

Policy Forum: Economics of Sport

Measuring the Contribution of Sport to the Economy

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1. Introduction

Professional and amateur sports continue to grow as a leisure-time activity in Australia. Not only does sport generate interest from fans who attend matches, but it also generates interest from fans who watch games on television or listen to games on the radio, who read the sports page of the newspaper and discuss potential player moves with their colleagues, listen to sports talk radio, participate in fantasy and tipping leagues, and the like. Moreover, professional leagues expand, teams move, and broadcasting possibilities burgeon. Cities and countries expend considerable resources to attract one-time events, such as the World Cup and Olympic Games. Sometimes, winning these bidding wars entails construction of infrastructure.

As a result of these trends there has been a marked increase in the commitment of financial resources to sporting activities by both the public and private sectors. The major sporting organisations in Australia undertake significant economic activity in their own right. For example, Cricket Australia (2005) reported total revenue of \$72 million in 2004–05; the Australian Rugby Union (2003) reported net revenues of more than \$60 million for the 14 months ending December 2003; and the Australian Football League (2005) reported a net operating surplus of around \$130 million for the year ended October 2005.

The financial involvement of the public sector has taken various forms, including the subsidisation or underwriting of events and competitions. Information about the extent of

public subsidies for some sporting events and competitions is not always readily available (Banks 2002). However, for the largest sporting event held in Australia, the Sydney Olympics in 2000, the Commonwealth Government outlaid around \$72 million and the New South Wales Government expended just over \$380 million (Australian Bureau of Statistics 2006). The Melbourne Grand Prix motor race is reported to have been subsidised to the extent of \$19 million in 2003 by the Victorian Government (Dabkowski 2003) while the much smaller V8 Super car event staged in Canberra received an ACT Government subsidy of around \$5 million in 2001 (Banks 2002). In a more general sense, total outlays by all levels of government in Australia on sport and recreation in the 2000–01 financial year were around \$2.1 billion (Australian Bureau of Statistics 2006).

With this public sector involvement has come an increased concern with monitoring the uses to which the funds are put. Not surprisingly, evaluations of the economic return from public expenditures have become an important part of this monitoring process and have resulted in a growing body of literature. This literature covers the reporting of evaluations of particular competitions or events (for example, Burns, Hatch and Mules 1986) as well as the analysis of how evaluations should be undertaken. Notable amongst this latter group is Hefner (1990), Burgan and Mules (1992), Crompton (1995), Noll and Zimbalist (1997) and Dwyer, Forsyth and Spurr (2006). The conclusion of most of these studies is that the evaluation should assess the net economic

impact that the event has on the target economy—usually taken to mean the expansion in the total level of goods and services produced in the target economy or changes in Gross Domestic Product (GDP).

We argue that this national income approach based on changes in GDP is generally inappropriate and often provides potentially misleading information to decision makers. We provide a taxonomy of situations and present alternative methods of evaluating the contribution of sport—to the economy, to the firm and to the local community. By focusing on the information requirements of public policy in the sports domain, a more meaningful set of measures is derived. It is suggested that producer surplus and consumer surplus provide the basis for a better measure of social welfare than does the change in GDP.

2. A Taxonomy of Economic Measures

The common practice in evaluating the economics of sporting events is to assess the impact that the event has on the GDP of the region hosting the event. In assessing the economic impact of an event in this way, only expenditure that would not have existed in the absence of the event should be included. For a conventional economic impact study this means that the study focuses exclusively on ‘new money injected into an economy by visitors, media, external government entities, or banks and investors from outside the community’ (Crompton 1995, p. 26).

There has been considerable discussion regarding the most appropriate techniques and analytical framework for undertaking eco-

nomics impact studies. Crompton (1995), for example, argues that they often fail to include opportunity costs, and fail to correctly derive multiplier coefficients. Noll and Zimbalist (1997, p. 496) note that these studies are ‘fraught with methodological difficulties’, such as confusion between new spending and spending diverted from other local activities, and overstating the multiplier. Others comment on the failure of these studies to take sufficient account of ‘intangible’ effects (Dwyer et al. 2000; Swindell and Rosentraub 1998). In any event, as Siegfried and Zimbalist (2000, p. 103) note, ‘independent’ economic impact studies (in contrast to ‘promotional’ studies) suggest that expenditure on sports facilities has little positive impact on regional economic development.

A logical starting point for assessing how the economic impact of sport should be measured is to consider *who* wants this information and *why* this information is required. This will guide *what* information should be collected and *how* it should be analysed. This perspective on the issue is portrayed in Figure 1.

