The economic contribution of sport to Australia

REPORT PREPARED FOR THE AUSTRALIAN SPORTS COMMISSION

November 2009

The economic contribution of sport to Australia

Contents

Final

The economic contribution of sport to Australia

Boxes

Figures

Tables

Executive Summary

Assessing the economic contribution of sport to Australia involves identifying and measuring the ways in which allocating resources to sport enhances the well-being of Australians.

Sport would exist in the Australian economy even without public support. The reason is that individuals benefit financially and otherwise from the provision of sport services and from participation in sport. Hence, they have private incentives to engage in these activities.

Public support of sport will mean that the sport sector will be larger and will use more resources (labour, capital etc) than would be the case in the absence of public support. But for the most part this will not mean that the economy's aggregate output and employment will be greater than they would have been in the absence of public support for sport. Instead it will mean that there is more employment in the sport sector but less employment in other sectors.

Diverting resources into the sport sector from other uses will be a good outcome if society values the additional sport services that are produced more highly than it values the goods and services that could otherwise have been produced by the diverted resources. This is likely to be the case if sport delivers benefit to society in addition to the benefits derived by the individuals who provide sport services and participate in sport. In this case, the private incentives mentioned in the first paragraph will not be strong enough to support a sporting sector of the size that is justified by the benefits that it provides to society overall.

In our report, we have focused on the following channels through which sport contributes to society in ways that are not well captured (if at all) by market transactions. Sport consists of a range of inter-related activities, ranging from those that are organised at a community level, to elite competitions at national and international levels. For the purposes of our analysis, we focused on the following channels through which sport contributes to Australia, and examined the following propositions:

- Sport activities that are conducted at a community level contributes to well being through impacts on health, social cohesion and socialisation
- Elite sport activities contribute to well being because of the value Australian attached to international sporting success

This report sought to establish the validity, and where possible, materiality, of these channels, and to discuss the policy implications. The issue of policy implications arises because these different channels involve instances of "market failure". Market failures occur when, left to their own devices, the self interested

actions of firms and individuals will generally lead to underinvestment (from a social point of view) in the activity in question.

We contrast our approach with one that would focus on the GDP impacts of sport. Such approach is unlikely to adequately capture the benefits conveyed by sport. This is because it will typically neglect or underestimate the main channels through which sport contributes to the well being of Australians. Moreover, such high level headline numbers of very limited use in answering specific policy questions, such as the appropriate level of funding for certain types of elite sport, or the types of policy responses that would enhance the health-related benefits of community sport.

Community level sport

By community level sport we mean activities that undertaken, whether in formal competition or otherwise, by participants who engage in sport primarily as a leisure activity. The distinction is not set in stone, since we can think of sport as a continuum stretching from community level activities to elite level activities, with various intermediate stages that might have elements of both.

In relation to community-level sport, market failure takes the form of "externalities". An externality arises when a person undertaking an action does not face the full social cost or benefit of that action. For example, to the extent that increase physical activity (including participation in sport) improves health outcomes, it confers a benefit to the individual taking part in sport. It also confers a benefit on others – by reducing healthcare costs borne by society, and through productivity gains, to the extent that a healthier workforce is more productive. Existing research suggests that gross healthcare savings of about $1.49 billion per year would be possible through increased physical activity; and that productivity gains could be about 1% of GDP per year (around $12 billion in 2008-09).

There is a shortage of quantitative evidence in regards to the effects of sport on social cohesion and socialisation. The main observations from qualitative studies suggest that participation in sport can have an impact on communities by fostering desiring psycho-social attributes, such as self reliance, communication and cooperative skills.

An interesting, and understudied, aspect of community level sport is the prominent role played by volunteers. Volunteers in sport account for nearly 33% of all volunteer participants and over 26% of all volunteer hours. Their input can be valued at just under $4bn per year. The beneficial impact of volunteers can be measured through the facilitating impact they have on the conduct and organisation of sport, and through the impact volunteerism appears to have directly on health and social indicators. Volunteers also play an integral part in supporting elite sport activities, and by extension the benefits delivered through these activities (see below).

The main policy implications from these findings relate to measures that can be geared towards addressing factors that hinder participation in sport. These include reducing the opportunity cost of time associated with participation in sport by improving the availability and ease of access to facilities. Because volunteers play such an important and catalytic role in sport (for example, through their role in administration, coaching or officiating functions), it is important to consider policies that would enhance the productivity of volunteers. These include investments in facilities, and in human capital (through training).

These interventions in sport are likely to have desirable efficiency and equity properties. The prospect for positive efficiency and equity impacts stems from the drivers behind these externalities. Consider, for example, the case of health. Low incomes are correlated with both low participation in sport, and poor health outcomes, notably in relation to obesity. Low incomes and poor health outcomes are also likely to be correlated with low labour market outcomes. Improving the participation of sport and physical activities of low income groups can generate benefits to society as a whole (through a reduction in health care costs) and can have progressive distributional outcomes – because of the improvement to health outcomes in low income groups and through the indirect effects these can have on labour market outcomes.

Elite sport

There is a strong and measurable relationship between the success of elite Australian sportspeople and indices of well-being. For example, some of the strongest positive movements in the Australian Well Being index were associated with successes at the 2004 Olympic Games. The notion of international sporting success can be considered a pure public good. By pure public good we mean that the enjoyment of it by one Australian does not reduce the possibilities of another enjoying it; and it cannot be provided to one Australian without providing it to all Australians.

In such circumstances, there is a prima facie case for government intervention. There are some market mechanisms through which the willingness to pay for success can translate into material rewards for sportspeople separately from government intervention (e.g. through sponsorship deals or competition prize money). However, these market mechanisms are not complete, in that they will typically apply to commercial sport and not to most Olympic sport, particularly lower profile sport that are important to the aggregate medal count. There are also imperfections to credit markets that prevent aspiring athletes from bearing substantial upfront investments in the hope of future returns. Moreover, the winner takes all nature of sport may deter some potential sportspeople, leading to a thinning of the competitive field. Publicly financed grants and infrastructure to athletes (conditional on performance) can extend this reward base, and elicit performance.

Finally, there are issues affecting the appropriability of investments in elite sport. By appropriability we mean, in this context, the extent to which a person investing in the developing a sport person can capture (fully or partially) the rewards from their investment (For example, professional sport clubs have few incentives to invest in young athletes since some other party might gain the benefits of that investment). This increases the difficulties associated with private investment in training sportspeople.

From a policy perspective, one immediate issue is whether the public willingness to pay for success justifies the amount that is invested in elite sport performance on an annual basis. The question is difficult to answer accurately because there have been no direct estimates of willingness to pay for national success. The only data that we do have suggest that (i) changes in measured well being over the course of the 2004 Olympics were to the tune of 2-4 percentage points per week; and (ii) on the basis of research conducted by Australian Unity, a conservative estimate of the monetary value of a permanent (i.e. over a life time) percentage point increase in happiness would be around $23,000. On the basis of the latter finding, assuming a constant interest rate of 5%, we can estimate that the monetary value to the average Australian household of a one week percentage point increase in well being would be around $23. The current annual value of government investment in elite sport works out at about $20 per Australian household. Given observed movements in measures of well being, it is plausible that the willingness to pay of Australian households for sporting success is at least equal to that amount; indeed it is likely to be higher.

Obviously, further, more rigorous research needs to be conducted into the question. Moreover, these figures give average values, not marginal values. What is important from a policy perspective is to what extent incremental changes in funding for elite sport, and the probable impact on performance, has on well being. For example, how much extra does the public value finishing in the top 5 of the medal table compared to the top 6 or top 7? Is value driven by overall success, or is success in some sport the source of most gains in perceptions of well-being?

We have focused on performance at the Olympic Games because it is for these that data are most readily available. Moreover, most contemporary research on the links between funding and performance, and the links between performance and satisfaction, focus on the Olympic Games because medal counts lend themselves readily to quantification and statistical analysis. At the same time, it needs to be emphasised that all sports follow their own cycle of regional and international competitions throughout the quadrennial Olympic cycle. Performances at these competitions, for some sports at least, are likely to be a source of value. Data measuring the reaction of Australians to performances in these competitions, or the value they attach to Australia's standing in particular sports, are not readily available. However, this should not be taken to mean that

such performances do not matter; rather they point the way to future research needs.

Our report lends support to the notion that the economic contribution of sport to Australia is multi-faceted. Further research could highlight mechanisms for policy intervention.

Key Messages

Community level sport

- In terms of community level sport, we examine the "externalities" (i.e. benefits not captured by an individual undertaking a particular activity) that exist between sport participation and health, social cohesion and socialisation. Where these externalities are shown to be material, a case for public policy support can be built.

- The relationship between physical activity (including sport) and health is well documented. Increased participation in these activities can lead to direct net savings in health costs (once the costs of sport injuries are accounted for) and gains in overall national income through an increase in productivity attributable to healthier workers. Existing studies on these relationships suggest that the gain would be around 1% of GDP per year. That is equivalent to about 12 billion dollars in 2008-09.

- There appear to be links between sport, on one hand, and social cohesion and socialisation outcomes on the other, through empirical evidence in this area is more sparse and tends to be primarily of a qualitative nature.

- Volunteerism is a distinctive (and understudied) aspect of sport, with volunteers in sport accounting for nearly 33% of all volunteer participants and over 26% of all volunteer hours.

- ABS data for 2006 estimated that volunteers supplied $187.2 million to the sport and physical recreation sector. Full time employees in the sector earned a weekly wage of $832.6. Assuming a 40 hour week, the figure for the weekly wage suggests that the labour input of volunteers was $3.9 billion

- The beneficial impact of volunteers can be measured through the facilitating impact they have on the conduct and organisation of sport, and through the impact volunteerism appears to have directly on health and social indicators. Volunteers also play an important role in elite sport, and thus enhancing their contribution to elite sport can enhance the value derived from elite sport (see below for discussion of value derived from elite sport).

- The productivity of volunteers can be enhanced through the public funding of physical capital (e.g. facilities) and the provision of training.

- The kinds of policy instruments that are likely to be relevant for consideration include:

- subsidisation of activities that directly focus on encouraging physical activity (say via tax deductions for exercise equipment or other fees)
- subsidies to organisers of physical activity and sport, particularly volunteers.
- subsidisation of facilities used for physical activity.

- There is a wealth of data available on participation and barriers to participation in sport and physical activity. These data suggest that targeting of policies is likely to be beneficial, towards particular groups for whom participation is less likely and for whom barriers to participation are relatively important (e.g. access to transport, proficiency in English).

- Interventions that are targeted to low income groups can be beneficial from both efficiency and equity perspectives.

Elite sport

- Elite sport provides a pure public good in the form of satisfaction at national sporting success. A public good is one that cannot be provided to one person without providing it to everyone else in society, and the enjoyment of which by one individual does not diminish the possibilities for others to enjoy it.

- The data suggest that success in international sport is correlated with improved perceptions of well being. The success encountered by Australian athletes at the 2004 Olympics was associated with one of the largest upswings in the Australian Well-being index since its inception.

- If we use as a starting point that, to the average household, a permanent (i.e. life-long) percentage point increase in well-being is worth around $23,000, then assuming a constant annual interest rate of 5%, a week long percentage point increase in happiness would be worth about $23 per household. Given that success at the Athens Olympics in 2004 was associated with movements of about 2-4 percentage points in measured well-being, and that current government investment in elite sport performance works out at roughly $20 per household per year, it is plausible that the average willingness to pay of Australian households for sporting success is at least equal to the amount currently invested by the government. Indeed, it is quite likely to be greater.

- There are vertical linkages between community level sport and elite sport, and the various levels in between. By reducing the cost of access to sport at the community level, the government can increase the potential pool of

sportspeople for the elite level. Support by elite sportspeople in activities at the community level can enhance community participation in these activities.

1 Introduction

1.1 Context of this work

1.1.1 Objectives sought

Frontier has been retained by the Australian Sports Commission (ASC) to assess the economic contribution of sport to Australia and, on the basis of this analysis, to articulate a strategy that would elicit the type and level of policy support that is appropriate given the economic contribution of sport.

The analysis takes place in the context of on-going policy discussions as to the appropriate policy stance in relation to sport. This includes the current inquiry by the Productivity Commission (hereafter the Commission) into the not-for-profit sector. While the inquiry is broader than the single issue of sport, a contribution to the inquiry by the sport sector, as represented by the ASC, is important. This is because of the importance of sport in the not-for-profit sector, both in its own right and because of its linkages to other parts of the not-for-profit sector. Moreover, the framework that the Commission has proposed for the conduct of its inquiry fits in very well with the wider task the ASC has set itself to articulate its contribution to the Australian economy and the policy implications that derive from this.

1.2 Approach and structure of this report

1.2.1 Approach

Key principles

The approach taken by Frontier in this paper consists of the following steps:

- Develop a framework for understanding sport as an economic activity. This in turn involves:
  - characterising in economic terms the different types of activities that fall under the heading of "sport" and their overall contribution to the economy
  - assessing the mechanisms through which sport activities create value for society and the factors that affect these. As discussed in this report, the main mechanisms are through externalities related to sport's promotion of health and wellbeing (mainly in relation to community level sport) and in delivering the collectively valued good of national sporting success at the elite level.

- From that framework deriving an understanding of the public policy issues that need to be addressed and the appropriate instruments that can be used.

1.3 Structure of the paper

The structure of the paper is as follows:

- Section 2 develops the framework for analysing the economic contribution of sport to Australia, including the principles for analysis that are used and the relationship these have to the Commission's framework for enquiry. It also discusses the role of sport within the wider Australian economy, including some of the conceptual and data issues that surround the measurement of sport. These particular comments are made with the Commission's framework for its enquiry in mind.

- Section 3 discusses public policy towards sport at the community level, in the light of the externalities that may exist between sport participation and socially desirable outcomes.

- Section 4 discusses public policy towards elite sport, in particular the grounds for intervention to support national sporting success by Australia's elite sportspeople.

2 An economic framework for understanding the contribution of sport to Australia

2.1 Principles of analysis of sport as an economic activity

2.1.1 Sport and the creation of value to society

This report aims to assess the economic contribution of the sport sector to Australia. The Australian Bureau of Statistics (ABS) has defined sport as:

> "An activity involving physical exertion, skill and/or hand-eye coordination as the primary focus of the activity, with elements of competition where rules and patterns of behaviour governing the activity exist formally through organisations"[1]

As with all other sectors in an economy, sport involves the use of a society's resources and assets through various activities that provide a range of goods and services. The range of activities that fall within the sport sector is large, and the limits of what constitutes sport are not always easy to define. These issues are discussed in greater depth in section 2.2 below. For example, sport encompasses activities that range from community level sport (which at its simplest involve unstructured play) to competitive sport at a national or international level, often on a remunerated basis. Depending on the circumstances and who takes part, sport can be varyingly construed as a leisure/recreational activity or as a professional activity (or some combination of both, since sport leisure activities often require an input from remunerated service providers, while professional sport often makes use of volunteers).

Substantial economic resources (land, labour, capital) are devoted to facilitating sporting activities in Australia. The conventional economic approach would define the *gross* value of this use of society's resources as the aggregate value that members of society place on the goods and services that are produced. But even if we could measure this, it would not provide an appropriate measure of the economic contribution of the sport sector. The reason is that it ignores what economists call the *opportunity cost* of the use of the resources by the sport sector. That is, it fails to recognise that the resources could, and in a well functioning macro-economy would, be used to produce other goods or services that would also be valued by the society's members. A more appropriate measure of the economic contribution of the sport sector is the *net* value of the use of society's

---

1 Australian Bureau of Statistics (2008) *Defining Sport and Physical Activity, a Conceptual Model – Information Paper*, p 10.

resources by the sector, i.e. aggregate value that members of society place on the goods and services produced by the sector *less* the aggregate value that they would place on the goods and services produced by the best alternative use of the resources. Note that unless sport represents a substantially better use of society's resources than alternatives, the net economic contribution of the sport sector is likely to be small, certainly much smaller than the gross contribution.

The range of activities that fall under the banner of the sport sector in turn have a range of impacts on the well being of society, where well being is measured in terms of benefits that are measurable in markets (and that can be included in the national accounts) but also through wider social and community impacts that are usually less readily defined through market transactions.

A central proposition of welfare economics is that under a number of fairly restrictive assumptions the decisions made by individuals as consumers and producers, and coordinated purely through markets, will lead to society's resources being allocated to their most valuable uses in the sense of maximising social well-being, i.e., to an *efficient* allocation of resources. If that proposition held in practice, measuring the economic contribution of the sport (or any other) sector would be of purely academic interest. But measuring the sector's economic contribution might be of *policy* interest if we believe that markets will fail to provide an efficient allocation of resources to the sector. It is in this context that we seek to assess the economic contribution of the sport sector in this report.

2.1.2 The concept of market failures

We think that there are two classes of reason for expecting that markets will allocate too few resources to the sport sector. They relate mainly to the not-for-profit parts of the sector rather than the commercial parts. They constitute *prima facie* justification for the idea that support of the not-for-profit-sport sector by government funding could increase the welfare of Australians.

Market failures and community level sport

The *first argument* is that without public support the services of the sector will be underprovided because, as well as producing services for which consumers are prepared to pay directly, the sector produces external benefits such as the promotion of a healthy active lifestyle. This reduces health-care costs some of which are borne by society generally rather than by unhealthy individuals themselves. Externalities have also been posited between sport and social cohesion and socialisation.

This first argument is most applicable to the community level of the sector rather than to elite sport. To quantify this argument, we would need to identify the relevant positive externalities and assign *marginal* values to them i.e. the extent to which an increase in the extent of participation in sport would produce a change in the variable of interest (e.g. health). This would require estimating the increase

in external benefits that would result from additional activity in the sector and the value of the corresponding additional external benefits.

Market failure and elite sport

The *second argument* relates mainly to elite sport. This is that the benefits of a nation's success in elite sport are essentially public goods. The key features of public goods are that the utility that is derived from them by any particular individual does not diminish the utility available to other individuals (non rivalry) and that no individual can be precluded from deriving utility from them if they are provided at all (non-excludability). The implication of these public-good characteristics is that markets cannot persuade individuals to fully reveal their willingness to pay for elite-sport success.

All individuals have an incentive to free ride, i.e., each is aware that their individual contribution will have a negligible effect on total provision and that they cannot be excluded from enjoying the success that others pay for. Like the externalities discussed in the context of the first argument, this means that markets will under-provide the services of the sport sector relative to socially optimal provision. To quantify this second argument, we would have to estimate the willingness to pay for the public goods that consumers will not reveal through market processes. This is not something that can be undertaken within the scope of this report (for reasons discussed in section 4). Rather we will confine ourselves mainly to validating the existence and materiality of a public good associated with "national sporting success".

