

Evaluating Major Events and Avoiding the Mercantilist Fallacy

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This paper reviews various methods for evaluating the economic impacts of major events such as World (Catholic) Youth Day and the Football World Cup. The paper recommends cost-benefit analysis, which is surprisingly rarely used for such evaluations. A computable general equilibrium (CGE) model may provide estimates of national or regional output or consumption impacts. But CGE models are not usually designed to estimate very short-term impacts on economies or welfare effects, allowing for example for labour opportunity costs and non-market effects. A case study based on the Australian Formula 1 Grand Prix supports these observations. The paper also discusses and dismisses various other evaluation methods such as input-output or economic impact analysis and injected export expenditure which typically exaggerate the benefits of export income (the Mercantilist Fallacy).

Key words: Major events, economic evaluation, cost-benefit analysis

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1 Introduction

Major events such as the Olympics, World Youth Day, V8 super car races and the Football World Cup often attract political support and considerable public funds on the grounds that they are ‘good for employment and the economy’. There is a widespread view that any expenditure by outside parties coming into the country is a free good and therefore to be encouraged by the provision of public subsidies where events would otherwise not be viable.

This view is an illusion. Any external investor seeks a positive return on capital and to take away more than they put in. Any visiting consumer wants a service in return for their expenditure and the provision of this service almost always requires the use of resources which could be employed in other activities. Consequently an external injection of funds guarantees neither net employment generation nor a welfare-enhancing economic project.

Governments and consultants advising governments use various methods to assess the viability of major events. However many of these assessments suffer from two main weaknesses. First, they are based on poorly defined policy objectives. Second, many of the evaluation methods are flawed. Consequently the policy decisions are poorly based and often result in misallocation of public funds.

In this paper I assess various evaluation methods for major events, including cost-benefit analysis, computable general equilibrium models and economic impact models. The paper is written principally from the perspective of a sub-national (state) government, but similar principles apply to a national event.

The paper is laid out as follows. Section 2 discusses four main policy objectives: maximising welfare, output, disposable income and employment. Section 3 discusses the main costs and benefits that are typically associated with major events. Section 4 reviews a variety of assessment methods. The final section summarises the paper’s conclusions with respect to the main assessment methods.

2 Policy Objectives: Maximising Welfare, Output, Income or Employment

There are many possible policy objectives but the paper focuses on four main ones:

1. To maximise the net (welfare) benefits to existing households in the state.
2. To maximise gross state product (GSP) or GDP.
3. To maximise the net income or consumption of existing households in the state.
4. To maximise employment in the state.

Maximising net welfare benefits is a basic social welfare objective. Typically any improvement in the well-being of a resident of a state is a benefit.¹ Any reduction in well-

¹ Residents would typically include Australian citizens and other long-term residents. Arguably no value would be attached to the well-being of short-term visitors who are normally resident inter-state or overseas.

being is a cost. Well-being is defined broadly to include market and non-market goods (such as environmental goods, travel time, leisure time, consumer surpluses and so on). The net benefit is the sum of all benefits less costs.

Maximising GSP Other things being equal an increase in GSP is welfare enhancing. However, as a metric of welfare, GSP has several limitations.

1. GSP includes output produced by, and income accruing to:
 - a. non-resident owners of capital employed in the state;
 - b. non-resident labour including short-term casual labour arriving for a major event;
 - c. the Australian government via income and indirect taxes.
2. GSP makes no allowance for the real cost of labour, i.e. the loss of household production or leisure which is embodied in labour's reservation price. Therefore it does not measure the net benefit to labour.
3. GSP does not account for any other non-market goods including consumer surpluses, health status, travel in non-work time or environmental impacts.

Given these distortions, the GSP metric is often a poor measure of welfare and an inappropriate policy objective. It follows that assessment methods designed to estimate GSP would generally be inappropriate evaluation methods.

Maximising after-tax income or consumption of existing households in the state would respond to the first limitation noted above. It would exclude income accruing to non-residents or to the Australian Government. But this option does not respond to the second and third points raised above.