2.1 Government Intervention

2.1.1 Efficiency Objectives

The role of government in sporting events and organisations is a controversial issue. Unfortunately, economic impact studies typically provide little or nothing of relevance to this issue (Seaman 1987). The case for government support of sporting events depends on the objective of the intervention. If the intervention is planned to improve the efficiency with which

Figure 1 A Measurement Matrix

Who	Why	What	How
1. Government	Intervention to enhance social welfare function	Social CBA	Market failure Distribution Risk and time
	Compare size of the sector	GDP	
2. Private sector	Profit from investment	Private CBA	Risk and time
3. Not-for-profit sector	Community investment	Private CBA	Defining objectives Risk and time

resources are used in the economy, the case for government assistance should rest on a social cost–benefit analysis (CBA) and on the presence of market failures. In other words, a necessary condition for government intervention on efficiency grounds is that there are factors impeding the efficient operation of the market. A CBA will reveal if government intervention in sport to correct any market failure results in a net gain to the community.

The answering of this question involves recourse to the notions of social surplus from welfare economics. In a strictly utilitarian world the value of sport is the sum of the gain in surplus to domestic consumers plus the gain in surplus to domestic owners of resources rewarded from the sporting event.

In practical terms, producer surplus is the difference between the social value of the resources used and the returns provided in the market place. Each resource should be valued at a price equal to the return it would yield in its next best occupation. For most resources this will be its market price; however, market prices need not always reflect true social opportunity costs (Boardman et al. 2006). Wherever there are externalities involved in production or the suppliers of inputs are able to exert market power in setting prices, market prices likely overstate social opportunity costs. Similarly, where unemployed labour is taken up by a project, the project outlay and the social opportunity cost could differ.

Consumer surplus is more difficult to estimate as it relies on understanding the maximum willingness and ability to pay of consumers. One approach that can be used to elicit consumers' willingness to pay is the contingent valuation method (CVM).¹ However, there are few examples of the application of CVM specifically to team sports. While there are no published estimates of domestic consumer surplus from major sporting events in Australia there are some estimates for other countries.²

Measurement of elasticities can be useful to compute consumer surplus. These measurements could also be helpful in determining the optimal stadium size, the optimal stadium location, where to host a sporting event, the incre-

mental value of an additional club in the league, and other such issues.

Potential impediments to the socially efficient operation of a sporting market, or market failures, include (i) the public good characteristics of sport; (ii) externalities or spillovers of costs and benefits to other parties; (iii) divergences between private and social discount rates; and (iv) information problems. The literature on sports focuses on the first two potential market failures.

One characteristic of a public good is that it can exhibit 'free rider characteristics'. Burgan and Mules (2000) note that firms may be reluctant to finance special events because they are unable to capture all of the benefits of funding the event—individual firms can 'opt out' of the funding and still capture the benefits of business that the event generates. Other examples of public goods and/or positive externalities include local unity, fan loyalty and civic pride (Johnson, Groothuis and Whitehead 2001; Swindell and Rosentraub 1998; Fort 2003), satisfaction from living in a 'big league town' and being able to view coverage of the events in the media (Zimmerman 1997).

The implications of a possible external benefit from sport through the impact that government support of sport might have on obesity-related health costs are highly likely to be raised in the near future if they have not already been considered in policy circles. However, justifying the subsidisation of professional sport and major sporting events on the basis of reductions in health care costs seems to us, at least at a *prima facie* level, dubious.

Obesity is, for most individuals, a consequence of too much food consumption and not enough exercise. In Australia and many developed economies, nationalised health care implies that individuals who are healthy will subsidise those who are sick. Because individuals can affect both the likelihood of requiring health care and the amount of health care they receive, and because they do not bear the full cost (or pay their expected costs), their overconsumption of the deleterious good, or underconsumption of exercise, implies a divergence between *ex ante* private and social health costs. This divergence then raises the question for the

policy maker as to what is the best method to correct it and, then, whether the benefits of correcting it will actually outweigh the costs of implementing the correction.

The benefits from encouraging a healthier lifestyle depend upon the malleability of individuals' preferences, the effectiveness of that particular event altering preferences, the relative size of the marginal population, the health status of that population, and the time preferences of society. With ample media coverage and access, the inducement to exercise could be expected to come predominantly from the existence of the sporting event rather than the location of the event. Even if more people exercise more often, the benefits in improved health care are uncertain and, in the case of obesity and the consequent reductions in cardiopulmonary events, many years if not decades into the future.

In other words, reducing the health care expenditures and improving general health is a worthy goal, but given the alternative ways of encouraging exercise, this is unlikely to be a determining factor in the case for subsidising sport since the impact could well be small, indirect and highly uncertain.