Properly defined, an analysis of the economic contribution of sport to Australia seeks to assess the contribution of sport to well being across there different dimensions.[2] In particular we wish to assess sport's use of society's scarce resources in promoting the well being of society. By pursuing such an approach, we can also draw inferences about the nature and extent of policy support that would enhance the contribution sport makes to the well being of Australians. Moreover, the types of issues articulated above have, as a matter of practice, been drivers of government policy, and consequently there is an interest in understanding the efficiency impacts of these policies and the factors affecting these impacts.[3]

---

2 This follows closely the approach taken by the Productivity Commission, into public support for Science and Innovation, in which is stated that "….From an economic perspective, people's wellbeing is not just determined by goods and services that are counted in GDP. Since most people value peace of mind, good health and sustainable environments, these are also relevant to economic well being properly defined (….) Many social and environmental impacts are, in any event, also standard economic benefits" Productivity Commission (2007), *Public Support for Science and Innovation – Productivity Commission Research Report*, p 107.

3 See Barrie Houlihan, "Government objectives and sport" in Waldimir Andreff and Stefan Szymanski (eds) *Handbook on the Economics of Sport*, Edward Elgar, 2006, pp254-260

In the rest of this report, we elaborate on these three key arguments and review what evidence is available about their quantitative importance.

Note that we will make no attempt to estimate the contribution of the sport sector to GDP or aggregate employment. This is because we do not regard such estimates as relevant to policy questions about public support for sport. In our preliminary report, we outlined how such estimates can be made. In an appendix to this report, we provide a more detailed overview of the methodological issues surrounding the use of input-output data for macro-economic modelling purposes.

2.1.3 Summing up

We can summarise the approach followed by this report through the following diagram, which also sets out the main issues that the report will explore.

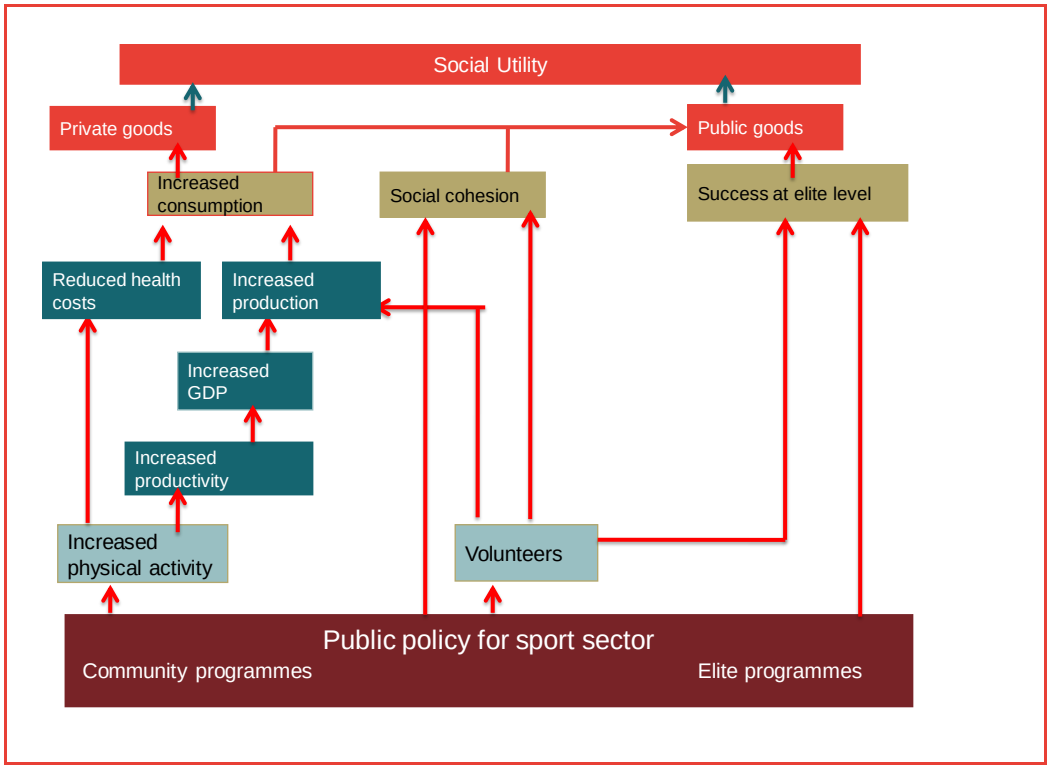


Figure 1 Economic contribution of sport to Australia

The overall question we want to assess is how public policy towards the sport sector as a whole promotes social utility (the notion of utility being a measure of society's well being). Social utility is influenced by private and public goods. The former are ones that can be transacted in markets. The latter are defined by the features of non-rivalry and non-excludability defined above. The chart depicts the different ways in which the enjoyment of public and private goods is driven by policy, and the range of factors and interactions that come into play. For example:

- The promotion of physical activity through sport is shown to impact on health costs and productivity. Both can impact on the consumption of private goods: lower health costs can mean that people have more money to spend on other goods and services while greater productivity reduces the costs of producing these goods and services. Health costs, and enhanced productivity, can also mean that the state has more resources to spend on the delivery of other public goods, which increases well being.

- Volunteers play an integral role in supporting the organisation and conduct of sport activities, at both community and elite levels. Consequently, questions of interest concern the importance of volunteers in sport, and the nature of their interaction with sport activities.

- Elite sport is construed as delivering a pure public good, in the form of satisfaction at success in international sporting competitions. The questions of interest here surround the valuation attached by society to such success, and how this compares with the resources the state invests in delivering such success.

2.2 Nature and organisation of sport activities

2.2.1 Defining sport

The definition of sport developed by the ABS, and quoted at the start of section 2.1, emphasises in particular the notions of competition and of rules to differentiate sport from physical recreation and from exercise. The ABS goes on to emphasise that the rules that define sport are derived from organisations – sporting organisations – established within society. On this basis, the ABS distinguishes between golf (as a sport) and mini-golf (as physical recreation) on the grounds that the latter is not undertaken as a serious competitive sport in Australia and because there are no formalised rules governing the game through organisations.[4]

The distinctions between sport, physical recreation and exercise are not watertight – for example sport training can count as exercise, but also as sport since the reason for which it is undertaken is predicated on participation in an actual sport. Moreover, some types of physical recreation can be important "inputs" into sport – for instance, general non-sporting physical activity can contribute to fitness and well being necessary for sport; while unstructured

[4] Australian Bureau of Statistics (2008) *Defining Sport and Physical Activity, a Conceptual Model – Information Paper*, p 15

activities (particularly amongst young children) can be important first steps or entry points into more structured sport activities.

The ABS distinguishes between various levels of intensity in physical activity (which is the basis for exercise, physical recreation and sport), running on a continuum from high through to moderate and low intensity activities to sedentary activity. Some sport – such as darts – have low physical intensity. Some sedentary activities – such as tennis umpiring – are classified as sport by the ABS. The delineation of sport activities (as well as exercise and physical recreation) by levels of physical intensity is useful insofar as it creates a way to focus on subsets of sport depending on the purpose. For example, if the issue is the link between sport and health outcomes, activities of greater physical intensity will be of direct interest, while activities on the lighter/sedentary end of the scale will be of more indirect interest i.e. on the grounds of whether they play an enabling role (as is the case with umpiring and volunteering) for the conduct of higher physical intensity activities.[5]

A further dimension along which sport activities can be differentiated is in terms of time. The ABS distinguishes between various types of time that are relevant to sport, notably: necessary time (time devoted to basic physiological needs) contracted time (time that is governed by explicit contracts, as in the case of professional sportspeople); committed time (activities to which a person has committed because of previous acts or behaviours or community participation, such as voluntary work, domestic duties and children); and free time (which is a residual category). The classification is of importance since different "types" of times will be relevant depending on the person undertaking the sport. Contracted time, for example, is relevant to individuals obtaining some remuneration or pecuniary benefit from sport.

From an economic perspective, and notably in labour market economics, it is customary to distinguish between labour and leisure as the basic choices for time allocation. On the ABS' analysis, contracted time would fall under the "labour" heading, while the other three would fall under leisure. As we shall see in Section 3, this classification will be of importance when considering the determinants of participation in sport in the context of understanding its health impacts.

2.2.2 Organisation of sport

While the organisation of sport can be characterised in a number of different ways, one way is by referring to a number of different interlocking levels. This is represented in the following figure.

---

5 Australian Bureau of Statistics (2008) *Defining Sport and Physical Activity, a Conceptual Model – Information Paper*, p 14

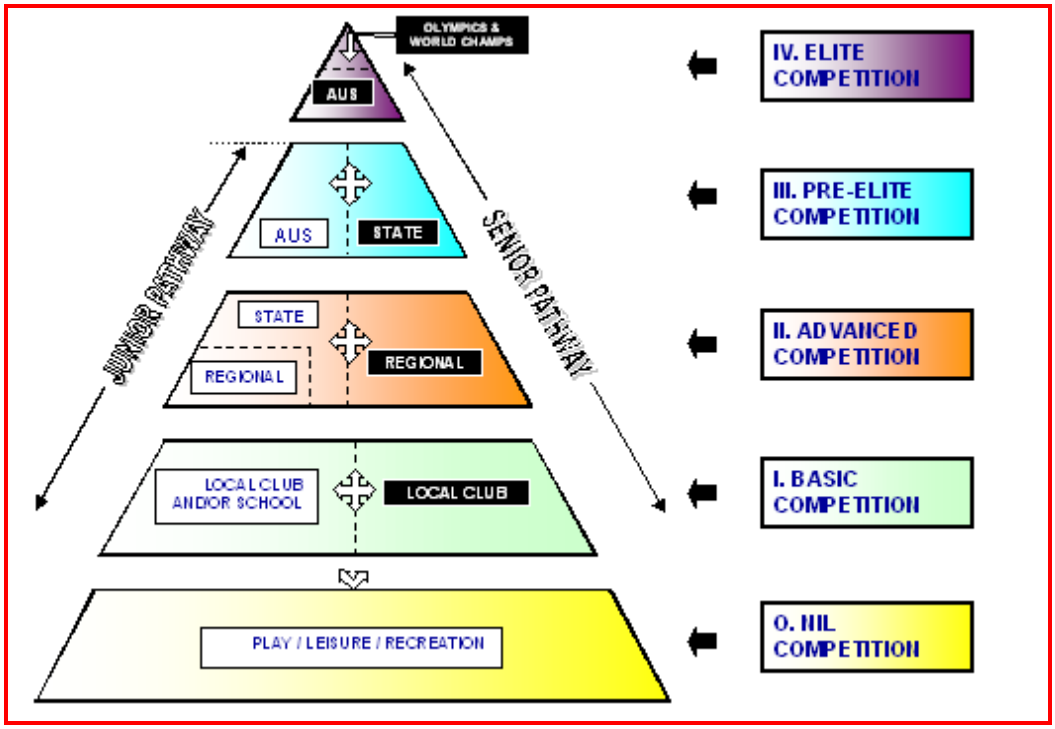


Figure 2 Levels of sport activities

Source: ASC.

The base layer would typically not be captured in ABS definitions of sport (as opposed to say, exercise or physical recreation). However, as represented here, it is an important entry point into sport, particularly amongst children. It is often at this level that the first experience of the basics of a sport are experienced, and where interest in pursuing a more structured form of the activity (that would qualify as sport "proper") is nurtured. This point is important, since to the extent that this level represents an "entry" into sport, the factors that affect participation at this level for an individual may have an impact on their future participation in structured sport. To the extent this is true, it makes this level of activity important in our analysis of sport related externalities and elite sport performance.

As we move up the pyramid, sport activities are likely to increase in structure and competitiveness. Furthermore, the time dimension is also likely to change, both quantitatively (i.e. the amount of time) and qualitatively (i.e. in terms of the different types of time defined by the ABS). On the latter front, we would expect that the proportion of contracted time relative to other types of time would increase. This simply reflects the fact that progress up the pyramid is likely to imply that sport will become the main vocation of the person involved. Contracted time need not imply that the person is a full time professional – for example, a competitor who earns a living through non sport mean but also has a

contractual relationship (e.g. with a sponsor) in relation to their sport performance will have some contracted sport time, in the sense that the contractual relationship is predicated on a certain level of participation in sport (if not the attainment of certain results).

"Progress pathways" through the pyramid are numerous and complex, and this is at least in part a function of institutional and governance factors. Progress through pathways and the activities at any level of the pyramid are both dependent on inputs from a variety of sources, including volunteers and paid professionals.

The relevance of this characterisation of sport for this analysis lies in the fact that:

- It allows us to understand the characteristics that tend to predominate at different levels of sport. For example, leisure time and voluntarism are likely to predominate at the base, basic competition and at least some of the advanced competition levels. These levels are likely to be the main focus for understanding the "externality effects" of sport. Whereas the elite and pre-elite levels will be primarily geared towards considering national pride and related issues.

- It allows us to understand the interactions between these various levels. In crude economic terms, activities in one layer can act as an input into others. This works most obviously from the bottom up – expanding the pool of say, children, involved in basic competition is likely to have beneficial effects on participation in the layer above. But there may also be top-down effects, for example, through current and former elite performers sharing their skills (e.g. through training) with participants at lower levels, through the transmission of techniques, tactics and technology first honed at the elite level; and through less tangible effects such as emulation.

2.2.3 Sport in the context of the broader economy

Economic measures of sport

The Australian Bureau of Statistics (ABS) collects and publishes a large amount of data on sport-related activities in Australia.[6] This provides numerous snapshots of various dimensions of sport in the Australian economy at a purely descriptive level. For example, according to the most recent data:[7]

---

6 The data can be accessed through the *Themes>People>Culture and Recreation* tabs on the ABS website (http://www.abs.gov.au).

7 *Sport and Recreation: a Statistical Overview, Australia* (ABS Catalogue No. 4156.0).

- Sport in general (including for-profit sport activities) accounted for approximately 2% of GDP
- expenditure on sport and physical recreation products accounted for about 1.8% of total household expenditure in 2003-04
- 0.8% of employed persons had their main job in a sport and physical recreation occupation according to the 2006 Census
- 11.2% of the adult population undertook voluntary work for sport and physical recreation organisations in 2005-06
- engineering construction work for recreational purposes accounted for 0.6% of aggregate gross fixed capital expenditure in 2006-07
- exports of sport and physical recreation goods accounted for 0.25% of total exports in 2006-07
- imports of sport and physical recreation goods accounted for 0.9% of total imports in 2006-07.
- According to the latest available ABS data, government support for sport, as measured by contributions made to organisations involved in the provision of sport and recreational services, amounted to 1.57 billion. These funds accounted for 17.7% of the combined income of these organisations. [8]

However, these data come from a variety of different ABS collection methodologies and refer to a variety of periods. This diversity limits their usefulness for measuring the economic contribution of sport in general and of the not-for-profit sport sector in particular. An estimate of the size of the not-for-profit sector, as captured in the national accounts, can be gained by forming a judgement as to which of the nine sub-sectors into which sport has be broken down by the ABS consist of not-for-profit activities. We judge that not-for-profit sport is included in the three of these sub-sectors (details can be consulted in Appendix A). The I-O tables reveal that gross value added for sector *93.01* in 2004-05 was $5,409 million, with returns to labour accounting for $3,162 million and gross operating surplus accounting for $1,997 million. GDP in 2004-05 was $897,642 million; hence sector 93.01 accounts for about 0.6% of GDP.

Appendix A sets out a more detailed treatment of the statistical issues that arise in the measurement of sport in the economy.

8 ABS (2008_, Year Book Australia 2008., section on sport and recreation.

2.3 This report and its relationship to the Productivity Commission's inquiry

In this section, we explain how the approach adopted by this report dovetails well with the Terms of reference for the Commission's inquiry and with focus of the inquiry and the proposed framework for measuring the contribution of the not-for-profit sector as set out in the Commission's Issues Paper.[9]

The *first dot point* in the Commission's terms of reference refers to existing measures of the economic contribution of the not-for-profit sector. The way in which not-for-profit sport is included in the Australian national accounts is discussed in Section 2.3.3, above. We note that the national-accounts representation uses input-based measures of the size of the not-for-profit sport sector. The focus of the discussion is on incorporating not-for-profit sport into an overall representation of the economic structure. In Section 2.3.4, we discuss the role of such a representation in models of the economic structure and conventional economic impact studies.

The *second dot point* in the terms of reference relates to alternatives to existing measures of not-for-profit activities. We address this in Section 2.3.5. We argue that existing measures do not deal adequately with important outputs of the not-for-profit sport sector, especially socially valuable outputs that cannot be sold in conventional markets. Our view is that it is these non-market outputs that constitute the main case for public support of the sector. It follows that improved output-oriented measures are required to facilitate evidence-based policy decisions about such support. Assuming that a convincing case for public support can be made, the efficiency of support mechanisms becomes a required focus (cf dot point 3-6 in the terms of reference). The role of the ASC in effective coordination of the not-for-profit sport is then crucial.

The focus of the inquiry is set out schematically in Figure 1 in the Commission's Issues Paper. It is clear that not-for-profit sport is within the scope as set out in the first row of the figure. The coverage of not-for-profit sport in the ICNPO codes that define activities encompassed by the Inquiry is discussed in Section 2.3.3, above. The second row of the Commission's figure lists issues relating to "efficiency and effectiveness". The not-for-profit sport sector provides interesting case studies for all of these – the role of volunteers, non-market funding arrangements, innovation (which is especially relevant to Australia's contribution to sport science) and regulation (especially inter-jurisdictional issues). The third row of the figure lists characteristics of organisations for which the Inquiry has "most focus". All of these are characteristics of most

[9] Productivity Commission (2009), *Contribution of the Not for Profit Sector* - Issues Paper. The terms of Reference for the inquiry are appended as Attachment A to the Issues Paper.

organisations in the not-for-profit sport sector. As we argue throughout this report, the key public-policy issues for not-for-profit sport relate to its provision of services ***in addition*** to those consumed directly by members of not-for-profit sport organisations. Hence, the not-for-profit sport sector belongs to the areas defined by the Commission at the bottom of Figure 1 as of "most focus" rather than to the areas of "less focus". While sport organisations do not deliver government services by means of explicit contract (as charitable organisation may do), they do deliver services that have outcomes that are in the public interest.