Maximising employment is usually highly correlated with maximising state output. It therefore suffers from similar weaknesses as an objective. Also, because of this relationship it is not necessary to consider this as a separate objective in this paper.

Accordingly the view of this paper and of most economics literature (for example Fleurbaey, 2009) is that public policy and expenditure policies should be designed as far as possible to maximise the welfare of some defined community. Maximising an output metric such as GSP or an income or consumption derivative of GSP is a second-best objective.

3 Costs and Benefits of Major Events

Assuming that the event is funded locally, the main costs and benefits may include some or all of the following:

Costs of major events borne by local public or private agencies or households

- Capital expenditures.
- Operating expenditures (for example, event management and staging, marketing / promotion and catering, administration).

- Other event-related costs incurred by state government agencies such as road agencies, police and state emergency services.
- Social and environmental costs such as disruption to resident lifestyles, the take-over of local public spaces, traffic congestion, noise and air pollution.

Benefits to event organisers, consumers and capital and labour

- Payments to event organisers (ticket revenue, sponsorship and advertising revenue and media payments).
- Consumer surpluses of local households from attending the event.
- Other benefits of local households from indirect enjoyment of the event (e.g. public screenings and off-site parties).
- Operating profits of local owners of visitor-related businesses (returns to locally-owned capital) associated with the event.
- Net benefits to local labour (after compensation for working and tax) associated with the event.
- Follow-on benefits of future visitors to the tourism industry (sometimes referred to as a brand benefit).
- On-going (legacy) benefits from construction of assets for the event.
- Possible additional taxpayer willingness to pay to host the event.

Estimating costs Estimating the first three sets of costs is straightforward. There is much experience of running major events and related data. The main problem may be avoiding appraisal optimism as costs are often underestimated.

Estimating the social and environmental costs may be harder but not unduly difficult. There are well-known methods for valuing temporary loss of land uses (Applied Economics, 2007), traffic congestion (Bureau of Transport and Regional Economics, 2007), and noise and air quality impacts (Boardman et al., 2006; Pearce et al., 2006).

Another potential cost is loss of local business trade and income due to event-created congestion and crowding out. However, in most cases consumers simply change the timing of their purchases or transfer their purchases to another location in the short run. This may create local winners and losers but the net effect on businesses from switches in local purchases would generally be small or negligible.

Estimating benefits The benefits include benefits to local event organiser(s), households, capital and labour, and other categories of benefits.

The estimated payments to event organisers can usually be based on data from similar events, adjusted for any perceived differences between the project event and other ones. In practice estimating the demand to attend or support events is not always easy, but the concepts are straightforward.

Consumer surpluses from attending an event and other local household benefits from indirect participation in the event (off-site fanfest screenings and related-event parties) are harder to estimate. However these may be estimated from event-specific surveys or information from other events (see ACT Auditor-General's Office, 2002; Applied Economics, 2007).

Producer surpluses may accrue to local capital or labour during the event or after it with additional visitors flowing from media coverage of the event. Returns to local capital are additions to operating profits (after-tax) accruing to local owners of businesses. Assuming that total local expenditure is the same with and without the event, these gains derive from additional expenditure by visitors less the cost of resources to service this expenditure. The local labour surplus is the difference between extra income earned after-tax and the opportunity cost of extra labour (the value of leisure foregone). These data may be derived from various sources including event surveys on visitor attendance, length of stay and expenditure, ABS data on value-added in the tourism sector, and ABS and local survey data on local employment rates.

A major unknown issue is the amount of after-the-event tourism that an event generates. As Giesecke and Madden (2007) observe, there are no statistics showing the amount of Olympic Games induced tourism in Sydney. On the contrary, in the four years after the Olympics foreign willingness to pay for NSW tourism grew by an average of 2.2 percentage points less than for all Australia. In our view, a conservative estimate of such generated tourism and related benefits is generally appropriate (see the discussion of the Formula 1 Grand Prix below).