The sports literature does not discuss two other potential sources of market failure: divergences in discount rates and information failure. The construction of sporting facilities and programs can involve large sums of money outlaid over an extensive period of time with benefits accruing far into the future. The planning horizon that is implicit in the evaluation of these proposals can have a big impact on the perceived attractiveness of these projects. Private investors may well have a shorter planning horizon (or higher discount rate) than society as a whole. This may mean that sporting programs that can make a potentially positive contribution to society will not be undertaken without some form of government intervention. These investments are also characterised by less than perfect information on both the costs and benefits involved. This imperfect information could lead to a socially inefficient level of private investment, either too high or too low. Both these forms of market failure are ever present and it is not clear that they could

be the basis for any strong case for government support of sport.

While there are strong grounds for favouring the assessment of the welfare implications of sporting events through changes in consumer and producer surplus values, the valuation of these changes in a social welfare sense is potentially problematic from a conceptual perspective where uncertainty is substantial. Marked uncertainty in total project costs can result in uncertainty in ticket prices for consumers. If the price is random, then firms or governments cannot change the price, but rather the distribution of price. Schlee (2003) showed that expected change in consumer surplus need not be a reliable measure of social welfare when there is risk in the price. The change in expected consumer surplus is only a good measure of the consumer's willingness to pay for a price change if the income elasticity of demand is small and consumers are risk neutral—two conditions about which we have limited information in the case of sport.

2.1.2 Non-Efficiency Considerations

If the intervention is aimed at achieving some non-efficiency objective, then the argument is different. Although it is difficult to see what equity notions could justify government subsidisation of sport, political considerations could, and probably do, prompt such action. However, the extent of the impact of sport on GDP in no way adds weight to the case for government subsidies on equity grounds either.

Nevertheless, most government projects generate distributional consequences about which the policy maker cares. If an inefficiency exists, and government intervention in sport is preferable to investment directly in infrastructure, then the policy maker must examine the distributional consequences. The weights in the social welfare function on different individuals determine whether or not the government intervention improves social welfare on equity grounds. If it lowers social welfare on equity grounds, then the policy maker could correct this reduction in social welfare through other projects or a separate transfer.

2.2 *The Relative Size of the Sports Industry in the Economy*

If the objective is to compare the size of the sports industry with the overall economy the situation is a little different. In this context, governments and the wider community may be interested in the comparison of the GDP from sport with national GDP. However, the GDP measure that would be most appropriate would be total expenditure on sports, not expenditure by non-residents. Additionally, it may be difficult to classify some expenditures; for example, should the entire purchase of a jumper with the team logo be counted as expenditure on sport or expenditure on clothing, or should it be divided as the cost of a comparable quality jacket on clothing and the remainder on sport?

2.3 *Private Profits*

From a private firm's perspective the appropriate measure is the extent to which an investment adds to the firm's profit stream. For many investments, this involves a CBA with risky returns and costs over a number of years. The dearth of information on sporting markets adds to the difficulty in carrying out these analyses. For example, there is little information on the elasticity of demand for sporting tickets; media rights generate funds from individual negotiations that are sometimes long drawn and often characterised by considerable scope for bargaining.

2.4 *Not-for-Profit Objectives*

Community organisations and not-for-profit sporting organisations are a common form of organisation in sporting markets. These organisations can have wide and complex objective functions. In undertaking a CBA on the returns from an investment for these organisations the specification of the objective function is critical. It may well involve a narrower sense of community than would be the case for federal or state governments.

In the case of local or regional government involvement in financing sporting infrastructure, there are often winners and losers off the

sporting field. For example, in the early 2000s, Phoenix, Arizona had two ongoing internal battles. Communities within the metropolis of 4 million vied to win the site of the professional hockey team and the site of the professional American football team by offering subsidies and inducements to the teams (International Facilities Group 2006). These teams already played in metropolitan Phoenix. The lobbying efforts would eventually create winners and losers by transferring rents in the form of community funds to professional sports providers.

Moreover, such competition between bidders has elements of an arms race; as with most arms races, both bidding parties could be better off if a neutral third party had intervened to stop the race initially. From the perspective of the Phoenix community, it may have been better for all residents of the Phoenix metropolitan area to agree to determine the new stadia's locations by lottery and have the winning suburbs compensate the losing suburbs.

2.5 *One Last Salvation for GDP*

We have argued that GDP or induced GDP growth is a poor objective for a policy maker. GDP could still be a useful measure despite this, provided the ranking of projects by induced GDP growth is perfectly correlated with the preference rankings of the policy makers. However, since GDP does not take into account the degree of risk in a project, time-frame, and other characteristics, it is very unlikely that induced GDP growth would be a reliable metric.