We turn now to the Commission's proposed framework for measuring the contribution of the not-for-profit sector. This is set out in Figure 2 in the Issues Paper. It begins in the top row with input-based measures of activity in the sector. Not-for-profit sport fits well with the details of this schema. As explained in Section 2.3.3 of this report, the main problem with identifying these input measures for not-for-profit sport is to separate sport-specific elements from other elements with which it is aggregated in the published data. This is a problem both for the market-based data that is included in the national accounts and for the supplementary data on non-market inputs (e.g. volunteer labour) that can be captured in satellite accounts. An additional problem is that the supplementary data and (to a lesser extent) the input-output data, are not produced very frequently in Australia. The most recent relevant satellite-account data refer to 1999-2000. The remaining rows of Figure 2 in the Issues Paper recognises, as we have emphasised in this report for not-for-profit sport, that many of the outputs of the not-for-profit sector are not sold on observable markets – and where they are this is certainly not at prices that reflect the social value of the impacts of the outputs. This is the main barrier to evidence-based public policy decisions about the sector. In Section 2.3.5 of this report, we discuss some of the major informational requirements for overcoming this barrier.

3 Public policy towards sport at the community level

In this section of the report, we examine the rationale and evidence for benefits of sport at the community level that might support an active role for public policy. We begin by providing a broad overview of the kinds of physical activity and sport that are undertaken within the community, before outlining how participation or increased participation in these activities might give rise to social benefits over and above the private benefits accruing to participants. We then turn to evidence on what determines whether people participate in physical activity and community sport, and then discuss some of the implications of our findings for public policy.

The approach, which essentially amounts to tracing the causal linkages between sport participation and social impacts, and between factors affecting sport participation and policy instruments, is consistent with the major trends of sport policy in the last two decades. This has essentially been to move from an approach that has sought to develop sport in the community (broadly speaking, to increase the degree of participation in sport in the community) to developing the community through sport (i.e. to increase participation with an eye to the putative social benefits increased participation might bring). [10]

3.1 Overview of activities in Australia

The ABS provides an extensive overview of the question of 'who, what and where' in relation to sport in Australia at the community level.

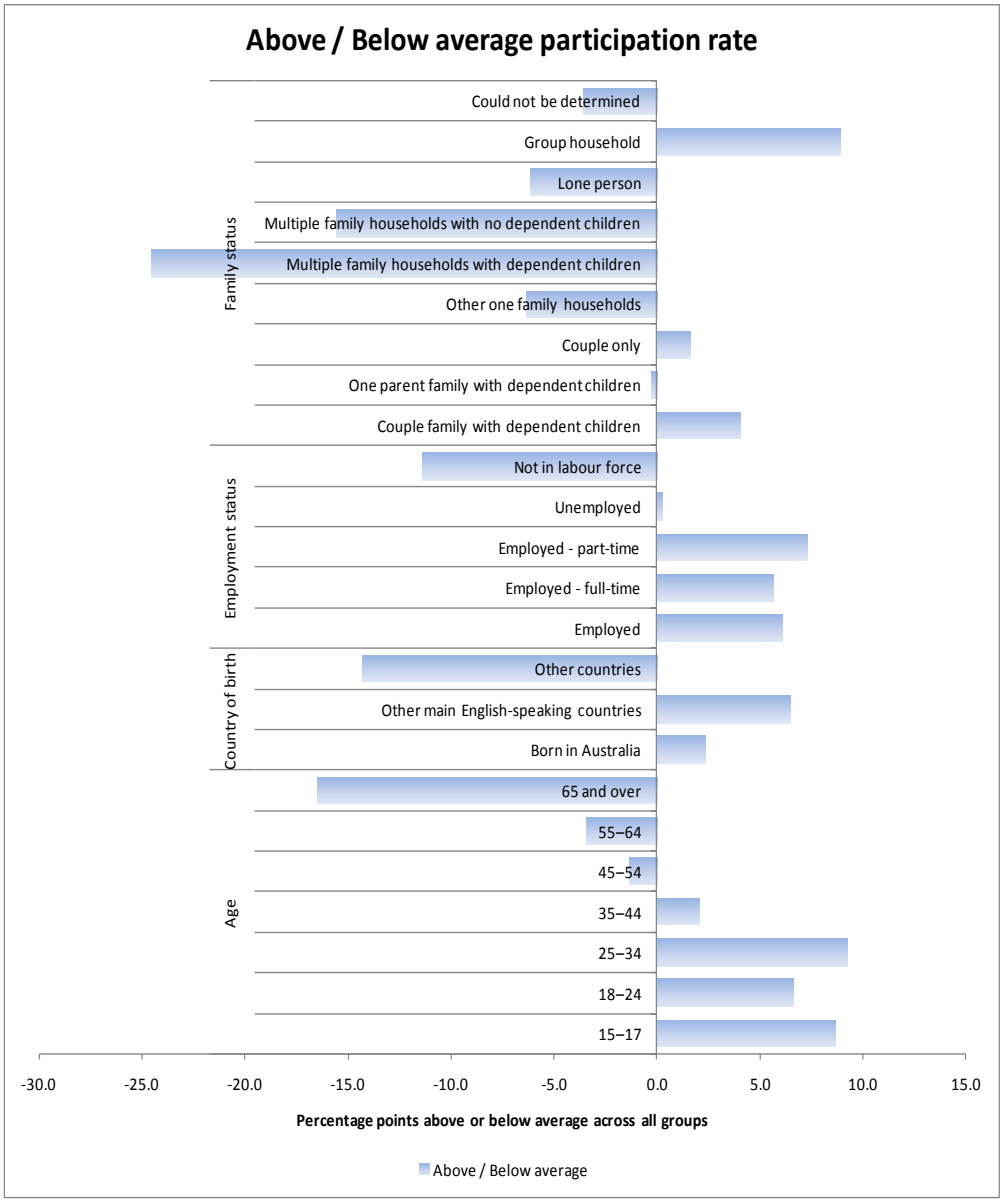
The publication *Sport and Recreation: a Statistical Overview, Australia*, Catalog 4156.0 (Edition 2), 2008 presents a statistical overview of sport and physical recreation in Australia, drawing on a variety of ABS data sources. The primary source is the 2005-06 Multi-Purpose Household Survey (MPHS). The survey collected data about the characteristics of persons aged 15 years and over who participated in sport and physical recreation activities. The MPHS was conducted each month during 2005-06, and measured activities undertaken by participants in the 12 months prior to interview.

In the survey, a sport participant is defined as a player, competitor or person who physically undertakes the activity. Persons involved solely as a coach, teacher, instructor, referee, umpire, administrator or club committee member are excluded from the data.

[10] Coalter, F, (2007), *A Wider Social Role for Sport: Who's keeping the Score*?, Routledge Oxon, pp 8-22

3.1.1 Participation rate

During the 12 months prior to interview in 2006, 65.9% of Australians aged 15 years and over participated in physical activities for recreation, exercise or sport. Further examination of the data reveals differences in participation rates by age, family composition, employment status and country of birth. This is highlighted in the following chart.



Source: ABS 4156.0 (2008), p. 15

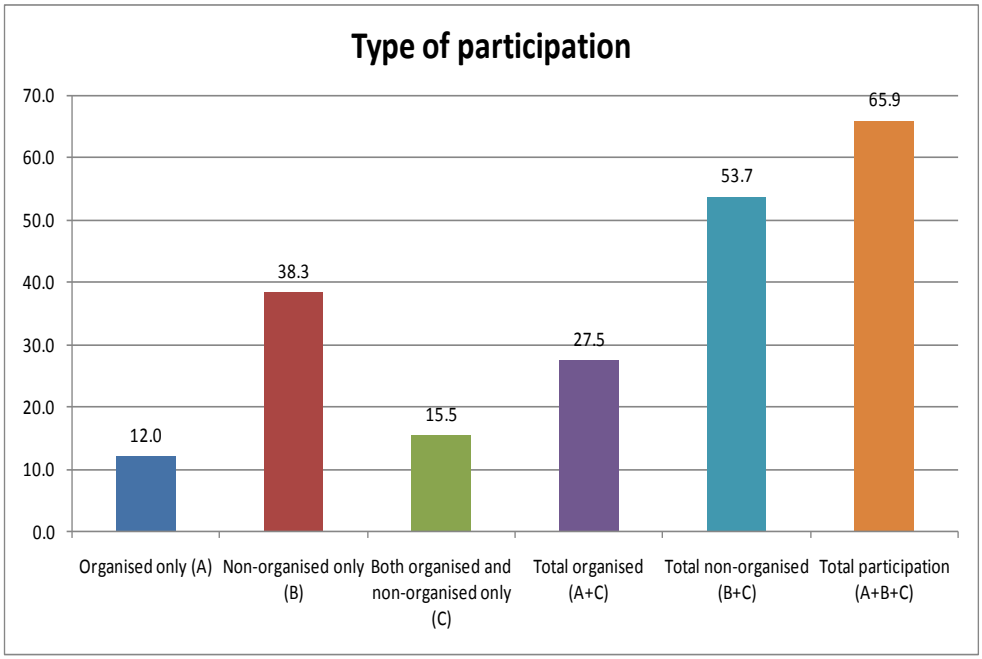
Figure 3 Influences on the participation rate

In particular, the data appear to suggest that lower participation is associated with higher age, being born overseas (non-English speaking country), being out of the labour force, and being in a larger household with dependent children.

3.1.2 Type of activities

Sport and community sport are a subset of the activities deemed physical activity. An interesting distinction made in the ABS data is between those who participated in sport or physical recreation organised by a club or association (e.g. playing tennis as part of a tennis club competition) and participation in non-organised activity. Examples of this include swimming at the beach with the family, walking for exercise and playing tennis socially. Of course, it is possible to participate in both organised and non-organised activity. Of the 10.5 million participants in sport and physical recreation, a large majority (82.3% or 8.6 million) had undertaken at least some non-organised activity, while about half (42.1% or 4.4 million) had participated in organised activity.

This is summarised in Figure 4.



Source: ABS 4156.0 (2008), p. 16.

Figure 4 Participation by type of participation

3.1.3 Frequency or regularity

A further feature of the ABS data on physical activity and sport relates to the frequency with which the activities are undertaken. Frequency and regularity are often cited in the literature as being important to delivering the optimum health-related effects of physical activity.

In Figure 5, we illustrate that a good proportion of those reporting physical activity do undertake it on a regular basis (more than twice a week), although there is a significant proportion that only undertake activity on a part-year and infrequent basis.

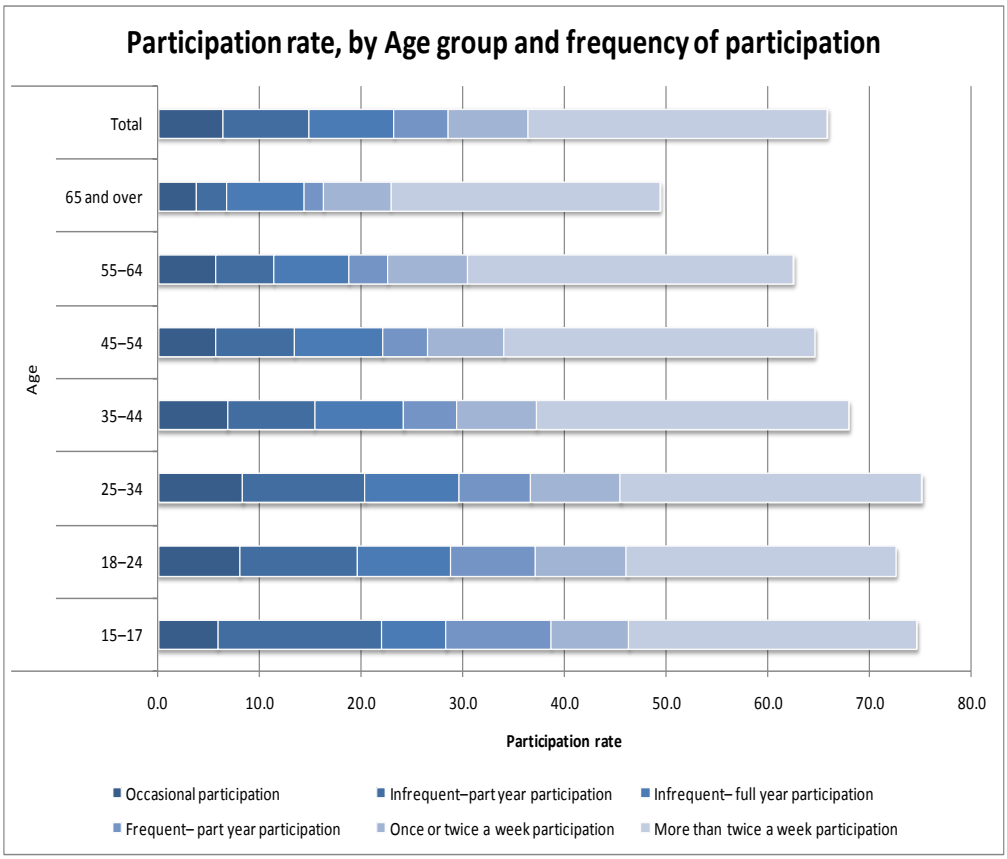


Figure 5 Frequency of participation

3.1.4 Other research

The ABS has also collected specific data on children's participation in sport, although this is from an April 2006 Survey *(Children's Participation in Culture and Leisure Activities*, 4901.0). This is largely limited to participation in organised sport outside of school hours. It is not possible to make direct comparisons between the data for adult participation and the data for children's participation. These

surveys also considered time spent on active non-organised sport activities such as dancing and skateboarding.

These data reveal that during the 12 months ending April 2006, 1.7 million or 63.5% of children aged 5–14 participated in sport outside of school hours that had been organised by a school, club or association. The sport participation rate for boys exceeded that for girls, both overall (68.9% compared with 58.0%), and within each age group category. However, although boys had the higher participation rate in organised sport, girls had a much higher participation rate than boys in another form of organised physical activity – dancing. Such data indicate that one must analyse statistics relating to sport and physical activity with some care.

3.2 The role of externalities in public policy towards community level sport

3.2.1 Overview

As outlined in section 2.2.2, the presence of externalities can cause certain activities to be under- or over-provided from a social point of view, depending on whether the externalities are positive or negative.

A positive (negative) externality can result if a decision-maker's consideration of the costs and benefits of a decision do not take into account the benefits (costs) that the decisions would impose on third parties. A classic example of a negative externality given in economic literature is a factory that pollutes a river. While the factory owner derives benefits from disposing of its wastes in that way (relative to more costly alternatives), the owner would not consider the costs it imposes on those undertaking activities downstream, which would be negatively affected by the pollution (for example, fishing).

Education is an example of a good or service with positive externalities. While individuals benefit privately from being educated, a society of well educated individuals is as a whole more productive and efficient than it would otherwise be, and individuals are less likely to resort to crime saving the community the related costs.

In the absence of policy intervention, activities that give rise to positive externalities tend to be under-provided relative to a social optimum, and negative externalities tend to lead to over-provision. Externalities may therefore provide the basis for government actions such as regulation, service provision or service funding.

A key question that we now consider is whether community sport give rise to positive externalities. The externalities commonly cited in the literature on the economics of sport relate to:

- physical and mental health, and the burden of funding health care
- social cohesion
- socialisation.

That is, while an individual participating in community sport is likely to obtain direct benefits to their own health (e.g. reflected in lower absenteeism and higher productivity at work), there are likely to be additional benefits. This benefit to society is conferred as a healthy person is more likely to contribute to society, and less likely to impose health-related costs. As Australia's medical system contains a large element of public funding (whether via direct funding of Medicare, or funding of private health insurance, or other means), individual health issues impose wider costs. When deciding how much sport to "consume", an individual may not take these additional economy wide benefits into account.

3.2.2 Evidence linking physical activity and sport with health externalities

Overview of findings

Preventative health concerns, notably in relation to obesity, have attracted increasing policy attention in Australia.[11] High body mass and related characteristics account for substantial proportions of the burden of a number of pathologies. For example, high body mass and physical inactivity account for around 60% of the burden for type 2 diabetes; the combined effect of poor diet, physical inactivity, high body mass, high blood pressure and high cholesterol is responsible for more than 50% of the burden of cardiovascular diseases.[12]

There is an abundance of credible Australian and international evidence that there is a strong link between physical activity (including sport) and improved health outcomes.

- The Australian Institute of Health and Welfare (2007, p. 31) estimated that if every Australian adult became moderately physically active, more than 13,000 premature deaths could be prevented (primarily from reduced risks of heart disease, strokes and certain cancers).

---

11 See for example, Government of Australia, Preventative Health Taskforce (2009) *National Preventative Health Strategy – A Roadmap for Action*.

12 National Preventative Health Taskforce, *Technical Report No 1, Obesity in Australia – A need for urgent action*. P 5

- The World Health Organisation (2003) suggests that physical activity reduces the risk of cardiovascular disease, some cancers and type-2 diabetes. These benefits are mediated through a number of mechanisms, including improvements to glucose metabolism, reductions in body fat and lower blood pressure. Participation in physical activity can improve musculoskeletal health, control body weight, and reduce symptoms of depression.

- The WHO also quotes data from developed countries indicating that the direct costs of inactivity are high. Physically active individuals save an estimated US$500 per year in health care costs according to 1998 data. The costs associated with inactivity and obesity accounted for some 9.4% of the national health expenditure in 1995. Other evidence cited indicates that workplace physical activity programmes in the USA can reduce short-term sick leave (by 6-32%), reduce health care costs (by 20-55%) and increase productivity (by 2-52%).

- The US Surgeon General's comprehensive report (1996) summarises an extensive and diverse medical literature on the benefits of physical activity to health. It finds that higher levels of physical activity are associated with lower mortality rates for both older and younger adults. Additionally, some findings are made on the link between physical activity and mental health, and health-related quality of life (p. 14).

- Canadian studies indicate that over 10% of deaths in Canada could be attributed to the negative effects of inadequate physical activity.[13]

There are have been some attempts to quantify, at the economy-wide level, the health-related impacts of sport, in terms of overall healthcare cost savings, and also in economic growth terms through the impact of increased health on productivity.

Costs savings and productivity gains

On the former front, Econtech conducted some modelling for a report commissioned by Medibank Private. The report reviewed the scientific literature and concluded that there are clear links between inactivity and the incidence of seven medical conditions: Coronary heart disease, Stroke, Type-2 diabetes, Breast cancer, Colon cancer, Depression and Fall injuries. It then used epidemiological techniques to estimate the share of health costs for each of these conditions that can be attributed to inactivity. In total, this amounts to $1.49 billion or 17% of

13 Katzmaryk, P., Gledhill, N. & Shephard, R. (2000). The economic burden of physical inactivity in Canada". *Canadian Medical Association Journal*, 163(11):1435–1440

the $8.8 billion total cost of these conditions in 2006-07, or about 1.5% of total health costs. In 2006-07, health costs accounted for 9% of Australian GDP; hence, the potential health-cost saving from the reduction in inactivity is worth about 0.14% of GDP. From the point of view of assessing the externality benefits of sport-related reductions in inactivity, it is important to note that about 70% of health costs are borne by the public purse rather than by the affected individuals.