Finally there may be two other benefits. One is on-going legacy value (if any) of assets constructed for the event. This value is a function of the demand for additional event capacity less the costs of maintaining the assets. The other potential benefit would be civic pride or pleasure in hosting a major event over and above participation benefits already valued. Any taxpayer willingness to pay for such a benefit should be clearly distinguished from household willingness to pay for direct and indirect participation in the event. Using a contingency valuation survey, Atkinson et al (2005) estimated that Britons would be willing to pay £2 billion for the intangible benefits associated with hosting the 2102 Olympic Games in London. However this estimate appears to include all spectator and non-spectator surpluses.

The multiplier Consistent with general cost-benefit practice (Department of Finance and Administration, 2006), the net welfare benefits described above generally do not include any secondary or multiplier effect for income generated. If there is full employment there is no secondary income generation. More generally, aggregate demand and employment in an economy are usually considered to depend on fiscal and monetary policies rather than on project surpluses.

4 Review of Assessment Methods

The three main assessment methods for major events are cost-benefit analysis (CBA), input-output (I-O) or economic impact analysis and computable general equilibrium (CGE) modelling. Some government agencies in NSW and possibly elsewhere use a short-cut method of assessment such as the direct injected expenditure assessment model or a qualitative “benefit scores’ or multi-criteria analysis. As we will see several of these methods are concerned primarily with estimating output rather than net welfare benefits.

4.1 CBA Evaluation

CBA is designed specifically to answer public policy questions. It aims to estimate all the costs and benefits of an event to a specified community. Economic costs are measured by 'opportunity cost'. This is the value of goods that individuals forego when society invests capital and employs workers in one project rather than another one. The benefit of a service is the (maximum) amount that individuals are willing to pay for it. This is the sum of the price that individuals pay to attend an event and their consumer surplus (if any). Using these valuation principles the analyst can estimate whether the benefits (the value of consumption) gained from an event are greater than the costs (the value of consumption goods foregone).² In general we would want to support projects with net social benefits and to discourage public expenditure when costs exceed benefits.

The principles of CBA can be readily applied to major events. Importantly, as shown in the example of the Formula 1 Grand Prix below, we can also estimate most of the relevant costs and benefits.

Three special issues may be highlighted. One is the value of external expenditure. In the 17th and 18th centuries, the prevailing mercantilist philosophy held that all export income was valuable because it increased wealth and that imports were bad because they decreased wealth. This philosophy has been discredited since the publication of Adam Smith's famous *Wealth of Nations* in 1776. Smith argued that export income has value only in so far as it enables a community to augment its level of consumption by imports or other means. A society that spends \$20m to create \$10m of exports is not increasing its consumption by \$10m; it is reducing its consumption by \$10m. Export income is valuable only in so far as it has more value than the consumption foregone. This is a key message of cost-benefit analysis.

The second issue is the return or surplus to labour. This is the difference between a worker's after-tax earnings and his or her opportunity cost. When a worker would have alternative employment, the labour surplus may be little or nothing. When a worker would be otherwise unemployed or under-employed, the opportunity cost is the value of leisure foregone. In a CBA it is the labour surplus that matters, not the gross or after-tax earnings.

The third issue is the return to capital (the surplus over alternative uses of the capital). This is easier to estimate than labour surplus because capital does not have occupational preferences. However there is a difference between short and long-term returns. In the short run there is a return to under-employed assets. However, owners of capital often have to employ other resources via labour and purchases to achieve a return to capital even when there is spare capital. In the longer run, capital is less likely to be under-employed and accordingly has a higher opportunity cost.

It is sometimes suggested (see for example Dwyer and Forsyth, 2009) that CBA cannot estimate the inter-industry impacts of an event, impacts on exchange rates, the shadow price of labour or labour or capital surpluses without the use of a CGE model. In practice these estimates are often based on assumptions fed into the models rather than

² Formally using the compensating variations principle, the net social benefit is the maximum net amount that local citizens would be willing to pay for the event and be just as well off with the event as without it. Using the equivalent variations principle, the net social benefit is the minimum amount that the local citizens would be willing to accept as compensation for not having the event.

outcomes of them. Nevertheless the underlying point is a valid one that a CBA has to draw on forecasting or economic modelling of impacts. This modelling can take many forms. For large events a CBA may draw on CGE simulations of inter-industry relationships to indicate possible inter-industry outcomes.