3. **Summary and Concluding Comments**

There is increasing interest in evaluating the economics of sporting events in Australia. This interest has been spurred on by rising incomes and increasing expenditure of both money and time on sports and leisure activities. Although economic impact measures based on changes in GDP may be relatively easy to estimate and apparently straightforward to interpret, these analyses should not be used to justify government subsidies of sport, and it is questionable as to what useful role they really perform. They

are founded on the notions of national income accounting and have little relevance to the essentially microeconomic questions that face the sports policy community.

Importantly, even if induced GDP growth is the policy objective, and subsidising sport is one means of achieving that objective, policy makers must justify an essentially indirect expenditure on sporting events rather than spending on more targeted programs that are more directly related to economic growth. Similarly, if a market failure relates directly to infrastructure investment (that is used in part by sport), then the decision should be based on the particular infrastructure issue involved.

Ultimately, one would hope that a policy maker has an objective function that depends on the welfare of the community he or she represents. GDP clearly measures only one aspect of this welfare and does so in an unreliable manner. In evaluating whether or not to invest in or subsidise sport, the policy maker must first identify the individuals that make up the community. Then, the policy maker needs to determine how any changes will impact on that target community. This impact will depend on factors such as risk preferences, time horizon and rate of time preference of the community, and the presence of incomplete information and information asymmetries. Measures of changes in GDP, regardless of how accurate they are, offer little in clarifying these complex decisions.

A set of alternative measures of the economic contribution of sport to the economy has been suggested based on possible policy questions. The welfare measures involve the measurement of producer surplus and consumer surplus flowing from a sporting activity.

Sporting events and clubs are often not scalable and are infrequently traded; therefore, it is more difficult to estimate demand for these than for other goods. Where the cost of estimation is a constraining factor, recourse can be sought to techniques such as benefit transfer and meta-analysis for estimating surplus values (Brouwer 2000). Nevertheless, the fact that consumer surplus may be difficult to measure does not mean that it is not both significant and substantial.

Compared with many other markets we know relatively little about the elasticities of supply and demand in sporting markets. There is an obvious need for further work in this area as information on these basic parameters is crucial in determining the optimal level of private and public investments in sport.

Obesity is a major and growing health problem in Australia and many developed economies. Because it causes premature death, increases absenteeism, and involves expensive medical care, reducing obesity is a worthy public policy goal. However, the link between the financial support of sporting events and individual health and health care expenditures is at best very indirect. Policy approaches that deal more directly with the obesity issue, such as physical education in schools, would appear to be more appealing from a public policy perspective.

Finally, the nature of both the political process and the market for sport means that bidding wars are likely to remain a defining characteristic of the sports market. These wars have the potential to waste resources. Additionally, the public goods nature of many events means that the government has a role in coordinating firms and soliciting their preferences. Because the various firms have private information about their valuations, the problem is an application of mechanism design. Further research in this area applying game theory has the potential to find methods to reduce the inefficiencies resulting from the Pareto inefficient outcome of bidding wars and information asymmetries.

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Endnotes

1. See Hanley and Spash (1994) for a discussion of CVM and related techniques.
2. See Johnson and Whitehead (2000), Johnson, Groothuis and Whitehead (2001), Gouguet (2002), Irani (1997) and Alexander, Kern and Neill (2000) for estimates of consumer surplus for European or US sporting events.