Econtech noted that costs associated with increasing activity levels should be offset against the gross health-cost reductions. The direct health costs of sport injuries and the cost of participating in fitness related activities were recorded at $831.4 million – roughly one tenth of the estimated gross cost savings from a reduction in inactivity. Hence, potential net health-cost savings from the reduction in inactivity is worth about $663 million or 0.06% of GDP.

The effect of physical activity on labour productivity is the topic of a report prepared by Tasman Asia Pacific and Ernst & Young (1998).[14] The report surveyed various studies that establish links between physical activity and productivity, especially via the effect of increased activity in reducing absenteeism. The report concluded that "a 4 per cent sustainable increase in productivity could be achieved for those workers who commence regular sport and recreational physical activity", describing this as an assumption that is "conservative" given the evidence surveyed.

For the purposes of our analysis, it is useful to combine the findings of the Tasman report with some of the data underpinning the Econtech study. The latter reported a 54% inactivity rate. If we assume that this rate applies to the workforce, and apply this in the context of the Tasman study (which we recall estimated that a 4% increase in productivity would result from inactive workers commencing some form of physical activity), then the potential increase in average productivity available from this effect exceeds 2% (i.e. 4×0.54). This could be expected to increase GDP by roughly 1% per year, or roughly $12 billion dollars in 2008-09.

There is also a link between physical activity and mental health. The potential dollar costs of physical inactivity (and size of relevant externalities) are potentially large. The organisation Beyond Blue has estimated that mental health issues and depression cost Australia an estimated $10 billion a year including $3.3 billion in lost workplace productivity.[15,16] A number of studies point to regular physical

---

14 Tasman Asia Pacific and Ernst and Young (1998), *Economic Impact Study of Sport*, report prepared for the Confederation of Australian Sport, February.

15 Beyondblue, *Opening our eyes to* cost *of depression in the workplace*, 2008; Available from: http://www.beyondblue.org.au/index.aspx?link_id=9.234&oid=418

16 Australian Institute of Health and Welfare, *Young Australians: Their Health and Wellbeing. Australian Institute of Health and Welfare*, 2007.

activity leading to improvements in depression symptoms and reduced risk of developing depression.[17] It is therefore feasible that increased physical activity would give rise to improvements in mental health that would have significant positive effects onto the Australian healthcare system.

Health outcomes and sport for people with disabilities

Special mentioned needs to be made of the role of sport in promoting health outcomes for people with disabilities. Various studies have indicated that individuals suffering from some for of existing disability are at reduced risk of contracting other conditions, including non-communicable conditions not directly related to the disability. [18] There are also psychological benefits that accrue to people with disabilities through their participation in sport.

3.2.3 Social cohesion

Social cohesion and social inclusion benefits refer to how sport can assist the development of relations among community members. This can include increased feelings of self-esteem, self-confidence and greater feelings of community connection. While some of these benefits will be private in nature (i.e. accruing to those that take part in the activities), it is arguable that a broader range of parties benefit from such activities.

---

17 beyondblue's factsheet *Physical activity and depression/anxiety* (available at http://www.beyondblue.org.au/index.aspx?link_id=9.379&tmp=FileDownload&fid=125) quotes a number of medical studies:

- Regular physical activity lead to 17-28% reduced risk of developing depression in men in a 20 year follow up study. Paffenberger, RS. et al. (1994) Physical activity and personal characteristics associated with depression and suicide in American college men. *Acta Psychiatr. Scan*. 377:16-22.
- People who reported no physical activity were more likely to have depressive symptoms compared with people who exercised regularly. Weyerer S. (1992) Physical inactivity and depression in the community. Evidence from the Upper Bavarian Field Study. *Int J Sports Med* 13:492-496.
- Regular aerobic and strength training activities of light or moderate intensity can lead up to 50% reduction in symptoms of depression and anxiety in the acute treatment phase, especially for women and older people. Dunn, A. et al. (2001) Physical activity dose-response effects on outcomes of depression and anxiety. *Med Sci & Sport*, 33(6):S587-597
- Physical activity can be as effective as pharmacological treatments (such as sertraline) in the management of mild to moderate depression in older people. Babyak, MJ. et al. (2000) Exercise treatment for major depression: maintenance of therapeutic benefits at 10 months. *Psychosom Med* 62:633-638.

18 Australian Sports Commission (2008), *A Review of Literature for the National Plan for Disability Sport, p14.*

- Long and Sanderson (2001) identify a range of mechanisms by which 'community benefits' might be derived from sport, including benefits from 'communality' and interaction, and empowerment.[19]

- Donnelly and Coakley (2002) argue that sport can both reflect and reproduce social inequality in society, but, it can be argued, also has the "capacity to transform communities. People could learn initiative, community endeavour, collective rather than individual values, self determination and so forth, that could permit them to take charge of their own lives and communities."[20]

- The notion of "Sport for development and peace" reflects a view held by the international community that sport activities can play an important role in strengthening societies that have been weakened through conflict and through poverty. Examples include sport programmes for children that had been forcibly recruited as child soldiers – the sport programmes are implemented to enable the reintegration of these children into society.[21]

It is not surprising that given the somewhat abstract nature of these benefits of sport and the unclear way in which they might work, there is not a great deal of published empirical work that addresses or quantifies these benefits. Donnelly and Coakley (2002) note that there are no single indicators of social cohesion or inclusion that would assist with empirically verifying its importance. Qualitative studies are therefore the norm in this field of research, and there is clearly a research agenda that needs to be developed

Box 1:Sport and Development

The interest in using sport as a mechanism for promoting international development outcomes is not new, but has gained increased prominence in the last decade or so. The United Nations declared 2005 the International Year for Sport and Physical Education. The Millennium Development goals provide an overall poverty-reduction framework for devising and implementing sport related activities. The main mechanisms through which sport is expected to play a role in poverty reduction are through health impacts, improving educational outcomes, alleviating the psychological stress of poverty, and facilitating social integration. A number of donor countries have stepped up efforts in this regard. Australia, through the ASC, runs programmes in the Asia-Pacific region and South Africa. Along with a number of other donors and not for profit organisations, it has established sportdev.org, an international platform designed to leverage the resources of donors and partner countries in facilitating the role of sport in reducing poverty.

While sport and development programmes do not represent a direct economic contribution to

19 Long, J, and Sanderson, I (2001), "The Social Benefits of Sport: Where's the Proof?", in C. Gratton and I. Henry (eds) *Sport in the City, London,* pp. 187-203.

20 Donnelly & Coakley, 2002, *The role of recreation in promoting social inclusion*, Laidlaw Foundation, p. 14.

21 United Nations (2003), Sport for Development and Peace, pp 15-16.

Australia per se, they do reflect the interest Australian have in contributing to the development of the global community. They can also be said to be a form of diplomacy, in the sense that such cooperation programmes help to affirm relationships (sporting and more broadly) between countries – including votes on key international bodies (e.g. those tasked with allocating international sporting contests).

The main issues that need to be addressed in relation to sport and development lie in developing the understanding between activities and poverty outcomes. This is important from the point of view of programme design and also to ensure that the sole purpose of these programmes is not directed towards securing influence on international sport bodies. There is a shortage of robust empirical evaluations of these programmes, and many of the notional outcomes are framed at an aspirational level. Because the impact of sport on poverty outcomes will undoubtedly be dependent on the efficacy of other interventions (e.g. directly in relation to health and education) it is important to understand how sport related activities relate to, and are integrated with wider development initiatives.

3.2.4 Socialisation

By socialisation, we mean the benefits that may be derived from participants in sport learning values and behaviours that improve their contribution to society. Clearly, some of the benefits gained from improved socialisation will be private in nature; that is, we should expect that people will undertake these activities because the net benefits of doing so will be positive. However, there is arguably an externality-type effect which relates a reduction of negative behaviours that affect third parties – crime, alienation, anti-social behaviour and school absenteeism and dropout.

A study by the Australian Institute of Criminology notes that a literature has emerged supporting the benefits of sport in reducing anti-social behaviour. It also notes that:

> Despite the obvious benefits of sport, there is a lack of robust evidence on of the direct impact of sport and physical activity on anti-social behaviour and the sustainability of any outcomes. There is general agreement, however, that the effects work indirectly through intermediate outcomes.[22]

Nonetheless, it is also apparent that the link between physical activity interventions and 'pro-social' behaviours is not straightforward. In particular, there is a need for further research evidence to support many of the claims made for physical activity to or to inform decisions about effective intervention design.[23]

---

[22] Australian Institute of Criminology, *Sport, Physical Activity and Antisocial behaviour in Youth*, No. 249, April 2003, p.2. The intermediate outcomes referred to are reduced boredom and reduced unsupervised leisure time.

[23] Sandford, R.A., Armour, K.M. & Warmington, P (2006), 'Re-engaging disaffected youth through physical activity programmes', *British Educational Research Journal,* 32, 2, 251-271

3.2.5 Importance of sport and types of sport relative to other factors

This type of detail is rarely found in published sources. There is also an issue here between the benefits from general forms of physical activity (such as walking) and organised sport.

The work of Coalter (2007) emphasises that much of the research available on the wider impacts of sport suffers from difficulties that, while not taken as 'disproof' of the benefits of sport, do not greatly assist with our understanding on the links between sport and community welfare. He argues that:

> In this regard, there is a lack of information about the various mechanisms, processes and experiences associated with participation [in sport]. We have little understanding about which sport and sport processes produce what outcomes, for which participants and what circumstances.[24]

One published study of which we are aware (and quoted in *Benefits of Investing in Sport,* Edmonton Sports Council, 2003) is that of Andersen et al (2001) which showed that physical activity is inversely associated with mortality in men and women in all studies age groups. Sport participants experienced reduced mortality risks when compared with moderately and highly physically active people in this study.[25] This suggests that partaking in sport may have some additional health advantages over other types of physical activities.

3.3 Determinants of participation in sport

In the previous section, we have identified the source of a number of externalities. While there are difficulties in quantifying such effects, we next need to see what factors affect individuals' decisions to take part in sport. If we can identify these, we can see what factors might make individuals participate in less sport than is socially desirable, and what implications there are for policy.

3.3.1 A consumer choice framework

A useful economic framework for understand the objectives and constraints facing consumers in devoting time to sport was developed by Becker (1964) [26] and further analysed by Humphreys and Rusecki (2006).[27] The consumer choice

---

24 Coalter, F. (2007) *A Wider Social Role for Sport: Who's keeping the Score?*, Routledge Oxon, p98

25 Andersen, L.B., Schnohr, P., Schroll, M. & Hein, H.O. (2000). All-cause mortality associated with physical activity during leisure time, work, sport, and cycling to work. *Archives of Internal Medicine*, 160:1621-1628

26 Becker, G, (1964), "A Theory of the Allocation of Time", *The Economic Journal*, 75(299), pp. 493-513

27 Humphreys, B & Rusecki, J, (2006) Economic Determinants of Participation in Physical Activity and Sport, July, *Working Paper Series*, Paper No. 06-13

model emphasises that individuals choose how to allocate their time to maximise their utility subject to budget, time and biological constraints (i.e. the need for sleep).

In this framework, individuals allocate time to sport as part of broader leisure activities, which include sedentary recreation activities such as watching television. Leisure is a 'normal good', meaning that as income rises, consumers will want to consume more of it.

The usefulness of such a model derives from the understanding gained when one considers changes to key variables, such as the relative 'prices' of different types of activities. Consider a rise in the wage rate of an individual. As indicated above, the individual will want to consume more of all normal goods, including leisure and therefore including sport. However, there is also a substitution effect between leisure and work – as income increases, foregoing work time for leisure becomes more costly.

Equally, substitution effects are also likely to be observed between different types of leisure activities. So if the relative cost of doing sport rises, consumers will substitute towards other forms of leisure (including non-sport recreation). To understand the effects of policies, one needs to understand the relative costs of taking part in these activities.

3.3.2 What is the evidence regarding determinants of participation

Our review of international and Australian research indicates a number of sources of data on the particular determinants of taking part in sport.

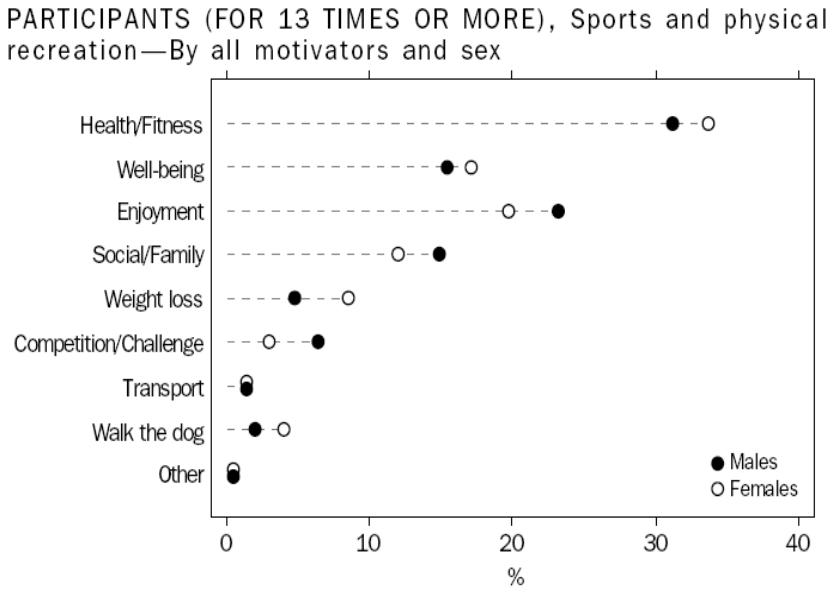
Relevant Australian (ABS) data and publications include:

- *Participation in Sports and Physical Recreation, 2005-06,* (cat no 4177.0) (ABS 2007b)
- *Motivators and Constraints to Participation in Sports and Physical Recreation* (ABS 2007a)
- *Sport and Related Recreational Physical Activity – the Social Correlates of Participation and Non-Participation by Adults* (ABS 2005).

These publications provide information on motivations and barriers to engaging in physical activity or sport. The first two publications draw on the 2005–06 Multi-Purpose Household Survey relating to participation in sport and physical recreation activities, while the 2005 paper draws on data from the 2002 General Social Survey.

The more recent ABS data indicate that:

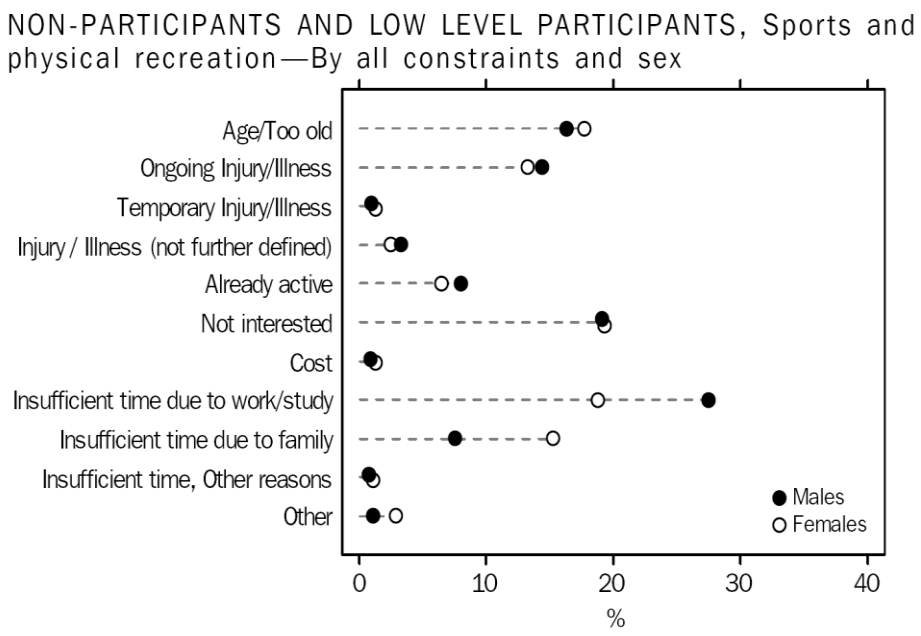
- *motivation* for sport commonly derives from a desire for health, fitness, enjoyment and a feeling of well being. Other more minor factors include weight loss, social reasons, and for transport. The relative importance of these factors is shown in Figure 6 below.



Source: ABS (2007a)

Figure 6 Motivation for physical activity

- *constraints* on the ability of those interviewees that undertook little or no sport and physical recreation included insufficient time, lack of interest, age and illness/injury. See Figure 7.



Source: ABS (2007a)

Figure 7 Barriers to participation in physical activity

Although it appears that, at face value, cost is not a material barrier to participation, when taking sport within the broader leisure framework and understanding that undertaking leisure activities has an opportunity cost in terms of foregone wages, then we can say that cost is a major barrier.

The 2005 ABS paper also includes some econometric work that relates socio-demographic factors to participation in sport and physical recreation activity. This kind of analysis is particularly useful as it allows for the assessment of particular characteristics while holding other characteristics constant. An econometric model known as a multiple logistic regression was used (logit model), with the variable to be explained the decision to participate (measured as participating at least once in the 12 month period).

The decision to participate was then measured against a range of socio-economic indicators that were thought to have some association with participation. The factors that were found to contribute to a higher probability of participating in sport or physical activity included are summarised in Table 1.

Characteristic (statistically significant)	More likely to participate
• Age and Sex	• Younger, Male
• Children	• Fewer
• Index of disadvantage	• Lower
• Household income	• Higher
• Education	• Higher
• Proficiency in English	• Higher
• Health status	• Healthier
• Availability of Transport	• Higher
• Frequency of family and friend contact	• Higher
• Feeling of safety	• Safer

Source: ABS (2005), p. 8.

Table 1 Characteristics influencing participation in sport or physical activity

Of these variables, household income, age, health status and proficiency in English tended to have the largest measured effects on participation.

Humphreys and Rusecki (2006) provide another detailed empirical study of the factors determining decisions to participate in sport and to devote time to sport and physical activity. They use data from the Behaviour Risk Factor Surveillance System – an annual survey conducted in the United States. This survey measures responses to questions on physical activity, including details on type of activity and times a week and minutes a week participating. They employ an econometric model to control for a range of factors that might affect the decision to participate (using a probit model) and time spent participating (using ordinary least squares). We summarise the results of their empirical work, which, as noted previously, employs a model of consumer choice, in Table 2.

