney Olympics 2000 Bid Ltd: Sydney.

Leiper N. 1997. A town like Elis? The Olympics: impact on tourism in Sydney. In *Proceedings of the Australian Tourism and Hospitality Research Conference*, Sydney.

Liu J, Var T. 1982. Differential multipliers for the accommodation sector. *Tourism Management* **September**: 172–187.

McIntosh MJ. 2000. The Olympic host city bid process: facing challenges and making changes. In *Focus on Olympism: Discoveries, Discussion, Directions*, Messing M, Muller N (eds). Walla Walla Press: Sydney; 312–321.

Mills ES. 1993. The misuse of regional economic models. *Cato Journal* **13**(1): 29–39.

Mount J, Leroux C. 1994. *Assessing the effects of a landmark event: a retrospective study of the impact of the Olympic Games on the Calgary business sector*. Laurentian University: Ontario.

NSW Treasury. 1997. *Research and Information Paper: the Economic Impact of The Sydney Olympic Games*. New South Wales Treasury and CREA: Centre for Regional Economic Analysis (University of Tasmania).

Papanikos GT. 1999. *Tourism Impact of the 2004 Olympic Games*. Tourism Research Institute: Athens. (In Greek.)

Porter PK. 1999. Mega-sports events as municipal investments: a critique of impact analysis. In *Sports Economics: Current Research*, Fizel J, Gustafson E, Hadley L (eds). Praeger Press: New York; 61–73.

Preuss H. 2000. *Economics of the Olympic Games: Hosting the Games 1972–2000*. Walla Walla Press: Sydney.

Ritchie JRB, Aitken EC. 1984. Assessing the impacts of the 1988 Olympic Winter Games: the research program and initial results. *Journal of Travel Research* **22**(3): 17–25.

Robin D. 1988. Hosting the Olympic Games: long-term benefits to sport and culture. In: *Hosting the Olympics: the Long-term Impact, Conference Report*. East Asian Architecture and Planning Program, MIT and Graduate School of Environmental Studies, Seoul National University: Seoul; 245–264.

Simson V, Jennings A. 1992. *The Lords of the Rings: Power, Money and Drugs in the Modern Olympics.* Simon and Schuster: New York.

Spilling OR. 1998. Beyond intermezzo? on the long-term industrial impacts of mega-events: the case of Lillehammer 1994. *Festival Management and Event Tourism* **5**: 101–122.

Steenge AE. 1990. On the complete instability of empirically implemented dynamic Leontief models. *Economic Systems Research* **2**(1): 3–16.

Walle AH. 1996. Festivals and mega-events: varying roles and responsibilities. *Festival Management and Event Tourism* **3**(3): 115–120.

Werling JF. 1992. *MIDE: A macroeconomic multisectoral model of the Spanish economy*. Unpublished PhD Thesis, University of Maryland.

West GR. 1995. Comparison of input–output and econometric and computable general equilibrium impact models at the regional level. *Economic Systems Research* **7**(2): 209–220.