It is also sometimes objected that CBA studies are so data intensive that they are too costly to conduct. Certainly CBA studies should include data such as consumer willingness to pay for an event. It is not an advantage of other methods that they ignore such benefits and do not attempt to collect such data. In my experience (for example Applied Economics, 2007) most of the relevant data is available or can be estimated with reasonable tolerances at quite low cost and CBA studies can be done quite cost-effectively. In any case, the CBA framework provides a natural basis for comparing the costs and benefits of a major event even if some figures are order-of magnitude estimates.

Case study: CBA of Formula 1 Grand Prix

Some of these observations are illustrated from the CBA and CGE studies of the Formula One Grand Prix (F1 GP) held in Melbourne in March 2005. The Victorian Auditor-General commissioned Applied Economics to undertake a cost-benefit analysis of the four-day event (including the 3-day run up to the F1 race) for the State of Victoria and Allen Consulting Group (ACG) to estimate the impact of the event on Victorian GSP. Both studies are published in Victorian Auditor-General (2007, see annexes).³

Table 1 provides a summary of the cost-benefit results. The estimated costs totalled \$69.8 million. The expenses incurred by the Australian Grand Prix Corporation to construct and run the event constitute nearly 98 per cent of the costs. The study also estimated the costs of loss of open space park use and amenity, transport congestion and noise based on available data. These costs sum to an estimated \$1.1 million. This is a significant cost to the local community but less than 2.0 per cent of estimated total cost.

Insert Table 1

The estimated benefits totalled \$63.1 million. Payments to the Australian Grand Prix Corporation represented over 80 per cent of the total. The estimated surpluses to Victorian capital and labour were 9 per cent of the benefits. Estimated consumer surpluses for Victorians made up the other benefits. These surpluses include the estimated surpluses of Victorians attending the event and of Victorians gaining pleasure from watching the event in the streets or at home.

The estimated net social benefit is -\$6.7 million and the benefit-cost ratio 0.90. Because the major costs and benefits are known and accurate, the overall result is robust. The major possible variances arise with the estimates of smaller costs and benefits and changes to these values would not change the results significantly.

³ The results shown here are those reported in Victorian Auditor-General (2007). They are based on the Applied Economics report but reflect some adjustments by the Victorian Auditor-General.

The main uncertain benefits are profits to Victorian firms and surpluses to Victorian labour. The Victorian Auditor-General estimated that the visitor-generated expenditure in Victoria would be \$60 million, which would produce only \$5.1 million of production surpluses after allowing for the import content of goods, the other costs of providing extra goods, non-local ownership and Commonwealth taxes. This was less than the Applied Economics estimate of \$9.4 million for local production surpluses which was 15.7 per cent of generated expenditure and may be more realistic.⁴ However the key point is that these surpluses are a small fraction of gross visitor expenditure.

Table 1 does not include any tourism benefits following the GP. The Victorian A-G considered one GP event would have little negligible on the number of future tourists. In preliminary work Applied Economics estimated that the generated tourism benefit could be worth \$0.3 million. In researching this issue, Applied Economics found that Victorian tourism or other agencies had no evidence of any ongoing visitor impacts from the holding of one-off events and concluded that this visitation impact was very small. In a comment on the CBA, the Victorian Department of Premier and Cabinet (Victorian A-G Report, 2007) argued that the ongoing tourism benefits and longer-term brand value of the event could be substantial, although it acknowledged that it had no evidence for this.

Finally, the CBA did not estimate any non-use value for the event. Such a value may arise from a sense of civic pride or enjoyment of the civic festivity created by the event over and above any participation benefits including such benefits as watching the event on hotel screens (for which a value was imputed). Victorians may be willing to pay something for such non-use benefits rather than receive other social services but there was no data on which to build quantitative estimates.