Decision to participate		Time spent participating	
Positive association	**Negative association**	**Positive association**	**Negative association**
• Income • Retired • Level of education • Level of health	• Age • Married • Number of children • Employed • Female • Black • Hispanic	• Age • Employed • Black • Hispanic	• Married • Income • Level of education • Female

Source: Humphreys and Rusecki, 2006, Tables 4 and 5.

Table 2 Results of Humphreys and Rusecki empirical study on determinants of participation in physical activity and sport

Each of the factors listed in the tables has a statistically significant impact on the consumers' decision, whether to participate in sport and, if so, how much time to devote to it. Interestingly, and as predicted by the theory, certain factors have opposite effects. Income, for example, is positively associated with a decision to partake but is negatively associated with time spent on the activity. This is consistent with the view that leisure is a normal good – more consume it as income increases, but higher levels of income imply a higher opportunity cost of time. This has important implications for policies that seek to increase sport participation and the frequency and duration of participation.

A UK study by Sport England (2005) points to the barriers experienced by those who do not participate in sport, or who could participate more.[28] This study involved the systematic review of published and unpublished qualitative research studies on reasons for participation in sport. The main barriers across a number of surveys were given as:

- a lack of time
- self image (not being 'sporty');
- being too tired and preferring more restful forms of recreation;

[28] Sport England (2005), *Understanding Participation in Sport – A systematic review* – September 2005.

- appearing incompetent at core skills;
- cost (of joining gyms
- concerns about going out alone (particularly women and minorities
- difficulty in accessing facilities.

This study also found that participation is correlated with being male, younger and in a higher socioeconomic group.

In summary, there is a wealth of data available on participation and barriers to participation in sport and physical activity. These data suggest that targeting of policies is likely to be beneficial towards particular groups for whom participation is less likely and for whom barriers to participation are relatively important (e.g. access to transport, proficiency in English).

Moreover, the prevalence of psychosocial factors – such as concerns about going alone, or the importance of contact with friends and – point to the importance of a collective/ community context. Individuals may be more ready to participate in sport (or physical activity) if it can be done in conjunction with others. Similarly, concerns about competence and self image also point to the need for qualified training and management – a point that we consider in the context of volunteerism in section 3.4 (given that training and managerial activities at a community are often undertaken on a voluntary basis).

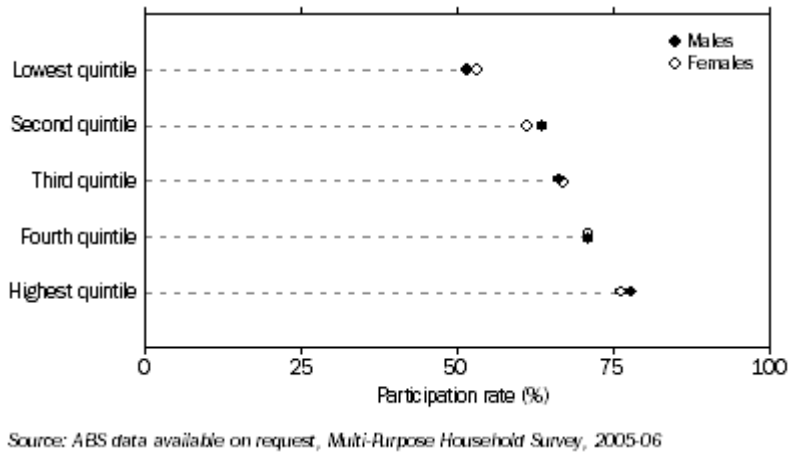
3.3.3 Cost factors affecting participation in sport

It is difficult to find data on cost barriers to participation. We have seen that the type of costs that are relevant are opportunity costs (of time) and the direct costs associated with undertaking physical activity. As noted above, ABS data indicate that the direct cost of undertaking physical activities is not as significant as the opportunity cost of time.

It is, however, also relevant to note that the ABS does present evidence suggesting a correlation between physical activity and socio-economic status. The index of relative socio-economic disadvantage includes attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations. The lower the value of this index, the greater the average level of disadvantage experienced by residents of the area.

It is also important to take into account the interaction between these factors and the question of availability of sport infrastructure, since shortfalls in the provision of infrastructure are likely to increase the costs of participating in sport. For example, if there is a shortage of sport grounds within reasonable proximity of where people live, the time (and hence opportunity costs) and travel costs will increase, affecting participation. There is also in all likelihood a correlation

between the quality and availability of sport infrastructure, on one hand, and the socio-economic status of a particular locality. To the extent that low income and socio-economic status are associated with low levels of sport participation, the shortfalls in infrastructure are likely to act as a further constraint.



Source: ABS

Figure 8 Participation in physical activity by socio-economic status

Although this result may be driven by factors other than cost of accessing facilities, it is suggestive that cost and access to facilities could be important to participation.

3.3.4 Sports and labour market outcomes

There is a literature indicating that increased participation in sport is linked to better labour market outcomes, i.e. higher productivity and higher wages. For example, the work of Lechner (2008) identifies three potential sources of positive relationships between leisure time spent on sport and labour market outcomes – improved health and well-being, social networking effects and improved job performance.[29]

Lechner's empirical work, based on a German dataset over the years 1984-2006, does in fact find that such relationships do exist, and exist in the long run (i.e. that the beneficial financial effects of sport are long-lasting, producing a return of €1,200 per annum). This is said to be consistent with the results of a number of U.S. studies.

It is difficult to draw policy conclusions from this literature. On the one hand, the fact that there are material incentives to undertake physical activity suggests

[29] Lechner, M (2008), Long Run Labour Market effects of individual sport activities, April 2008 *Discussion paper no. 2008-13*, University of St. Gallen

that we could expect people to engage in these activities based on private benefits alone. On the other, the fact that some people will be attracted to sport for labour market reasons does not suggest that the optimal number of people will be. To the extent that some people are uninformed of these benefits, or choose to ignore these benefits, then it could still be argued that the externalities these people impose on others provides a justification for some kind of intervention to promote physical activity.

3.4 Volunteers and volunteerism

3.4.1 The role of volunteers and their impact

The ABS collects data about volunteer participation in the workforce as part of its General Social Survey (see ABS cat. no. 4441.0). The ABS data show that in 2006, 35% of the Australian adult population participated in voluntary work (up from 32% in 2000 and 24% in 1995), collectively contributing about 713 million hours of labour in 2006. Organisations classified as *Sport/physical recreation* accounted for large shares of volunteer activity (33% of volunteers and 26.5% of voluntary hours). These shares are far larger than the share of aggregate employment accounted for by the sport sector. Hence, the data suggest that volunteer labour is much more important in the sport sector than in other sectors of the economy. The Australian data are consistent with findings elsewhere. In the UK for example, it was estimated in 2002 that of 1.5 million volunteers, over a quarter were involved in the sport sector.[30]

According to the ABS (Catalogue no. 4441.0, Table 18), volunteers supplied 187.2 million hours of voluntary labour to the *Sport and physical recreation* sector in 2006. To estimate the market value of this, we apply an estimate of the hourly remuneration rate received by full-time employees in the sector. According to the ABS (Catalogue no. 4156.0, page 40), the average weekly earnings of such full-time employees was $832.6, which is 23% less than the average weekly earnings of full-time employees in all sectors. Assuming that 40 hours constitutes a full-time working week, the average hourly remuneration rate of full-time employees in the *Sport and physical recreation* sector was $20.8 (832.6/40). Hence, our estimate of the value of volunteer input to the sector in 2006 is $3.9billion (20.8×187.2million).

In order to assess the impact of volunteerism in the context of the analysis conducted in this section, it is important to understand the particular economics that surrounds volunteerism. The economic theory of the non-profit economy[31]

---

[30] Sports England (2003), *Sports Volunteering in England in 2002*, p3

[31] See discussion in Chris Gratton and Peter Taylor (2000), *Economics of sport and recreation*, Spon Press pp125-142

suggests that voluntary non-profit organisations such as sporting clubs arise to provide the cooperative action that is necessary to produce goods that are collectively consumed[32] by sub-groups of the population. For example, volunteers facilitate the organisation and conduct of activities and competitions (e.g. by refereeing games, supporting the logistics of a competition, executing administrative tasks). However, while this form of cooperation may be sufficient to ensure provision of the goods to the level that is justified by the collective willingness to pay of the relevant sub group, the goods may still be underprovided from the point of view of society as a whole if they entail external benefits accruing to people outside the co-operating group.

These external benefits are common where the purpose of the co-operating group is precisely to deliver a wider community service. This characteristic is more obviously connected to sectors other than sport (for example, faith and community organisations), though it is not irrelevant to sport organisations. An obvious example is found in the Australian Surf Life Saving Association. Surf Life Saving clubs provide tangible public services in the form of beach-safety patrols. In a 1995 report[33], the Allen Consulting Group valued the lives saved, serious injuries avoided and first-aid services provided as worth $1.4 billion per annum. It is also the case that many sport organisations are instrumental in charitable exercises.

Setting these examples aside, there are two channels through which sport volunteerism can deliver the type of benefits we have considered in this section.

The first is the importance of volunteers in facilitating the organisation and conduct of sport activities. In purely economic terms, volunteer labour is an input into the amount of sport that takes place. If that is the case, we can think of a market for volunteer labour much as we think of a market for other types of labour that support the work of organisations. Amongst other things, this means that increasing the value of volunteer labour input, particularly increasing its productivity, can have beneficial effects on the amount of sport activity. Intuitively, we can see how this might work - for example, if people are more likely to take part in sport because there is a better supply of well qualified volunteer instructors. If we accept the desirable effects that follow from an increasing level of participation in sport, then it follows that one way of increasing such participation is to improve the supply and quality of volunteers.

A variant of this argument is that volunteers also play an important role in the elite sports system. To the extent that elite sports also confers benefits to society

---

32 That is utility derived from the goods by one member of the group that values them is not at the expense of utility derived by other members of the group.

33 Allen Consulting Group (2005), *Valuing an Australian Icon: The Economic and Social Contribution of Surf life Saving in Australia*, report prepared for the Australian Surf Life Saving Association, February.

(see section 4.1.2 for the discussion on this question) then enhancing the input of volunteers to the elite sports can increase the value derived from elite sports.

The second source of benefits lies in the possibility that volunteerism, in its own right, makes a direct contribution to these desirable health outcomes. An increasing body of research suggests that volunteerism per se has positive impacts, notably on mental health.[34] The main channels through which this appears to occur are through the psychological effects (e.g in relation to self-perception) and through the creation of social networks and contacts. There is also a body of research linking social relationships to health outcomes.[35] Unresolved questions exist as to the extent to which sport-related volunteerism leads to these impacts, as compared to other sorts of volunteerism.

3.4.2 Public policy issues arising

Given the importance of volunteerism in sport, and the impacts this has, it is worth considering what policy options exist for leveraging the input of volunteers. Because the direct linkages between sport volunteerism in relation to socially beneficial outcomes are less well documented, we will focus mainly on the facilitating role of volunteerism within sport i.e. in contributing to the output of the sport sector. Piggy backing on the willingness of volunteers to devote their time to the organisations can then become a cost-effective way of providing the wider public goods.

The main issue is whether, absent some form of policy support, there would be a sufficient level of volunteerism. For example, it may be that volunteerism is associated with better labour market outcomes, if, say, employers are more willing to hire individuals with some volunteer experience as this may signal that the individual has desirable attributes (e.g aptitude for teamwork or leadership skills). Thus even if volunteering does provide benefits to an individual that this individual may not appropriate, it may be that the tangible rewards that do accrue to volunteering may be strong as to elicit a sufficient "amount" of volunteerism.

However, as against this, it is also important to note the factors that might constrain volunteerism. A recent report prepared for the NSW Department of Sport and Recreation[36] provides qualitative evidence that various aspects of the

---

34 See for example, *Marc A. Musick and John Wilson* (2003) "Volunteering and depression: the role of psychological and social resources in different age groups", *Social Science and Medicine* 56, pp 259-269; and John Rietschlin (1998), "Voluntary association membership and psychological distress" in *Journal of Health and Social Behaviour*, Vol. 39, No. 4, pp 348-355

35 See for example, James S. House, Karl R. Landis, Debra Umberson (1988), "Social relationships and health", *Science*, Vol. 241, No. 4865, pp 540-545

36 "Volunteers in Sport: Issues and Innovation", a report prepared for NSW Sport and Recreation by the Griffith University Business School, March 2008.

relationship between government and the sport sector are important for the facilitation of continued participation of volunteers. Three issues are highlighted.

- The first is the point noted above that effective participation of volunteers in the provision of collective goods depends on the availability of infrastructure that is commonly provided from government sources, most often *via* local government, perhaps with specific funding from Commonwealth or State programs.

- The second point is that the administration of sporting organisations, which is frequently a responsibility undertaken by volunteers, has become progressively more complicated, often as a consequence of increased government regulation. Risk management issues relating to working with children and young people is one example.

- The third point, which is closely related to the second, is that volunteers do not always have levels of training and experience that are necessary for them to deal with the increasing level of management sophistication required for the administration of sporting organisations.

Setting aside the regulatory issues raised in the second point (which tie in with much broader issues relating to the management of risks for children) two grounds for intervention that could facilitate the involvement of volunteers include:

- The public provision of infrastructure. The main reason is that the public provision of facilitating infrastructure (e.g., sport grounds) increases the output of the sport sector in two ways: firstly because the infrastructure is an input to the sector's production function (capital, if you like) that has a positive marginal product and secondly because its provision induces potential volunteers to supply for free additional inputs of volunteer labour.

- The provision of training, or financing training options to increase the human capital of volunteers, in response to increased demands regarding competence and managerial abilities. Left to their own devices, organisations may under-invest in training, because they are unable to fully appropriate the benefits of human capital themselves. Similarly, individuals are may not invest in these skills themselves, particularly if they are specific to a sporting function, and given other costs (e.g. of foregone personal or contracted time) that may be involved.

3.5 Implications for public policy

In this section of the report, we examine at a high level the public policy principles that should guide policy support to community level sport, on the basis of the findings we have enumerated.

3.5.1 Grounds for public policy intervention

All public policy should be based on clearly defined objectives, which can generally be considered as either allocative (i.e. to improve the allocation of resources to increase efficiency) or distributive (i.e. to improve the allocation of resources to increase equity). These objectives are aspects of an over-riding objective of promoting overall community welfare. Where policy is not based on clearly defined objectives, the potential for policy failure increases.

Interventions to achieve allocative goals are usually supported by an analysis of market failure. Markets are an effective mechanism to produce efficient resource allocation provided that pre-conditions for a competitive market hold (e.g. property rights are well defined, there is full information as to costs and benefits of actions). Where these pre-conditions do not hold (even approximately), inefficiency can result and we say there is market failure.

The presence of various types of market failure provides a necessary but not sufficient condition for government intervention. Intervention by government should also meet two additional hurdles:

- that the benefits of intervention exceed the costs (including, to the extent foreseeable, costs associated with unintended consequences)
- that the proposed intervention delivers the highest net benefit of available interventions.

As we have discussed in this section of our report, there is a considerable amount of information suggesting that increasing physical activity would improve health outcomes and potentially contribute to better social outcomes (although the latter is more controversial). Part of these benefits would clearly accrue to individuals who could be expected to take rational decisions to partake in physical activities, including sport. To the extent that individuals are not aware of the benefits of physical activity, then that would provide grounds for intervention to provide information that would enable more rational choices to be made. However, it is likely that even a community fully *informed* about the private benefits of sport would not undertake a sufficient amount of physical activity, thereby imposing costs on the community. This derives primarily from externalities relating to funding of the health system and detriments to society resulting from increased levels of crime, incarceration and anti-social behavior.

However, there are several problems with identifying the grounds for, and the level of, intervention into community sport that would be beneficial from a social point of view.

- Difficulties in separating out the impacts of sport with those of non-sport physical activities per se; and separating out the relative contributions of either in the context of other intervening factors.

- It is difficult to measure the strength of relationships between the means of intervention (e.g. funding of community sport programs), the desired changes in behavior (e.g. participation in sport programs), and improved health and other behavioural outcomes.

- This also impinges on the question of whether intervention to promote *community* sport would be the best intervention. This is so when comparing sport as opposed to other forms of physical activity such as walking, as well as opposed to forms of medical treatment which might alternatively be effective in countering disease or obesity, in the sense of delivering highest net benefit.

Of course, such arguments do not suggest that the benefits of sport are not material. Rather, it suggests that difficulties in measurement of effectiveness will mean that particular interventions are likely to remain the subject of debate.

Having said that, it is also useful to note that interventions in sport (with a view to achieving wider community objectives) often compare well with other sorts of interventions that have the same objectives in mind. This seems to be the case in relation to preventative health, notably obesity. In this particular context there have been numerous calls for restrictions on advertising of energy-dense, nutrient poor products, particularly advertising targeted at children. Yet the evidence in regard to the efficacy of such actions is inconclusive; and these actions display a number of weaknesses in relation to good regulatory practice. These include difficulties and costs related to implementation, and unintended consequences, including the possibility that bans might increase the consumption of targeted products. [37]

In contrast, the impact of promoting sport and physical activity has been subject to more analysis, and is unlikely to have the sorts of unintended consequences discussed in relation to advertising prohibitions. It is also unlikely to raise the more philosophical objections related to intrusive regulatory paternalism which can arise in the context of advertising bans.

---

37 See Frontier Economics (2008), *The impacts of advertising bans on obesity in Australia.*

3.5.2 Types of instrument

To the extent that one accepts that the grounds for intervention have been made out, the next task is to consider the types of instruments that government could use to address the problems identified.

Generally speaking, government intervention to address market failure can take a variety of forms, including market and non-market instruments. *Market* instruments might include policies such as subsidies to those that engage in the desired amount of physical activity, while *non-market* instruments might include policies that require employers to offer activities for physical recreation.

In assessing the appropriateness of various instruments it is important to consider:

- that each objective generally requires a separate instrument
- the benefits and costs of intervention, including transactions costs (the costs associated with implementing the policy and meeting its ongoing requirements)
- information issues, risk management, monitoring and enforcement
- unintended consequences and interactions with other policies and markets.

The choice of instrument relating to the objectives of improving the choices made by those who are relatively uninformed seems reasonably straightforward. The instruments should be designed to increase the awareness of the benefits of exercise, and thereby seek to promote voluntary participation by individuals (based on a re-assessment of the benefits and costs of undertaking physical activity).

