# The impacts of temporary but anticipated tourism spending: An application to the Glasgow 2014 Commonwealth Games

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## HIGHLIGHTS

- CGE has advantages for examining temporary and anticipated tourism spending.
- Examine impact of non-Scottish tourists spending at Glasgow 2014 Commonwealth Games.
- Economy impact depends on factor supply assumptions and behavioural characteristics.
- Optimal degree of pre-announcement shown for GDP impact of temporary tourism shock.

## ARTICLE INFO

## ABSTRACT

An extensive literature attempts to identify the economic impact of tourism expenditure. While Input-Output methods have been widely applied these may not always be appropriate for such applications and there is a growing use of more flexible Computable General Equilibrium (CGE) approaches. This paper uses a multi-period Scottish CGE model to estimate the system-wide effects of the temporary tourism expenditure related to the Glasgow 2014 Commonwealth Games. We quantify the sensitivity of our results to model specification, focusing in particular on how investment and consumption decisions are made and shifted over time to accommodate the temporary tourism shock. As part of this analysis we identify the pre-announcement period that optimises the present value of the economic impact. Whilst the empirical results apply to a specific event, our results have implications for similar analyses applied to mega events and other temporary phenomena affecting tourism expenditure, such as terrorism attacks or epidemics.

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## 1. Introduction

An extensive literature attempts to identify the full local economic impact of tourism expenditure. Any local economic development agency that is considering the encouragement of tourism as an element of its development strategy, or has an economy already heavily dependent on tourism, requires accurate information on these effects. The existing studies typically use conventional demand-driven Keynesian, Input-Output (IO) or Social Accounting Matrix multipliers to quantify the full supply chain (indirect) and linked consumption (induced) effects associate with the tourist spending (e.g. Incera & Fernández, 2015; Lee & Taylor, 2005)[2]. These standard multipliers assume that no supply-side constraints operate in the local economy (Miller and Blair, 2009). This implies that there are no locally scarce resources that are bid away from other uses if tourism expenditure increases or are released for other uses if tourist spending falls.

This assumption of passive supply is acceptable for long-run analysis because local economies are typically open to the free migration of labour and capital (McGregor, Swales, & Yin, 1996). Therefore in the long run, production capacity and the labour supply can more fully adjust to changes in local demand. The

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[2] More examples are given in Section 3.

conventional multiplier approach is therefore appropriate for identifying the ultimate year-on-year impact of a permanent tourist attraction or the effect of regular and frequent tourism events. However, for temporary tourism demand shocks, such as those associated with SARS, political conflicts, terrorist attacks and mega events, the short-run crowding out or the release of local resources become important determinants of the overall economic outcome. In this setting, Computable General Equilibrium (CGE) analysis has typically been favoured (e.g. Dwyer et al., 2004).

This paper focuses on one type of temporary shock, the hosting of a mega event. These are one-off events, such as the Olympic Games, the World Cup or the European City of Culture, which generate large temporary tourist inflows accompanying by increased tourism expenditure. Mega events have a number of characteristics that make them particularly appropriate subjects of study. First, the timing and duration of the event are known with some precision, together with the likely direct impact on tourism numbers and expenditures. Second, these events are typically announced well in advance. Third, one element of the justification for cities and regions bidding for such events is their potential positive economic impact, so that ex ante accurate economic appraisal is required for effective policy implementation.

The hosting of the Commonwealth Games in Glasgow in 2014 resulted in an estimated £100 million temporary tourism expenditure injection to the Scottish economy (TNS, 2014). This paper has three main aims. The first is to use a multi-period CGE model of the Scottish economy to generate the best estimate of the system-wide effects of this expenditure on the Scottish economy. The second is to quantify the sensitivity of this result to the way in which investment and consumption decisions are made and the extent to which these expenditures are shifted over time to accommodate the temporary shock. The third is to identify the pre-announcement period that optimises the present value of the economic impact. Whilst the empirical results apply to a specific mega event, the paper also discusses their implications for similar analysis applied to other mega events and other temporary phenomena, such as terrorism attacks or epidemics.