References

- Alexander, D., Kern, W. and Neill, J. 2000, 'Valuing the consumption benefits from professional sports franchises', *Journal of Urban Economics*, vol. 48, pp. 321–37.
- Australian Bureau of Statistics 2006, *Sport and Recreation: A Statistical Overview, Australia*, Cat. no. 4156.0, viewed September 2006, <<http://www.abs.gov.au/ausstats/abs@.nsf/latestproducts>>.
- Australian Football League 2005, *2005 Annual Report*, viewed September 2006, <<http://afl.com.au/default.asp?pg=annualreport&spg=display&articleid=51000>>.
- Australian Rugby Union Limited 2003, *2003 Annual Report*, viewed September 2006, <<http://www.rugby.com.au/aus.rugby/pages/13378>>.
- Banks, G. 2002, 'Inter-state bidding wars: Calling a truce', speech to Committee for Economic Development of Australia, Brisbane, 6 November.
- Boardman, A. E., Greenberg, D. H., Vining, A. R. and Weimer, D. L. 2006, *Cost–Benefit Analysis: Concepts and Practice*, 3rd edn, Pearson/Prentice Hall, Upper Saddle River, New Jersey.
- Brouwer, R. 2000, 'Environmental value transfer: State of the art and future prospects', *Ecological Economics*, vol. 32, pp. 137–52.
- Burgan, B. and Mules, T. 1992, 'Economic impact of sporting events', *Annals of Tourism Research*, vol. 19, pp. 700–10.
- Burgan, B. and Mules, T. 2000, 'Event analysis – Understanding the divide between cost benefit and economic impact assessment', in *Events Beyond 2000: Setting the Agenda*, Proceedings of Conference on Event Evaluation, Research and Education, eds J. Allen, R. Harris, L. K. Jago and A. J. Veal, Australian Centre for Event Management, University of Technology, Sydney.
- Burns, J. P. A., Hatch, J. H. and Mules, T. J. (eds) 1986, *The Adelaide Grand Prix: The Impact of a Special Event*, Centre for South Australian Economic Studies, University of Adelaide.
- Cricket Australia 2005, *Annual Report 2004–05*, viewed September 2006, <http://cricket.com.au/_content/document/00000071-src.pdf>.
- Crompton, J. L. 1995, 'Economic impact analysis of sport facilities and events: Eleven sources of misapplication', *Journal of Sport Management*, vol. 9, pp. 14–35.
- Dabkowski, S. 2003, 'Olympic size crowds swamp the sporting capital every year', *Age*, 8 November.
- Dwyer, L., Forsyth, P. and Spurr, R. 2006, 'Assessing the economic impacts of events: A computable general equilibrium approach', *Journal of Travel Research*, vol. 45, pp. 59–66.
- Dwyer, L., Mellor, R., Mistilis, N. and Mules, T. 2000, 'A framework for evaluating and forecasting the impacts of special events', in *Events Beyond 2000: Setting the Agenda*, Proceedings of Conference on Event Evaluation, Research and Education, eds J. Allen, R. Harris, L. K. Jago and A. J. Veal, Australian Centre for Event Management, University of Technology, Sydney.
- Fort, R. D. 2003, *Sports Economics*, Prentice Hall, Upper Saddle River, New Jersey.
- Gouguet, J. 2002, 'Economic impact of sporting events: What has to be measured?', in *Transatlantic Sport: The Comparative Economics of North American and European Sports*, eds C. P. Barros, M. Ibrahim and S. Szymanski, Edward Elgar, Cheltenham, United Kingdom.
- Hanley, N. and Spash, C. L. 1994, *Cost–Benefit Analysis and the Environment*, Edward Elgar, Brookfield, Vermont.
- Hefner, F. L. 1990, 'Using economic models to measure the impact of sports on local economies', *Journal of Sport and Social Issues*, vol. 14, pp. 1–13.
- International Facilities Group 2006, 'Arizona Cardinals stadium', viewed September 2006, <http://www.ifgroup.cc/portfolio/arizona_cardinals_stadium.htm>.
- Irani, D. 1997, 'Public subsidies to stadiums: Do the costs outweigh the benefits?', *Public Finance Review*, vol. 25, pp. 238–53.
- Johnson, B., Groothuis, P. A. and Whitehead, J. C. 2001, 'The value of public goods generated by a major league sports team: The

- CVM approach', *Journal of Sports Economics*, vol. 2, pp. 6–21.
- Johnson, B. and Whitehead, J. 2000, 'Value of public goods from sports stadiums: The CVM approach', *Contemporary Economic Policy*, vol. 18, pp. 48–58.
- Noll, R. and Zimbalist, A. 1997, 'The economic impact of sports teams and facilities', in *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*, eds R. Noll and A. Zimbalist, Brookings Institution Press, Washington, DC.
- Schlee, E. E. 2003, 'Expected consumer's surplus as an approximate welfare measure', Department of Economics Working Paper, Arizona State University.
- Seaman, B. A. 1987, 'Arts economic impact studies: A fashion excess', in *Economic Impact of the Arts: A Sourcebook*, ed. A. J. Radich, National Conference of State Legislatures, Washington, DC.
- Siegfried, J. J. and Zimbalist, A. 2000, 'The economics of sports facilities and their communities', *Journal of Economic Perspectives*, vol. 14, no. 3, pp. 95–114.
- Swindell, D. and Rosentraub, M. 1998, 'Who benefits from the presence of professional sports teams? The implications for public funding of stadiums and arenas', *Public Administration Review*, vol. 58, pp. 11–20.
- Zimmerman, D. 1997, 'Subsidizing stadiums: Who benefits, who pays?', in *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*, eds R. Noll and A. Zimbalist, Brookings Institution Press, Washington, DC.