The choice of instrument relating to encouraging greater participation in physical activity and community sport is more difficult, for the reasons that are identified in section 3.5.1. The kinds of instrument that are likely to be relevant for consideration include:

- subsidisation of activities that directly focus on encouraging physical activity (say via tax deductions for exercise equipment or other fees)
- subsidies to organisers of physical activity and sport, including the provision of training (and other ways of augmenting human capital) to volunteers
- subsidisation of facilities used for physical activity. As noted before, this could have an impact on stimulating the productivity of labour (in the form of volunteers).

As each instrument is likely to have different effects and different costs, it may well be necessary to use these instruments as complements rather than substitutes. For example, some policies may be effective in promoting singular physical activities that deliver health benefits, but provide less social benefit than policies that increase community sport.

The literature also raises the issue that policies to promote physical activity may well be complementary to other kinds of policies.

At this point, it should also be borne in mind that it might be decided that the costs of the instrument to address market failure are greater than the benefits, and so no intervention is justified. Market failure can be identified in many areas of the economy, but often intervention is too costly and/or ineffective given the suite of instruments available.

It is important to emphasise that the sorts of interventions considered here are on efficiency grounds – that is, they enhance the well-being of society as a whole. The reason for this is because of their impact on the types of externalities considered in this report. These efficiency based arguments are distinct from distributional and equity based arguments that are often associated with concept of social inclusion, which itself has often been associated policy towards community-based sport.

That is not to deny that there are positive equity and distributional impacts from such interventions, to the contrary. The prospect for positive efficiency and equity impacts stems from the drivers behind these externalities. Consider, for example, the case of health. Low incomes are correlated with both low participation in sport, and poor health outcomes, notably in relation to obesity. Low incomes and poor health outcomes are also likely to be correlated with low labour market outcomes. Improving the participation of sport and physical activities of low income groups can generate benefits to society as a whole (through a reduction in health care costs) and can have progressive distributional outcomes – because of the improvement to health outcomes in low income groups and through the indirect effects these can have on labour market outcomes.

We would expect these positive efficiency/ equity dynamics to hold in relation to sport for people with disabilities. Disabilities are known to have a negative impact on income and earnings potential. This income effect reduces opportunities to participate in sport, compounding the difficulties that people with disabilities have in participating in sport in the first place. This in turn suggests that a variety of interventions – including investments in facilities for people with disabilities, and investing in training for volunteers to help people with disabilities – can have beneficial efficiency effects (by improving health outcomes for people with disabilities) and distributional consequences.

3.6 Conclusions

3.6.1 Main messages

- There is a wealth of evidence relating physical activity (including sport) to desirable public health outcomes, including mental health. It is more difficult to disentangle the relative contributions of physical activity (particularly physical recreation) and sport per se. It is even more difficult to disentangle the relative contributions of different types of sport.

- Existing research suggests that the costs of inactivity amount to around $1.49 billion per year. Drawing on and pooling the results of modelling conducted by separate studies, a rough estimate of increased GDP through productivity gains as a result of a reduction in inactivity is in the order of 1% per year, which in 2008-09 is equivalent to about 12 billion dollars. These productivity gains from the health-related impacts of increased physical activity can be compared to the overall investment of government funds in sport, of roughly 1.5 billion. This latter figure includes spending on professional sport infrastructure and other areas that are not directly related to community level sport; hence, if anything, it is liable to understate the relationship between health benefits that are captured in GDP and government spending.

- There appear to be links between sport, on one hand, and social cohesion and socialisation outcomes on the other, through empirical evidence in this area is more sparse and tends to be less firm.

- There is a wealth of data available on participation and barriers to participation in sport and physical activity. These data suggest that targeting of policies is likely to be beneficial, towards particular groups for whom participation is less likely and for whom barriers to participation are relatively important (e.g. access to transport, proficiency in English) , and people with disabilities

- There is some evidence to suggest that participation in physical activity and sport declines with lower income and increasing social disadvantage, possibly on account of the costs associated with accessing sporting infrastructure.

- Volunteerism is distinctive (and understudied) aspect of sport, with volunteers in sport accounting for nearly 33% all volunteers and over 26% of all volunteer hours. We estimate the value of volunteer labour to be $3.9 billion per year.

- The beneficial impact of volunteers can be measured through the facilitating impact they have on the conduct and organisation of sport, and through the impact volunteerism appears to have directly on health and social indicators.
- The productivity of volunteers can be enhanced through the public funding of physical capital (e.g. facilities) and the provision of training.
- The relationship between physical activity and health outcomes is more certain, and in many cases better analysed, than the impact of other means of promoting those outcomes (for example, regulatory measures relating to advertising)
- The above factors suggest a case for targeted policy intervention, though this can be complicated by the fact that:
  - It is difficult to measure the strength of relationships between the means of intervention (e.g. funding of community sport programs), the desired changes in behavior (e.g. participation in sport programs), and improved health and other behavioural outcomes.
  - This also impinges on the question of whether intervention to promote *community* sport would be the best intervention. This is so when comparing sport as opposed to other forms of physical activity such as walking, as well as opposed to forms of medical treatment which might alternatively be effective in countering disease or obesity, in the sense of delivering highest net benefit.
- The kinds of policy instruments that are likely to be relevant for consideration include:
  - subsidisation of activities that directly focus on encouraging physical activity (say via tax deductions for exercise equipment or other fees)
  - subsidies to organisers of physical activity and sport, particularly volunteers.
  - subsidisation of facilities used for physical activity.
- Interventions that are targeted to low income groups can be beneficial from both efficiency and equity perspectives

3.6.2 Issues for further research

- Data linking participation in sport with desirable social outcomes, notably social cohesion and socialisation.

- A better assessment of the strength of relationships between means of intervention (e.g. funding of community sport programs), the desired changes in behavior (e.g. participation in sport programs), and improved health and other behavioural outcomes.

3.6.3 References in this section

ABS (2005), *Sport and Related Recreational Physical Activity – the Social Correlates of Participation and Non-Participation by Adults*

ABS (2006), *Children's Participation in Culture and Leisure Activities*, cat. no. 4901.0

ABS (2007a), *Motivators and Constraints to Participation in Sports and Physical Recreation*

ABS (2007b), *Participation in Sports and Physical Recreation 2005–06*, cat. no. 4177.0, Canberra.

ABS (2008), *Sport and Recreation: A Statistical Overview*, cat. no. 4156.0, Edition 2, Canberra.

Allen Consulting Group (2005), *Valuing an Australian Icon: The Economic and Social Contribution of Surf life Saving in Australia*, report prepared for the Australian Surf Life Saving Association, February.

Australian Institute of Health and Welfare (2007), *Young Australians: Their Health and Wellbeing*.

Australian Sports Commission (2008), *A Review of Literature for the National Plan for Disability Sport*

Becker, G, (1964), "A Theory of the Allocation of Time", *The Economic Journal*, 75(299), pp. 493-513.

beyondblue (2008), *Opening our eyes to cost of depression in the workplace*, 2008; Available from: http://www.beyondblue.org.au

beyondblue (undated) *Physical activity and depression/anxiety*, available at http://www.beyondblue.org.au

Coalter, F, (2007), *A Wider Social Role for Sport: Who's keeping the Score?*, Routledge Oxon.

Collins, M, et al (1999), *Research Report: Sport and Social Exclusion A report to the Department for Culture, Media and Sport,* March, Institute of Sport and Leisure Policy, Loughborough University

Donnelly, P and Coakley, J, (2002), *The role of recreation in promoting social inclusion,* Laidlaw Foundation.

Edmonton Sport Council (2008), *Benefits of Investing in Sport*, www.edmontonsport.com

Gratton, Chris and Peter Taylor (2000), *Economics of sport and recreation*, Spon Press

Government of Australia, Preventative Health Taskforce (2009) *National Preventative Health Strategy – A Roadmap for Action*

Humphreys, B & Rusecki, J, (2006) *Economic Determinants of Participation in Physical Activity and Sport*, July, Working Paper Series, Paper No. 06-13.

House, James S., Karl R. Landis, Debra Umberson (1988), "Social relationships and health", *Science*, Vol. 241, No. 4865, pp 540-545

Lechner, M (2008), *Long Run Labour Market effects of individual sport activities*, April 2008 Discussion paper no. 2008-13, University of St. Gallen

Long, J, and Sanderson, I (2001), "The Social Benefits of Sport: Where's the Proof?", in C. Gratton and I. Henry (eds) *Sport in the City*, London, pp. 187-203.

Medibank / Econtech (2007), *The Cost of Physical Inactivity*, August.

Morris, L *et al* (Australian Institute of Criminology) (2003), *Sport, Physical Activity and Antisocial Behaviour in Youth,* April.

Musick, Marc A. and John Wilson (2003) "Volunteering and depression: the role of psychological and social resources in different age groups", *Social Science and Medicine* 56, pp 259-269;

National Preventative Health Taskforce, Technical Report No 1, *Obesity in Australia – A need for urgent action*.

Rietschlin, J. (1998), "Voluntary association membership and psychological distress" in *Journal of Health and Social Behaviour*, Vol. 39, No. 4, pp 348-355

Sandford, R.A., Armour, K.M. & Warmington, P (2006), 'Re-engaging disaffected youth through physical activity programmes', *British Educational Research Journal*, 32, 2, 251-271.

Sports England (2003), *Sports Volunteering in England in 2002*.

Sport England (2005), *Understanding Participation in Sport – A systematic review – September 2005*.

Tasman Asia Pacific and Ernst and Young (1998), *Economic Impact Study of Sport*, report prepared for the Confederation of Australian Sport, February

United Nations (2003), *Sport for Development and Peace.*

U.S. Surgeon General (1996), *Physical Activity and Health*.

World Health Organisation (2003), *Health and Development through Physical Activity and Sport*

4 Public policy towards elite level sport

4.1 Valuation of national sport success

4.1.1 How is success measured

Success in sport is primarily measured by performance and achievement in competitions. These occur at all levels of sport. From a national perspective, the metric of success is in major international sport competitions. There is a range of such competitions, including:

- "mega-sport" competitions (essentially the soccer World Cup and the Olympic games)
- periodic sport competitions for one sport or type of sport (e.g. world championships in swimming, gymnastics, or athletics)
- annual tournaments and championships (e.g. tennis grand slam competitions and the Davis Cup, the cycling world championships) and annual year-round/seasonal competitions (such as the ATP tour, the world downhill skiing championships)
- regional multi-sport competitions and specific sport competitions (such as the Commonwealth games, the European football championships, or the Pan-Pacific swimming championships).

The measure of success will be valued differently depending on the type of competition and the countries involved. Generally speaking, the highest level of success for an athlete will be measured in terms of performance at world level events, such as world championships and the Olympics. National associations representing specific sport, as well as national Olympic associations, will typically target achievements in these types of contest.

For the purpose of this report, we will focus more on Olympic sport, rather than the sport that do not feature in the Olympics (such as golf) or for which the Olympics are not a primary concern (such as soccer and tennis). The reason for this is that Olympic sport tie in more readily with the nature of the Commission's not-for-profit Inquiry. Most Olympic sport are not commercially organised on a national basis, and indeed some are not on an international basis.

Success at events such as the Olympic games can be measured at the aggregate level and at the level of individual sport. The aggregate measure of success is the total medal count, which itself can be broken down into total medals and the number of gold medals (the latter determining a country's position in the medal table). Success in particular types of sport (or even in particular events within a

sport) is also given weight in and of itself. This may be because a particular sport or event carries a certain prestige (for example, track and field and within this certain "blue riband" events such as the men's and women's 100 metre sprint); or because a nation has a particular attachment to a sport usually because of some source of comparative advantage in that sport.[38] Examples include Australian interest in swimming or the interest of Nordic countries in cross-country skiing.

National Olympic associations or peak bodies for individual sport almost invariably set targets in terms of medals prior to any Olympic games. Increasingly, the targets are set over the course of one or many quadrennial Olympic cycles. For example, the United Kingdom has targeted a fourth place finish or better for the 2012 Olympic games. Prior to hosting the Beijing Olympics, the Chinese authorities targeted a first place finish in the medal count.

4.1.2 Is sporting success valued and why?

Historically, various reasons have been advanced as to why sport is valued. "International prestige" is an often cited element, but this itself can (and in practice, has) meant different things. During the cold war, sport was used partly as a means of propaganda for rival political systems – a motivation that was particularly prominent in Eastern Europe (and particularly the German Democratic Republic) and the Soviet Union. Some arguments have also been advanced that sport success is useful for the image of a country, in diplomatic and economic spheres (e.g. in terms of attracting investment). However, such arguments are extremely weak – certainly, they would be the object of derision of serious student of either diplomacy or international economics. It is hard to identify a single instance of an international treaty that has been concluded or an investment that has agreed where sport success would have played even a minimally contributory role.

A more promising line of inquiry would be to consider the way international success and performances are considered within the country. The question at this juncture is whether and if so why sporting achievement – as reflected, for example, in the Olympic medal count or medal wining achievements at the Olympics – is valued by society in general. The valuation here is different to that which is attached, say, to the enjoyment of watching a sport. Rather, it is associated with the satisfaction derived from knowing that a nation has enjoyed sporting success. This could be a discrete event – for example, an athlete winning a particularly significant event – or the satisfaction from knowing that a nation has established a particular status in the rest of the world through a sporting event (e.g. by securing a position in the medals table). Of course, there can be

[38] See in particular Moonjoong Cha and Vitaly Pershin (2003), "Reconsidering performance at the Summer Olympics and revealed comparative advantage", *Journal of Sports Economics*, Vol. 4, No.3, August, pp 216-239.

some relationship between these sources of satisfaction and the satisfaction derived from being a spectator (as might have been the case, say, for Australians who witnessed Cathy Freeman win gold at the 2000 Sydney Olympics or the French at winning the 1998 soccer world cup, which they hosted).

The fact that the valuation of national sporting success and sporting status is separate from that of being a spectator has several implications. The first is in terms of measurement. Whereas the utility attached to being a spectator can be measured through market transactions (expenditure as measured by gate receipts, for example), it will generally not be possible to do so in regard to the utility that attaches to the national sporting success. In this case, it will be necessary to rely on reported measures of well being and satisfaction.

The use of these reported measures has fed a field of research into the "economics of happiness" over the last three decades. The economics of happiness is predicated on the notion that utility is determined by more arguments than income, that it can be measured through surveys and indicia of feelings as well as through the observation of objective data (i.e. of market transactions), and that in some circumstances these non-market indicia are a more accurate gauge of welfare than are transactions.[39] It is not so much a departure from the conventional welfarist-utilitarian framework used by economics as a way of portraying welfarist conclusions as "states of mind" rather that in terms of transactions.[40]

The approach has been used to measure the impact of policy decisions (for instance in the realm of macro-economic policy) and to assess the impact of institutional quality such as the effect of direct democracy or the absence of corruption on well-being.[41] The question then is to what extent does sporting success make a difference to well being as measured through happiness metrics.

---

39 The approach was stimulated by the work of Easterlin that suggested that indicia of happiness remained stationary while income was growing; see Easterlin, R.A. (1974), "Does economic growth improve the human lot? Some empirical evidence", in P.A. David and M.W. Reader (eds) *Nations and Households in Economic Growth: Essays in Honour of Moses Abramowitz*, pp89-125.

40 Arguably, the attempts to measure happiness in such a manner takes welfarist economics (the underlying ethical framework for economic analysis), towards its original Benthamite roots. Jeremy Bentham viewed the utility of an object as its propensity to increase or decrease a person's happiness. Indeed, Bentham envisioned the development of a "utility meter" that would measure and rank people's mental states. This did not materialise, and was one of the factors that prompted the development of ordinal theories of preferences. Happiness economics is also ordinal in nature (hence its affinity with the treatment of preferences in conventional economics) but shares the Benthamite concern for utility as "mental states".

41 See for example, Bruno S. Frey and Alois Stutzer (2002), "What can economists learn from happiness research"? in *Journal of Economic Literature*, June, Volume XL, No.2 pp 402-435; and Rafael di Tella and Robert Mc Culloch (2006) "Some uses of happiness data in economics" in *Journal of Economic Perspectives*, Volume 20, Number 1, pp25-46.

There is evidence -- both direct and indirect, formal and anecdotal -- that lends support to the fact that national sporting success has important well-being impacts. In Australia, Australian Unity computes a personal well-being index periodically, based on various different components. There is a strong correlation between movements in this index and performance by elite sportspeople. For example, over the period 2001 and 2008 the index was at its highest level in the immediate aftermath of the Athens Olympics in 2004. The performance of Australian athletes appears to have favourably affected the standard of living and connection to other people components of the index.[42] While the index is generally relatively stable, sporting achievements appear to be one of a few factors associated with significant shifts between surveys.[43]

Some indirect evidence of the contribution of national sport success to happiness can be found in the impact of the "feel good" factor associated with sporting success on political variables. If, as seems intuitively plausible, feelings of well being are beneficial for incumbent governments, then any feel good factor or increase in happiness that results from sporting success should, all else being equal, have a positive effect on incumbents. There is some evidence that this is the case. For instance, bookmakers in Britain cut the odds of an election following the performances of Team Great Britain at the Beijing Olympics, reflecting the view that the Prime Minister would call an election to take advantage of the "Beijing Bounce".[44] In France, then President Jacques Chirac's approval rating increased by 11 percentage points in the month following the success of the French national team at the 1998 World Cup hosted by France; the Prime Minister Lionel Jospin (who was from a different political party) saw his approval rate increase by 9 percentage points.[45] On a more sinister level, the obvious use of sport by dictatorships, such as Hitler's use of the Olympics to promote the Nazi regime, or the use of the World Cup by Mussolini in Italy (1934) and Galtieri in Argentina (1978) to promote their respective regimes, are a demonstration of the importance attached by the general public to sporting success.

Formal attempts at measuring the happiness impacts of sporting success use econometric techniques, controlling for other variables (such as socio-economic variables, family and psychological variables). One study attempted to examine the relative contributions of national athletic success and the impact of hosting major events (such as the soccer world cup and the Olympic games) for a sample

---

42 See Robert Cummins, Richard Eckersley, Sing Kai Lao, Erik Okerstrom, Bruce Horner and Jacqui Warner, *Australian Unity Well-being Index,* Survey 12, p 19.

43 See Robert Cummins, , *Australian Unity Well-being Index,* Survey 19, p 15.

44 "Beijing Olympics: Odds cut on Gordon Brown calling snap election after Team GB victories", Daily Telegraph, 19 August 2008.