4.2 Input-Output Analysis (sometimes called an Economic Impact Analysis)

An input-output (I-O) model shows the demand and supply of goods in dollar terms across industries and includes the household sector and imports and exports. In an I-O model an exogenous injection of expenditure, such as an increase in tourism expenditure, brings about an increase in output in relevant industries. This requires in turn an increase in inputs supplied to those industries, which again requires an increase in outputs by industries supplying these inputs. An I-O model traces and estimates these input requirements among industries.

I-O models are a traditional method of estimating the impacts of expenditure on GSP and employment.⁵ However, as Dwyer and Forsyth (2009) and others have shown, they have several critical limitations.

- First, they attempt to measure changes in output, not welfare.
- Second, I-O models assume that, in response to any external injection of expenditure, there are no resource constraints. All inputs are supplied without (opportunity) cost and no crowding out effect. Gross additional expenditure is assumed erroneously to equate to increased output and income.

⁴ This refers to unpublished preliminary work by Applied Economics — see footnote 3.

⁵ The NSW Department of Industry and Investment employs I-O method of analysis which is also described as economic impact analysis (NSW Auditor-General, 2010).

- Related to the previous point, price effects are ignored. In practice capacity constraints may cause prices and costs to rise as economic activity expands. This causes output and employment to fall in other (non event-related) sectors.
- I-O models assume constant proportions between inputs and output, between labour and output and between value added and output. These assumptions are unrealistic if relative prices change and firms change the composition of their inputs or resources are drawn from other parts of the economy.

In summary, I-O models lack resource constraints and fail to capture significant welfare (consumer and environmental) impacts. They always produce a positive gain to the economy however disastrous the event. Even as a limited model of production in an economy, an I-O model does not capture complex inter-industry feedback effects, price changes or changes to government fiscal position.

4.3 Computable General Equilibrium (CGE) Modelling

CGE models resolve many of the I-O issues noted above. They combine a national accounting framework as described by a macroeconomic model with an industry-level I-O model.⁶ The macroeconomic equations provide a balancing framework to ensure that the model satisfies resource constraints. Under the macroeconomic equations, there are numerous equations linking the industries to each other and specifying the production function in each industry (i.e. how output varies with inputs notably capital and labour). CGE models also have equations to explain household and business demand for goods and allow for changes in relative prices, substitution in consumption and production between industries, and supply-side constraints. Overall CGE models often contain several thousands of equations.

A CGE model is typically estimated from a base year set of data, which is assumed to represent an equilibrium economy. Changes to key variables are allowed and the effects chased through all sectors until another macroeconomic equilibrium is reached. Demand and supply for goods and services, capital and labour are kept in balance via price adjustment. For example, an increase in tourism demand can lead to an increase in supply of tourism services by allowing providers of these services to raise their prices and to attract more workers into their businesses.

Resources used in one sector come from another sector or, if there is unemployment, from an unemployed pool. A CGE model specifies the supply of labour and capital available. If there is significant unemployment, a small tourism expansion may not lead to skills shortages. If labour markets are tight, tourist industries may increase wages to bid skilled workers away from other sectors.

Assumptions in CGE models are critical to the predicted outcomes. Critical assumptions include the nature of unit costs (whether industries have constant, falling or rising unit costs); whether capital comes from domestic saving or foreigners; and the availability and

⁶ For macro-economic modelling purposes, there are many other potential forecasting models (time series and structural estimation models) that forecast GSP (or GDP), employment, inflation and so on, but they usually do not disaggregate to industry level (Abelson, 2009).

(market) opportunity cost of local labour. The output from increased demand in any sector increases with falling unit costs and greater supply of capital and labour.

CGE models can produce estimates of regional as well as national outputs. However, estimates of regional output vary greatly with differing assumptions about inter-regional labour and capital mobility. As Dywer and Forsyth (2009) emphasise, CGE models can also estimate an industry level impact and show the interactions *between* industries (or sectors). However they rarely show what happens *within* an industry or market. This limitation is, of course, a general feature of economy-wide modelling.

CGE analysis is often employed to estimate the economic impacts of policies as diverse as trade liberalisation or protection, environment-economy interactions, structural adjustment, labour or financial market deregulation, taxation changes, international capital linkages, public infrastructure, and industry-sector studies.