The paper proceeds as follows. Section 2 quantifies the specific tourism expenditure related to the Glasgow 2014 Commonwealth Games. Section 3 reviews the application of Input-Output, Social Accounting Matrix and Computable General Equilibrium models to the analysis of tourism expenditure in general and that expenditure linked to major events in particular. Section 4 outlines the nature of the model used in the present paper and Section 5 details the simulation strategy adopted. Section 6 presents the simulation results not only from the central model but also a range of backward and forward-looking specifications with varying degrees of pre-announcement and factor supply assumptions. We are particularly interested in revealing the alternative cumulative results on key economic variables, as well as the timing of these results under each specification. Section 7 investigates the economic impact of varying the degree of pre-announcement and the policy implications. Section 8 concludes.

## 2. The tourism expenditure shock

The Commonwealth Games are a multi-sport event held every four years, with cities across the Commonwealth bidding for the right to host them. The first Games, held in 1930, had 400 competitors representing 11 nations whilst at the Glasgow 2014 Games there were almost 5000 competitors, from 71 nations[3]. Using the number of participating athletes as a metric, the scale of the Glasgow 2014 Games falls between the London 2012 Summer and Sochi 2014 Winter Olympics.

Research funded by the Scottish Government, Glasgow City Council, Glasgow Life and Glasgow City Marketing Bureau estimates that over the period of the Glasgow 2014 Commonwealth Games, Glasgow hosted 690,000 visitors, of which 440,000 were "day visitors" (i.e. those who did not stay overnight) and 250,000 stayed at least one night ("overnight visitors") (TNS, 2014). This and additional information from that report is presented in Table 1. The same source states that 98% of the day and 18% of the overnight visitors were Scottish residents, so that there were 8800 non-Scottish day and 205,000 non-Scottish overnight visitors. This paper focuses on the economic impact of the expenditure made by these non-Scottish tourists.

The day visitors made on average 2.6 trips to the Games and their tourism expenditure on each trip averaged £57; overnight visitors stayed on average 6.8 days and with a tourism expenditure of £125 a day. Given the information shown in Table 1, we estimate the total expenditure in Scotland by non-Scottish visitors to the city as £175.5 million. This is calculated on the assumption that in each category ("day" and "overnight" visitor) the average spending by a Scottish and non-Scottish tourist is the same.

These gross expenditures are allocated across the sectors in accordance with the base year distribution of tourism demand in the most recent (2009) Scottish Input-Output accounts. The expenditures on Scottish goods and services are then calculated at basic prices by removing imports and net taxes/margins from the gross expenditures figure[4]. These adjustments mean that the total expenditure on Scottish goods and services made by international tourists is precisely £100 million. This is the exogenous demand shock that we enter into the model in all simulations.

The expenditure injection from non-resident tourists is not the only direct Scottish economic impact generated by the 2014 Commonwealth Games. Therefore in restricting the direct impacts to the 2014 increased expenditure by non-Scottish tourists, the simulation results reported in Sections 6 and 7 are likely to systematically underestimate the full impact of the Commonwealth Games on the Scottish economy. However, the analysis focusses solely on the 2014 tourism expenditures by non-Scottish residents for two inter-related reasons. First, a central concern of this paper is the sensitivity of the economic outcomes to variations in the assumptions about adjustments to temporary shocks. This is illustrated most clearly where the initial shock is unambiguous and temporally distinct. Second, in the case of Commonwealth Games, the impact of other effects is likely to be small and uncertain. The tourist expenditure by Scottish residents is essentially consumption expenditure switching and will have a very small net effect (Allan et al. 2007). Similarly, much of the expenditure on venues and the Games organisation is funded by the Scottish Government which has a fixed budget. Therefore these expenditures on the Commonwealth Games simply replace similar expenditures that would have been made by the public sector. Finally supply-side and potential future tourist expenditure are uncertain and are typically given second-order importance in studies of mega events [5].

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[3] At their inception they were called the British Empire Games but were renamed the Commonwealth Games in 1978.

[4] Net taxes, margins and imports from the rest of the UK and the rest of the world make up 43% of the tourist expenditure.

[5] There could also be other linked demand-side impacts For example, Rose and Spiegel (2011) find evidence that hosting, or even simply bidding for, an Olympic Games has a positive impact on the nation's subsequent exports. Further, Fourie and Santego-Gallego (2011) find econometric evidence that hosts of mega events experience some additional tourism prior, though not subsequent, to the event.