45 High Dauncey and Geoff Hare (1999), *France and the 1998 World Cup*, p214

of 12 European countries.[46] In order to measure athletic success the study used a variable that measured the deviation between predicted gold medals and actual gold medals (the predicted number of gold medals being generated by an econometric model of determinants of Olympic gold medals). The study concluded that effect of national athletic success on happiness was positive, but substantially weaker than the impact of hosting an event. It stated that

> "Overall (….) it is plausible that national success in sporting competitions can lead to an increased sense of satisfaction, but the effect is surely not a powerful one".[47]

The result may be related to the specific nature of the sample countries considered. As the authors point out:

> "It should be noted that these results derive from a sample of European nations where football is the dominant sport; in regions of the world where football is not dominant one might obtain different results"[48]

Indeed, one might also add that of the sample, only a handful of countries could actually be considered major contenders in athletics. It is reasonable to assume that where expectations of success are very low, actual success may not necessarily cause a large or durable increase in happiness simply because the interest in the sport is of less significance. Certainly, the movements of the Australian well-being index following the Athens Olympics (where Australian performances, particularly in highly followed events such as swimming, exceeded expectations) suggest a stronger association between national sporting success and wellbeing.

The use of happiness data (which are increasingly available) and the application of econometric techniques have potential as a fruitful avenue of research to estimate the impacts of national sporting success. They provide an alternative to the other main technique used to estimate the valuation of public goods, namely contingent valuation methods.

There are also other more "tangible" variables which can be examined in order to validate the hypothesis that national sporting success is a valid driver of wellbeing. For example, some studies show an increase in health hazards such as myocardial infarctions (heart attacks) as consequence of stressful sporting events.[49] While this may in part reflect the competitive tension and excitement of

---

46 Georgios Kavetsos and Stefan Szymanski (2008), "National wellbeing and international sport event", *North American Association of Sports Economists, Working Paper Series*, paper No. 08-04

47 Georgios Kavetsos and Stefan Szymanski (2008), "National wellbeing and international sport event", *North American Association of Sports Economists, Working Paper Series*, paper No. 08-04, p 10

48 Georgios Kavetsos and Stefan Szymanski (2008), "National wellbeing and international sport event", *North American Association of Sports Economists, Working Paper Series*, paper No. 08-04, p 14

49 See for example, Ute Wilbert-Lampen et al. "Cardiovascular events during the World Cup Soccer", *The New England Journal of Medicine,* Vol 338, No. 5, pp 475-483

these contests, the implication of stress-related impacts suggest that what may also be at issue is the "bad" associated with loss. For example, one study based on soccer showed that home defeats were associated with measureable excesses in death through cardiovascular events. The authors attributed this to the fact that "home defeats" were the worst of all possible outcomes.[50] Associating distress and adverse health effects with the "bad" outcome of a loss is an indirect way of asserting that success contributes to happiness (or at least the avoidance of distress), and a way of gauging the extent to which sport matters to individuals.

There is also some evidence to suggest that better team performance is associated with lower suicide and homicide rates.[51] An important caveat to these findings is that they are usually attributed to commercial sport, such as soccer or gridiron, which are known to inspire fierce passions and loyalty, in a way that many Olympic Sports may not.

4.2 Public policy implications

4.2.1 National sporting success as a public good

Many of the goods considered in the happiness literature - democracy, lack of corruption – have public goods characteristics. These are non-rivalry and non excludability.

It is fairly clear that national sporting success satisfies these two conditions:

- enjoyment by one person of sporting success does not diminish the scope for someone else to enjoy that success
- sporting success cannot be provided to one member of a community without being provided to everybody else,

and in that sense has all the hallmarks of a pure public good.

Consequently, there is a prima facie case for government intervention on the grounds that left to their own devices, markets would under-provide the good, with negative effects on well being.[52] In particular, economic theory suggests that where these pure public good characteristics are present, government supply

---

50 W Kirkup and DW Merrcik, (2003) " A matter of life and death: population mortality and football results", *Journal of Epidemiology and Community Health*, Vol. 57, pp429-432.

51 Robert Fernquist, (2000), "An aggregate analysis of professional sport, suicide and homicide rates: 30 US, metropolitan areas, 1971-1990", *Aggression and Violent Behaviour*, Vo. 5, No. 4, pp 329-341

52 Loek Groot (2008), "The contest for Olympic success as a public good", *Tjalling C. Koopmans Research Institute Discussion Paper Series*, 08-34, p 3

finance though general taxation (i.e. through budgetary appropriations) is appropriate.

Of course, while these public good characteristics provide a prima facie case for policy intervention, the case for such intervention will only be conclusive if the strength of these effects can be gauged, and the efficacy of such intervention in addressing the problems relating to the provision the good (in this case sporting success) characterised by public good effects is demonstrated.

In regard to the strength of the public good effect, the question is relevant since while national sporting success has public good characteristics, it is quite possible that the market for sport more generally may generate sporting activities that provide national sporting success as a by-product. There are, after all, markets for sporting events, both at a national and international level. Agents engage in various market transactions e.g. spectators buying entry tickets or subscriptions for pay TV, sponsors purchase TV time and demonstrate an interest in these events through marketing. Many of these activities directly or indirectly provide remuneration to athletes. National interest in sport is also one of the drivers behind endorsement deals signed by sportspeople.

None of these transactions are necessarily directly connected to the provision of national sporting success – the spectators are paying to see a contest, in which it is likely that there are sportspeople of two or more nationalities; while sportspeople are in a contest for a reward. The point is that there are markets for sport competitions that reflect public appetite for the enjoyment of sport, and that can generate incentives for sportspeople to compete for rewards (both direct and indirect); and that in acting in a self-interested way, sportspeople provide national sporting success as well. In order to understand whether these incentives are strong enough to avoid a material under-provision of national sporting success, it is opportune to examine the more closely the manner in which these incentives operate.

4.2.2 Incentives for elite sport performance and market failures

In the economic literature of sporting contests, participants in contests (tournaments, races) undertake investments in effort, which affect their probability of winning a "prize" (all else being equal).[53] The prize could be monetary, non-monetary but tangible (e.g. trophies), or intangible (e.g. social recognition), and an individual's measure of success will be determined, for an economic perspective, by whether the utility that he or she attaches to the prize is at least equivalent to the costs incurred.

---

53 See for example, Stefan Szymanski, "The theory of tournaments" in Wladimir Andreff and Stefan Szymanksi (eds) *Handbook on the Economics of Sport*, p 377 -342

For the purposes of our discussion, the following issues are important:

- Progress, for a sportsperson, through the various levels of sport i.e. from basic competitions through to pre-elite and elite sport can be modelled in terms of contests. For example, performance at school level can help secure participation in state and inter-state level representative sport; performance at these levels can secure participation at the pre-elite level; and performance at that level is a requisite for joining the elite. Performances at the elite level determine access to prizes at the national and international levels.

- At each level, a participant undertake costs, whether in terms of investments in acquiring skills and equipment, and in terms of the opportunity cost of time that could have been allocated to other purposes (study or work, for example). The costs of time, in particular, will evolve with age and the level of sport. At an early age, sport may simply involve the use of free time, but at a later stage (and at higher levels of sport, such as interstate representative level sport and above), involvement in sport is likely to involve foregoing contracted and commitment time, as defined by the ABS (see section 2.2.1).

- The costs are undertaken in anticipation of reward – notably the reward of progress through to the next level of sport. Such progress could be reward in and of itself; but more likely, the ultimate reward is likely to be found in participation at elite sport and the rewards that attend these. The chances that a sportsperson will obtain a reward (and hence the expected value of the reward) are increasing in the effort of the person concerned and decreasing with respect to the effort of other parties. That is, one party selects their level of effort given the effort of another.

The issue is whether there are sufficiently strong incentives to lead individuals to bear the costs required to arrive at the elite level and to perform at such a level (i.e. undertake sufficient effort), consistent with the aim of providing the good of national sporting success. As observed before, the fact that people value national sporting success correlates to some extent with the fact that there exist markets for sporting events and markets for sponsorship. These provide material reward for successful sportspeople (alongside the rewards of competition and status). Successful sport people, consequently, have, at least in some sport, the opportunity to recover the costs of their investment in getting to where they are. This is particularly true of professionally organised sport such as tennis or soccer. It is also the case that sporting achievement can increase earning potential in the labour market more generally.

As against this, many of the observations above are more relevant to commercial sport than Olympic sport. Indeed, there are many Olympic sport where the expected stream of future earnings (in addition to sport rewards) would be unlikely to fully compensate for costs incurred, such as those associated with

alternative uses of contracted time and committed time, or alternative types of investments that an aspiring sportsperson might have made (for example, in the length of tertiary education). This situation is likely to apply to a number of high profile sport, and certainly to lower profile sport (such as, for instance, diving, or track cycling) that play an important role in securing a nation's Olympic standing. This in turn suggests a role for public financing, such as grants to cover costs, or investment in infrastructure (e.g. training resources and facilities) that lower the development costs associated with becoming a competitive sportsperson.

Moreover, the notion that sportspeople can find a way of bearing upfront costs in order to generate a future stream of rewards can be problematic, in much the same way as this notion can be problematic in the field of education. Credit markets – which are the standard means through which upfront costs can be borne in anticipation of future returns - are not likely to work well, in that it may be difficult to determine between different types of aspiring sportspeople as to their true potential. This is particularly likely to be the case for younger age groups of sportspeople.

A second issue is that the use of public funds (whether as grants or for the provision of infrastructure) can be viewed as rewarding performances that meet a certain standard. More specifically, it broadens the "reward base". Absent this broadening, rewards may simply accrue to the limited number of sportspeople that actually win a contest. Under such a "winner-takes-all" format, and assuming a certain degree of heterogeneity in ability, some potential sportspeople may be deterred from taking part in contests, or will reduce their effort, if they attach a low probability and hence value to finishing at the very top end of a contest[54]. This can be problematic if it leads to a thinning of the competitive field, since competition spurs performance. Extending the reward base through grants provides access to infrastructure for a wider group of sportspeople (that have met a certain cut-off requirement) can avoid this thinning effect.

Finally, there are issues relating to the appropriability of investments in establishing and operating the systems and infrastructure for high performance sport. By appropriability we mean the extent to which a party can capture all the benefits of their effort e.g. by charging others that draw on their efforts (for example, in Research and Development, through the licensing of technology). The appropriability issues are largely similar to those that are witnessed in relation to Research and Development in technology, in that it is difficult to exclude third parties from benefiting from these investments because of

---

54 See for example Ronald G. Ehrenberg and Michael L. Bognanno (1990), "Do tournaments have incentive effects?", *The Journal of Political Economy*, Vol. 98, No. 6 (Dec., 1990), pp. 1307-1324; and Gerd Muehlheusser, "Implications From the Theory of Contests for Modelling and Designing Sports Competitions" in Wladimir Andreff and Stefan Szymanksi (eds) *Handbook on the Economics of Sport*, p 342-349

spillovers i.e. benefits that accrue to other parties. In the case of sport, spillovers could occur at a variety of levels (regional, national and international), and would generally diminish the incentives to invest in sport on a private basis. Indeed, we would expect the appropriability issue to be considerably stronger in relation to high performance sport, given that instruments such as intellectual property rights have less application in this field compared to technology generally. This is particularly true of training and developmental methodologies, and management techniques. Moreover, much of the knowledge base in high performance sport development is vested in human capital, which is generally highly mobile internationally.

Taken together, these arguments suggest that if left to their own devices, the self-interested actions of individuals is very likely to lead to an under-provision of national sporting success, and confirms the prima facie case for public intervention based on the pure public good characteristics of sporting success. There may be some case for combining this with an approach that allows for some degree of cost-recovery, when athletes meet some threshold of remuneration as a consequences of the development of their sport career.

4.2.3 Willingness to pay and investments in high performance elite sport

From a policy perspective, the interesting issue lies in comparing measures of willingness to pay for sporting success with actual investments in high performance elite sport, in order to establish whether these investments offer value for money. The main empirical issue involves estimating willingness to pay. As already discussed, there are two possible approaches:

- Undertake a contingent valuation survey of willingness to pay
- Assess the impacts of sporting success in a defined event on measures of happiness or wellbeing, and estimate the monetary equivalent that would be required to generate the same impact on the measure of happiness or well-being.

The first of these approaches has not been attempted in Australia. As for the second, there exists (as discussed earlier) evidence that well being responds significantly as positively to sporting success. As measured by the Australian Well-being Index, the impact of the Athens Olympics was to increase measures of well being by 2-4 percentage points over the duration of the games. The way in which the well-being index is presented does not enable us to infer from these movements the monetary equivalent that would have had to have been paid to Australians to generate equivalent changes in well-being (i.e. to roughly estimate what Olympic success would have been "worth" in dollar terms).

The authors of the index did separately calculate how much it would cost to purchase an extra percentage point of well-being on a *permanent* basis (as compared to the *temporary* impact on well-being of sporting success). They found that the monetary cost of purchasing a permanent percentage point of happiness increased by household income, from $23, 077 for a household with an income in the range of $15,000-$30,000; to $71,429 for a household with income in the range of 100,000-150,000.[55]

These figures provide a basis for some very rough calculations of what value would be attached to a percentage point increase in well-being on a transient basis, say for one week. Suppose we use as a (conservative) starting point the figure of $23, 077 referred to above as representative of the average Australian household. We can treat this figure as a lump sum payment for a percentage point increase in happiness over the span of adult life (say 60 years). If that is the case, it is a simply matter of working out the annuity associated with that lump sum payment for a constant interest rate. Assuming the latter is 5% annually, the annuity (or yearly equivalent of the lump sum payment) works out at just over $1,200 in current terms. The rough weekly equivalent would thus be around $23 per household i.e. a payment of $23 would raise the level of well being in an average household by 1 percentage point for 1 week. On this logic, a higher payment would increase the level and/ or the duration of the increase in well-being. For example, if there was a 2-4 percentage point increase for a week, which is the order to magnitude observed over the 2004 games, these figures would put the cost at between $46 and $92 per household.

How does that compare with what is spent on elite sport performance in any one year? The current annual cost of development high performance elite sport, as measured by the ASC's appropriation for that purpose for 2007/08, is $131.5 million. If we add to this funding by states through states-based institutes of sport (net of contributions to these institutes made through the Australian Institute of Sport) we arrive at a total of about 167 million for 2007/2008. By household, this works out at a little under $20 per year. The question is, whether the willingness to pay of Australian households for sporting success, on the evidence available regarding the temporary movements in well being that have been measured, is equal or greater than this amount. On the basis of out calculations, which imputed a rough value of a transitory increase in happiness of the sort associated with the Olympics, the plausible answer is "yes". Infact the numbers suggest that the willingness to pay of the average Australian household for national sporting success is likely to be significantly in excess of current funding allocations for elite sport performance.

These preliminary observations point to the need for further research, Moreover, the rough numbers presented here are averages. The economics of public

---

55 Australian Unity (2007) What Makes Us Happy? Pp16-17

investment decisions is driven by marginal values. That is, how much extra well being would gained from an increase (say improving the medal count by one unit) in sporting success; how much extra investment is required to bring this about; and what is the relative role of different sport in driving these welfare gains.

We have focused on performance at the Olympic Games because it is for these that data are most readily available. Moreover, most contemporary research on the inks between funding and performance, and the links between performance and satisfaction, focus on the Olympic Games because medal counts lend themselves readily to quantification and statistical analysis. At the same time, it needs to be emphasised that all sports follow their own cycle of regional and international competitions throughout the quadrennial Olympic cycle. Performances at these competitions, for some sports at least, are likely to be a source of value. Data measuring the reaction of Australians to performances in these competitions, or the value they attach to Australia's standing in particular sports, are not readily available. However, this should not be taken to mean that such performances do not matter; rather they point the way to future research needs.

A specific question arises as to the willingness to pay of the Australian public for success in relation to sport for people with disabilities. There has been no specific measurement of changes to well being as a consequence of performances in events such as the Paralympic games. Generalising broadly, we would suppose that people would derive value from sporting success, as well as from the knowledge that Australian athletes are able to participate in events such as the Paralympics. The latter effect is due to the affinity that support for people with disabilities is likely to have with other charitable causes – people will derive value from knowing they have supported a "good cause". This is an important consideration to bear in mind – while people may be less aware (and have less direct interest in) international sporting competition for people with disabilities, compared to competitions such as the Olympic games, they are likely to attach value to the fact that these competitions do take place and provide an opportunity for Australian successes. (Much as people value the existence of the Great Barrier Reef, even though they may not visit it very frequently).

The issues surrounding international competitions for athletes with disabilities bear further analysis, in particular regarding the level of satisfaction that is derived from these competitions, and the sources of this satisfaction.

4.2.4 Public policy in a global context

A final set of issues derives from the fact that public policy is not pursued in a vacuum but in a global context featuring international competition. While national sporting success is a pure public good (i.e. non excludable and non rival), success in an international contest does not have those characteristics. Since it is

a contest, it is by definition it is characterised by rivalry. The quantity of success (e.g. medals) is largely fixed, so the appropriation of medals by one country entails a drop in the share available to others. Indeed, we could model contests between countries along similar lines to contests between athletes – countries select a level of effort, given the choices of other, in order to secure a prize (success). Generally speaking, its chances of success will increase with its effort and decrease with the efforts of others. The true picture is generally more complicated than that, since the chances of success (e.g. of wining gold medals) will be a function of other variables, most importantly per capita GDP and population size.[56] However, while accounting for this, it is fair to say that (particularly for countries of similar levels of GDP per capita and population size), a country will have an effort "reaction function" – it will respond to an increase in effort by another country.

Consider now that all countries that participate in international sport are aware of the public good nature of sporting success, and therefore are led to invest in sport development. This can be characterised as their "effort" to increase their chances of winning medals. It is easy to see in this context how an announcement by a country that it will increase its investment in developing its athletes will be received by other countries of similar levels of GDP per capita: the announcement would diminish their chances of success, and therefore elicit a corresponding response. In practice, this is what is generally observed internationally. The model of interaction is largely derived from models of international trade and imperfect competition.[57] It provides an economic framework within which to understand appeals by the Australian Sports Commission for additional funding in response to committed increases in funding by rivals. As in the models of imperfect trade and international competition, such actions can enhance (or at least preserve) domestic welfare.

Whether such rivalry between countries in spending on developing sportspeople is an optimal use of resources from a global point of view is a different matter, which is beyond the scope of this report. One argument might be to suggest that countries might be better off if they agreed to mutually limit their spending on sport performances – this is the logical implication of characterising investments in sport as "an arms race". However, it is likely that such a characterisation is misleading. This is because consumers of sport value not only relative performances (how one country or performer fares against others) but absolute performance as well (for example, the speed at which a race is run, and whether

---

56 See for example Andrew Bernard and Meghan Busse (2004), "Who wins the Olympic Games: Economic Resources and Medal Totals", *Review of Economics and Statistics*, 86(1), pp: 413-417; and Stefan Szymanksi (2000), "The market for gold medals", *World Economics*, Vol. 1, No.4, pp 207-214.