Some advocates of CGE modelling also contend that CGE models should be used to estimate the economy-wide inter-industry effects of one-off major events.⁷ In recent years, several studies have used CGE models to assess the economic impacts of major events (see for example Blake 2005, Giesecke and Madden 2007; Allen Consulting Group 2007).

Limitations of CGE modelling However CGE modelling has significant limitations for evaluating one-off events.⁸ First, CGE models are designed principally to estimate market output (GDP or GSP) and not welfare. Increased market output may arise from (i) use of additional capital or labour from outside the state or region, (ii) utilisation of unemployed or underemployed *local* factors of production or (iii) improved productivity. In the first two cases the welfare (or net) benefit is the surplus to these factors of production over and above their opportunity cost. From a state perspective, the benefit is the surplus accruing only to *local* factors of production over and above their opportunity cost.

It is possible to decompose model outputs into producer surpluses, terms of trade effects and net payments to foreigners and to derive estimates of the change in local income or consumption.⁹ For example, Giesecke and Madden (2007) assumed that during the Sydney Olympics in 2000 there was a preference shift towards Olympics matched by a shift in consumption away from other goods, which resulted in reduced spending on other goods by \$450 million. They also estimated that the Sydney 2000 Olympics reduced Australian real consumption in present value terms by \$2.4 billion. Blake (2005) forecast how the 2012 Olympics in London would change relative prices and industry output and the impacts on the income of UK and London residents separately. These approaches are sophisticated attempts to estimate the real income effect, typically by introducing the event as a new industry. The CGE estimates depend critically on estimates of resource

⁷ Events NSW has adopted a consultant recommendation that CGE modelling should be adopted for events attracting over \$10m in government support (NSW Auditor-General, 2010).

⁸ As noted by a reviewer, most experienced CGE modellers are well aware of the limitations of CGE models, but some users of CGE models are not.

⁹ In private correspondence Peter Dixon has pointed out that it is not inherent in CGE modelling that GDP and welfare are confused. Dixon and Rimmer (2010) and Dixon, Kauzi and Rimmer (2010) clearly distinguish between GDP and local gains in consumption.

constraints as inputs to the models¹⁰ (but so do estimates from CBA models). More significantly, they do not account directly for the opportunity cost of labour, consumer surpluses or non-market third party effects. Such impacts would need to be added to the CGE output.

Second, CGE models were developed to assess the longer-term impact of major micro-economic policies such as trade liberalisation. Most models simulate the change from one equilibrium state to another, with resources moving between industries. While some recent CGE modeling (for example Dixon et al., 2010) attempts to estimate the impacts of short-term shocks, these models are far from common practice. Typical CGE models need significant adaptation to assess small and temporary demand "shocks" such as major event type impacts.

It makes little sense to use a CGE model with thousands of equations to estimate the impact of \$20 to \$30 million expenditure over one week on a state economy with an annual output of over \$200,000 or \$300,000 million. There is minimal, if any, change in the medium or even short-term equilibrium nature of the economy. The CGE equations are not designed to estimate short-term *intra-industry changes over a few weeks* or even months in an economy. Economic agents will largely use existing capital capacity or make small temporary operating adjustments to meet the temporary demand shock.

Matters may be different for mega events like the Olympic Games or a World Football Cup where a CGE model may show how an exogenous increase in tourism demand affects various economic sectors (see Giesecke and Madden, 2007). Indeed a CBA study may draw on these insights when estimating the impacts of an event lasting only a few weeks.

However, CGE models are large and generally non-transparent black boxes. The output from CGE models cannot be verified because there is no observable counterfactual. It is hard to tell how particular assumptions drive specific results. While a modeller should be able to provide a coherent and simple explanation for the results, it is often hard to understand what occurs within CGE models.¹¹

Further, the development of CGE models for the states is limited by the availability of data. There is limited state-level industry sector data and little data on interstate trade and labour migration. For this reason alone there is scope for "garbage in – garbage out" from state or regional CGE models. Of course, if information on intrastate industry or interstate trade or labour migration is relevant data, some assumptions need to be made about them whatever the evaluation method used.