57 See notably James A. Brander and Barbara J.Spencer (1983), "International R&D rivalry and Industrial Strategy", *Review of Economic Studies*, Vol, 50, No.4, pp707-722

world records are beaten or not). This in turn suggests that there is value from higher levels of investment in performances and that it is not (purely) wasteful competition.

Moreover public investment in elite sport development contributes to the value derived from the increased quality of global competitions, through the spillover effects of public investment that were identified in section 4.2.2. This is because methods pioneered in some countries will eventually flow on to others, through deliberate channels (e.g. capacity building efforts) or through unplanned channels (for example, the movement of personnel). Because other countries and the international sporting community derive value form these spillovers, they and the investments that generate them can be said to contribute to the delivery of global public goods.

4.2.5 Interdependencies between approaches to sport at the elite and community levels

Thus far in our analysis, we have considered elite and community level sport along largely separate tracks, given the specific nature of the public policy arguments that apply to each. However, as we have already observed, there are many interconnections between these different sets of activities, a fact already quite clearly depicted in the pyramid diagram in section 2.2.2. As observed in that section, interdependencies can occur "vertically" between the different levels. The "lower" levels can act as inputs to the higher levels, and there can be various benefits that flow from higher levels through to lower levels in terms of technology and skills.

In this section we look briefly at some of the implications of the public policy issues that we have discussed for these vertical relationships. For example, because community level sport acts as an input into the preparation of an elite pool of athletes, expanding that pool and deepening its quality has vertical benefits, in that it increases the probability of developing elite athletes. In particular, increasing the intensity of competition can have beneficial effects on elite performance, and with this the delivery of the public good of national success. This "vertical" externality may not be taken into account by individuals taking part in sport at lower levels, and hence the level of activity undertaken at these levels could be lower than appropriate. This is likely to create a case for policy intervention to reduce the costs of sport activities at the community level. This is on top of the social externalities (what we might label "horizontal externalities") that we discussed in section 3.

Another form of vertical externality might arise through the aspirational example that elite sportspeople offer participants at other levels of sport. Alternatively, one can construe the linkage in terms of the fact that success by sportspeople, and the enjoyment of that national success, can act as a spur for increased participation. Because of the linkages between participation and other socially

desirable outcomes, this may create a further basis for public intervention – for example, running persuasion campaigns or demonstration events featuring elite sport people, or funding their participation in community activities.

4.3 Conclusions

4.3.1 Main public policy messages regarding elite sport

- Elite sport gives creates a pure public good in the form of satisfaction at national sporting success. This creates a prima facie case for public intervention.

- There are number of market mechanisms (directly related to sporting contests and indirectly, such as those related to endorsements and sponsorship) that can provide rewards to sportspeople for their investments in effort, which in turn creates performance incentives for success that can also deliver national sporting success.

- However, these market mechanisms are not complete, in that they will typically apply to commercial sport and not to most Olympic sport, particularly lower profile sport that are important to the aggregate medal count. There are also imperfections to credit markets that prevent aspiring athletes from bearing substantial upfront investments in the hope of future returns. Moreover, the winner takes all nature of sport may deter some potential sportspeople, leading to a thinning of the competitive field. Publicly financed grants and infrastructure to athletes (conditional on performance) can extend this reward base, and elicit performance. Finally, there are issues affecting the appropriability of investments in the development of elite sport, which increases the difficulties associated with private investment in elite sport.

- There may be some scope for cost recovery from beneficiary sportspeople whose future success delivers a significant income stream.

- International sporting success is a rival good, and, once other factors are controlled for, a country's investments in developing sporting performance will increase its chances of winning for any given level of investment in another country. If all countries understand the public good characteristics of national sport success, they will select a level of investment given the investment levels of others. This explains why calls in one country for increased funding are likely to be matched by similar calls in other countries.

- If we use as a starting point that, to the average household, a permanent (i.e. life-long) percentage point increase in well-being is worth around $23,000, then assuming a constant annual interest rate of 5%, a week long percentage point increase in happiness would be worth about $23 per household. Given that success at the Athens Olympics in 2004 was associated with movements of about 2-4 percentage points in measured well-being, and that current government investment in elite sport development works out at roughly $20 per household. it is plausible that the average willingness to pay of Australian households for sporting success is at least equal to the amount currently invested by the government. Indeed, it is quite likely to be greater.

- There are vertical linkages between community level sport and elite sport, and the various levels in between. By reducing the cost of access to sport at the community level, the government can increase the potential pool of sportspeople for the elite level. Support by elite sportspeople in activities at the community level can enhance community participation in these activities.

4.3.2 Issues for further research

- Econometric research to determine the value attached to national sporting success. This could be done through:
  - Happiness and well being studies
  - Contingent valuation methods.

- Research needs to focus on understanding marginal effects i.e. the extra satisfaction resulting from a change in performance driven by extra investments. Information needs to be more fine-grained: for example, is it the overall medal count that matters, or performance in certain sports.

- The notion of sporting success should be broadened to include performances outside the Olympic games.

4.3.3 References for this section

"Beijing Olympics: Odds cut on Gordon Brown calling snap election after Team GB victories", Daily Telegraph, 19 August 2008.

Bernard, Andrew and Meghan Busse (2004), "Who wins the Olympic Games: Economic Resources and Medal Totals", Review of Economics and Statistics, 86(1), pp: 413-417;

Brander, James A. and Barbara J.Spencer (1983), "International R&D rivalry and Industrial Strategy", Review of Economic Studies, Vol, 50, No.4, pp707-722

Cha, Moonjoong and Vitaly Pershin (2003), "Reconsidering performance at the Summer Olympics and revealed comparative advantage", *Journal of Sports Economics*, Vol. 4, No.3, August, pp 216-239.

Cummins, Robert, Richard Eckersley, Sing Kai Lao, Erik Okerstrom, Bruce Horner and Jacqui Warner, *Australian Unity Well-being Index*, Survey 12..

Cummins, Robert, *Australian Unity Well-being Index*, Survey 19.

Di Tella, Rafael and Robert Mc Culloch (2006) "Some uses of happiness data in economics" in Journal of Economic Perspectives, Volume 20, Number 1, pp25-46

Ehrenberg, Ronald G. and Michael L. Bognanno (1990), "Do tournaments have incentive effects?", *The Journal of Political Economy*, Vol. 98, No. 6 (Dec., 1990), pp. 1307-1324;

Fernquist, Robert, (2000), "An aggregate analysis of professional sport, suicide and homicide rates: 30 US, metropolitan areas, 1971-1990", *Aggression and Violent Behaviour*, Vo. 5, No. 4, pp 329-341

Frey, Bruno S. and Alois Stutzer (2002), "What can economists learn from happiness research"?, *Journal of Economic Literature*, June, Volume XL, No.2 pp 402-435

Groot, Loek (2008), "The contest for Olympic success as a public good", *Tjalling C. Koopmans Research Institute Discussion Paper Series*, 08-34.

Dauncey, Hugh and Geoff Hare (1999), *France and the 1998 World Cup*.

Kavetsos, Georgios and Stefan Szymanski (2008), "National wellbeing and international sport event", *North American Association of Sports Economists, Working Paper Series*, paper No. 08-04, p 14

Kirkup, W. and DW Merrcik, (2003) " A matter of life and death: population mortality and football results", *Journal of Epidemiology and Community Health*, Vol. 57, pp429-432.

Muehlheusser, Gerd. "Implications From the Theory of Contests for Modelling and Designing Sports Competitions" in Wladimir Andreff and Stefan Szymanksi (eds) *Handbook on the Economics of Sport*, p 342-349

Stefan Szymanksi (2000), "The market for gold medals", *World Economics*, Vol. 1, No.4, pp 207-214.

Szymanski, Stefan, "The theory of tournaments" in Wladimir Andreff and Stefan Szymanksi (eds) *Handbook on the Economics of Sport*, p 377 -342

Wilbert-Lampen, Ute (2008). "Cardiovascular events during the World Cup Soccer", *The New England Journal of Medicine,* Vol 338, No. 5, pp 475-483

Appendix: Input-Output data relating to not-for-profit sport and their relationship to modelling

Data

The most recent I-O tables published by the ABS (Catalogue 5209.0.55.001) relate to 2004-05. In this appendix, we set out the data for the not-for-profit sport sector that are included in the I-O tables. We then assess the prospects for useful modelling of the economic impact of the sector based on the available data.

In the ABS I-O tables, sport is included in sector *93.01* (*Sport, gambling and recreational services*). Use data for this sector are reported in the first row of Table 3. It shows that total supply from the sector in 2004-05 was $15,285 million[58], with household demand accounting for the majority of the usage.

The "Product details" report that accompanies the I-O tables splits the use data for sector *93.01* into nine sub-sectors using the IOPC classification. We judge that not-for-profit sport is included in the three of these sub-sectors for which we include data in the rest of Table 3. These three sub-sectors have use patterns that are similar to that of their parent sector, with sales to households dominating final usage. The main difference between sub-sectors is that for IOPC *93120010* final usage accounts for a smaller share of total usage than is the case for the remaining sub-sectors; correspondingly, intermediate usage accounts for a relatively large share.

Sector	Inter-mediate	House-holds	Govt	Exports	Total supply
93.01 Sport, gambling and recreational services	2032	12158	1128	507	15825
93120010 Sports grounds and similar facilities operation nec	867	947	149	0	1963
93190020 Sports and services to sport nec	503	2132	94	0	2729
93300010 Recreation services nec	405	2668	405	201	3680

[58] This includes competing imports worth $474 million.

Table 3: ABS 2004-05 use data on not-for-profit sport $M

Source: ABS I-O tables (Catalogue nos 5209.0.55.001 and 5215.55.001)

The I-O tables reveal that gross value added for sector *93.01* in 2004-05 was $5,409 million, with returns to labour accounting for $3,162 million and gross operating surplus accounting for $1,997 million. GDP in 2004-05 was $897,642 million; hence sector 93.01 accounts for about 0.6% of GDP.

The product details report does not contain any information to permit making a distinction between the input structures of the relevant IOPC sub-sectors and the input structure of the aggregated parent sector, *93.01*. The input structure of sector *93.01* is shown in ABS 5209.0.55.001, Table 2. There are, nevertheless, likely to be at least minor differences between the input structures of the sub-sectors. A clue to this is given by the description that the ABS offers of the basis for the compilation of the IOPC:

> "The overall principles for the preparation of such an industry-of-origin product classification include:
>
> - homogeneity of inputs - each product or product group should consist of items that have similar input structures or technology of production. This principle is generally applied through the definition of each IOPC item in terms of the ANZSIC industry in which it is mainly produced.
> - homogeneity of disposition - each product or product group, having satisfied the first criterion, should consist of items that have similar patterns of disposition or usage. This principle is applied by reference to the description of source data items and information about the transport, distribution and product taxation margins applying to particular products." (ABS 5215.55.001, Part 2, Summary)

Statistical issues in the measurement of sport in the economy

To understand the statistical requirements of attempts to measure the economic contribution of not-for-profit sport, we must first specify the relevant "contribution" question. The following are the main possibilities.

- What is the contribution of not-for-profit sport to generating macroeconomic activity (output and employment)?
- What is the significance of not-for-profit sport for other sectors of the economy?

Appendix: Input-Output data relating to not-for-profit sport and their relationship to modelling

- What is the contribution of not-for-profit sport for the economic welfare of Australians?

The key requirement for answering the first two of these questions is that we have data on the not-for-profit sport sector that are consistent with the data underlying the Australian National Accounts (ANA): both the national income and expenditure aggregates and the sectorally disaggregated input-output (IO) tables.[59]

The not-for-profit sport sector has several characteristics that pose special problems for its incorporation into the ANA framework and hence for the evaluation of its economic contribution.

Bundling of sport and other services

Firstly, sport services are often provided as part of a bundle of services offered by institutions not primarily classified as sport providers. Educational institutions are the most obvious examples but the provision of sport facilities by companies to their employees is another. This makes it difficult to identify and value sport services whether the valuation is to be made on the basis of value assigned by the consumers of the services or on the basis of the costs of supplying the services.

Aggregation of not-for-profit sport with other activities

Setting aside this "bundling" issue, a second issue relates to *aggregation*. It is important to realise that not-for-profit sport is included in the ANA but, from the point of view of analysing sport-related issues in the ANA framework, there are two main problems: the sector is not distinguished separately at any of the levels of aggregation at which the national-accounts data are reported; and the size of the not-for-profit-sport sector may be understated relative to most other sectors.

The *National Income, Expenditure and Product* accounts (ABS catalogue no. 5206.0) are published annually but report only macroeconomic aggregates, with no sectoral detail. Hence, there is no explicit detail about the not-for-profit-sport sector, although aggregates will include:

- household and government consumption of the services produced by the sector
- exports and imports of the services produced by the sector
- investment in sport infrastructure

---

[59] Another possibility is to evaluate the contribution of sport to regional economies within Australia as well as at the national level. We do not pursue this possibility any further in this draft.

- wages paid to employed workers in the sector
- depreciation of capital employed in the sector.

The *Input-Output Tables* (ABS catalogue no. 5209.0.55.001) are published periodically with the most recent publication referring to 2004-05. They provide sectoral detail of the national accounts. In the main publication, the not-for-profit-sport sector is included under industry code 9301 (*Sport, gambling and recreational services*). Additional details are available from *Input-Output Tables (Product Details)* (ABS catalogue no. 5215.55.001), but even in these details data for the not-for-profit-sport sector are aggregated with data for other sectors. The product details break down industry code 9301 into seven sub-codes, of which (9312 *Sports Grounds and Facilities n.e.c.*, 9319 *Sports and Services to Sports n.e.c.* and 9330 *Other Recreational Services*) include most activities classifiable to the not-for-profit-sport sector.

Non-observed transactions

A large proportion of sport services is not sold to users in markets at prices that reflect either the costs of provision or the users' willingness to pay. This characteristic is shared by the general-government-services sector. In such cases, it is not possible to value output by observing market value; instead output is valued at the cost of provision. The main problem with this is that an arbitrary price has to be assigned to the capital used in the provision of the services. This generally focuses on assigning a depreciation rate to reflect the cost of the return *of* capital but omits any surplus element reflecting the return *to* capital. In contrast, where a market value of output is observable, the cost of capital is determined as a residual between the market value of output and the market values of produced inputs and labour.

Voluntarism

A special problem for not-for-profit sport, one that is shared with much of the rest of the not-for-profit sector, is the prevalence of volunteer labour in the sector's workforce. This compounds the difficulty noted in the previous paragraph of valuing output by the cost of provision. As well as assigning a price to capital, it is also necessary to assign a price to volunteer labour. The usual procedure is to value volunteers according to the market wages of employed persons performing similar tasks. Another, less popular, possibility is to estimate the opportunity cost of the volunteers' time.

Extended data including the contribution of inputs provided by volunteers are of interest but pose difficulties for the comparison of the extended sector to the rest of the economy since volunteers are not included in data for most other sectors. It should be noted, however, that volunteers do appear to be particularly important to the sport sector. For example the 2004-05 edition of ABS Catalogue

Appendix: Input-Output data relating to not-for-profit sport and their relationship to modelling

no 8386.0 reports that "At the end of June 2005, total employment in sport and physical recreation services was 111,519 persons. In addition, there were 181,832 volunteers during the month of June 2005." Recognising that volunteer labour is usually supplied on a part-time basis, this still suggests that volunteers provide a significant proportion of the workforce in the not-for-profit sport sector.

Implications for modelling

We now turn to consideration of the modelling exercises that could be supported by the data described in the first section (a) of this appendix. We have in mind a computable general equilibrium (or perhaps an input-output model) that is implemented on the most recent ABS I-O tables[60].

The first task would be to split data relating to sector *93.01* in the model's database to distinguish two sub-sectors: the first being *Not-for-profit sport* (defined as the sum of IOPC categories *93120010*, *03190010* and *93300010*); and the second comprising the rest of sector *93.01*. Without assembling data from sources outside the I-O accounts, only a limited split would be possible. We could distinguish separate sales patterns for the two sub-sectors but their cost structures would be derived by simply pro-rating the costs shown for sector *93.01* in the I-O tables.

The modified model including the split data could be used for two types of exercise with respect to the *Not-for-profit sport* sub-sector.

- The first type of exercise would be to forecast growth prospects for the *Not-for-profit sport* sub-sector. Prospects for the sector in the model-based forecasts would depend primarily on forecast assumptions about macroeconomic aggregates such as household consumption and government spending and on projections of changes in household preferences and of policy changes with respect to the structure of government spending.

- The second type of exercise would be to use a model of the economy's structure (including the *Not-for-profit sport* sector) to answer questions such as: what would be the effect on GDP or aggregate employment of an externally imposed (*exogenous*) increase in activity in the sport sector. The implication of the limitations to the data split noted above would be that the effects would depend on the scale of the shock and the size of the *Not-for-profit sport* sub-sector but not on sub-sector-specific information about costs.

  Two variants of such modelling exercises are common in the literature: one using input-output models, which tend to suggest that the effect is large, and the other using computable general equilibrium models, which tend to

60

suggest that the effect is small. The key difference between them is the extent to which the increase in activity in the sport sector is assumed to crowd out activity in other sectors.

Input-output models generally assume unlimited supplies of primary inputs. Hence, the sport sector can expand without bidding away inputs from other sectors. These models typically produce so-called "multiplier" effects that indicate that the expansion of activity in the sport sector increases the demand for inputs from other sectors and thus generates final increases in aggregate output and employment that are larger than the increases contributed directly by the initial expansion of sport-sector activity.

In contrast, computable general equilibrium models recognise that an expansion of activity in the sport sector would divert resources from other uses; hence, it would alter the industrial structure of the economy but would not necessarily increase aggregate output or employment. Whether or not the aggregate value of output increases depends mainly on whether the expanding sector represents a more productive use of the economy's scarce endowments of primary inputs than the sectors whose output is crowded out by the expansion.

Appendix: Input-Output data relating to not-for-profit sport and their relationship to modelling

FRONTIER ECONOMICS NETWORK
BRISBANE | MELBOURNE | SYDNEY | BRUSSELS | COLOGNE | LONDON | MADRID
Frontier Economics Pty Ltd 395 Collins Street Melbourne Victoria 3000
Tel: +61 (0)3 9620 4488 Fax: +61 (0)3 9620 4499 www.frontier-economics.com
ACN: 087 553 124 ABN: 13 087 553 124