¹⁰ For example Blake (2005) assumed a labour supply elasticity of 0.33 in the UK whereas Giesecke and Madden (ibid) assumed there was full employment across Australia in 2000.

¹¹ Using the Monash Multi-Region Forecasting CGE model, the Productivity Commission (PC, 2008) estimated an annual welfare gain of about \$500m from cutting automotive assistance. On the other hand, Dixon (2009a), the main creator and user of the model, estimated that with the PC's *own* assumptions the gains would be between -\$26m to +\$66m. In further notes, the two parties also disagreed strongly on the appropriate assumptions for the model (Gropp et al., 2009 and Dixon 2009b).

Finally any carefully constructed CGE modelling and report would generally not be a low cost exercise. There are many thousands of variables and equations in a most CGE models. CGE models are complex and require significant expertise to run.

Case study: CGE model of F1 Grand Prix

Allen Consulting Group (ACG, 2007) drew on the Monash Multi-Regional Forecasting CGE model to estimate the impacts of the F1 GP on Victorian GSP and Australian GDP. ACG assumed that total domestic expenditure on local goods would be unchanged. Thus the driver was total visitor expenditure less net import content of GP outlays, which totalled a net \$58.4 million.¹² There was no allowance for subsequent induced tourism.

Critically ACG viewed the GP as an annual event which would affect the inter-state distribution of labour, (not as a one-off event which was the brief for the CBA). ACG assumed that the total labour employment in Australia was fixed and that the project did not affect the aggregate level of employment. Thus the CGE model assumed that the GP would increase the demand for labour and wages in Victoria and that labour would move from the other states into Victoria. Also the national exchange rate would appreciate.

ACG estimated that the 2005 GP increased Victorian GSP by \$62.4 million. However the GP increased national GDP by only an estimated \$1.9 million. Thus GDP in all other states and territories excluding Victoria fell by \$60.5 million. These figures are not readily testable or verifiable though they may be justified by back-of-envelope calculations and supporting economic theory.

These figures imply that most of the gains accrued to labour that *moved* from other states or territories to Victoria as well as to some Victorian labour gaining increased wages. Firms producing traded goods in Victoria and elsewhere would lose some income because of the appreciation of the exchange rate and households consuming goods would benefit from the appreciation. However the benefits were not broken down into such components in the ASG report.

Actually, it is highly unlikely that a *one-off* four day event could do this. These results are only conceivable by assumption of a continued annual event. Even then the assumption that a small expenditure of \$62 million over a few weeks in a state economy of over \$300,000 million and a national economy of over \$1,000,000,000 million could have structural wage and exchange price effects or impacts on labour location seems hardly credible. Far more likely, such an event would simply increase part-time labour for a few days or weeks. But this does not appear to have been allowed.

Moreover, in terms of welfare, these estimates assume that labour migration is costless, they do not distinguish between returns to local (Victorian) and non-local capital, and they make no estimates of non-market consumer surpluses or environmental impacts. As we have seen the CBA produced quite different results to the CGE model.

5.4 Direct Injected Expenditure Assessment Model

¹² Gross visitor expenditure in the ACG report was \$73.4 million compared with \$60 million in the Applied Economics report (Victorian Auditor-General, 2007).

Under this method, the benefit of an event is measured by the direct expenditure injected into the relevant economy (national, state or regional) from external sources. This is the basis of the Events NSW approach (NSW Auditor-General, 2010). Injected expenditure is defined as gross expenditure flowing into an area via visitors (spectators and competitors) less expenditure flowing out of the area via payments to businesses outside the region which provide inputs to the event (but not payments for inputs to other services).

There are major problems with the injected expenditure method. All visiting consumer expenditure is payment for some goods or services. The provision of these goods and services requires resources. This expenditure is not free aid. Furthermore, most visiting competitors plan to make a financial gain from competing. Thus any local expenditure by such competitors is likely to be offset by prize monies flowing out.

The local benefit from visitor expenditure is the surplus of revenue over the costs of all resources used including imported or local resources. This is what a CBA estimates. Ignoring opportunity costs (other than event-based import purchases) is a fundamental error. In some cases the costs could exceed the injected expenditure. It is also wrong to argue that the higher the injected expenditure the greater the local benefit without any attention to resource commitment. The ranking of projects depends on relative benefits and costs.

5.5 Benefit Scores or Multi-Criteria Model

Events NSW also employs a “Benefit Scores” evaluation model which includes scoring Economic Valuation criteria, Marketing/Strategic evaluation criteria and Community Evaluation criteria (NSW Auditor-General, 2010). This is essentially a version of multi-criteria analysis. In this kind of approach, weights are attached to the various criteria and scores awarded to the achievement of the criteria.

However as many economists have observed (e.g. Ergas, 2009; Dobes and Bennett, 2009), the selection of the criteria, the weights attached to the criteria and the estimates of the scores are arbitrary and subjective. Neither the criteria nor the scores appear to reflect any established economic thinking and they are not objectively testable. There is a major risk that such criteria are used for political purposes to justify projects that some vested interests wish to see justified.

6 Conclusions

State governments and to a less extent the Australian Government receive numerous requests for support of major events almost always with claims of significant economic benefits. Most of these benefits are said to arise from increased visitor expenditure rather than from the user benefits of the event itself.

This thinking is a modern version of mercantilist thinking that dominated economic policy in the 17th and 18th centuries. According to mercantilism, any form of export income is desirable because it increases wealth. Although mercantilism has long since been discredited in the economic academies, residual mercantilism continues to infuse

much government decision-making with respect to hosting major events. Any external revenue is treated as though it were a free good.

In considering how to evaluate major events, it is important to be clear about objectives. This paper has argued that this should be the welfare (or net social) benefits of the relevant community, not gross output or even local disposable income or consumption. Gross output or consumption is a poor measure of welfare because it assumes that labour has zero cost and it does not account for non-local capital or labour. Local disposable income accounts for non-local resources but again assumes that local labour has no opportunity cost and ignores non-market consumption benefits and third-party effects.

Cost-benefit analysis is the preferred method for estimating the net welfare benefits of major events to any designated community. CBA is based on an explicit welfare framework and provides a valuation process for estimating both costs and benefits of events and hence the net social benefit.

A CGE model can estimate the impacts of increased expenditure on GDP or GSP or gross consumption. But impacts do not equate to net benefits. A CGE model is not primarily designed to estimate net social benefits and the modelling is complicated and often non-transparent. Moreover, the paper argues that a CGE model is not well-suited to estimate the micro intra-industry impacts of small and temporary events. When there are complex inter-industry effects of a mega event such as the Sydney Olympics, a CGE model can provide insights into how resources move between industries and provide useful inputs to a cost-benefit analysis.

Each of the other three methods discussed (input-output or economic impact analysis, injected expenditure and benefit scores) have basic weaknesses. Injected expenditure ignores the resource costs for supply of goods and services. Input-output analysis is an extended variant to injected expenditure, but again ignores resources costs and is often misleading. Estimated “benefit scores” are not based on any principles of valuation and are arbitrary and not testable.

Of course if governments or any group of citizens wish to host events to promote civic pride or for other feel-good reasons, they may do so if the sacrifice of other services is considered acceptable. But they should not claim that the event provides economic benefits unless it passes the cost-benefit test.

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Table 1 **Costs and Benefits of Formula 1 GP for Victoria**

Costs and Benefits	\$m
Costs	
Grand Prix construction and operation costs ^a	68.1
Other GP-related government costs	0.5
Loss of park uses and amenity	0.4
Transport congestion	0.5
Noise costs	0.2
Total quantified costs	69.8
Benefits	
Event revenues paid to AGPC	41.5
Sponsor payments to AGPC	10.9
Victorian visitor consumer surpluses	3.4
Net profit to Victorian businesses during GP	3.7
Net profit to Victorian businesses after GP ^b	0.3
Generated labour surpluses	1.7
Other consumer benefits of Victorians	1.9
Total quantified benefits	63.1
Net Benefit	-6.7

Source: Victorian Auditor-General (2007).