Institution: Bournemouth University		
Unit of Assessment: 24		
Title of case study: Economic Modelling of Tourism		
Period when the underpinning research was undertaken: 2000-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Professor Adam Blake	**Professor of Economics and Econometrics**	**31/12/2007 - current**
Dr Neelu Seetaram	**Principal Academic**	**December 2010 – January 2018**
Period when the claimed impact occurred: August 2013-December 2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

Bournemouth University (BU) researchers have developed economic modelling techniques that more accurately predict the outcome of events, policies or other major economic decisions. This type of modelling allows governments and organisations to effectively plan for the positive and negative impacts arising from decisions. The technique has been used to inform crucial national government policy decisions relating to tourism in the UK, including plans for tourism post-Brexit, and was instrumental in the 2016 decision by the Airports Commission to recommend the expansion of Heathrow ahead of other UK airports, and in cutting tourism VAT.

2. Underpinning research (indicative maximum 500 words)

The underpinning research undertaken by Blake and Seetaram is represented by a number of publications and research awards. These have pioneered application of new approaches for estimating the economic impacts of tourism activities.

Economic impact research has evolved since the 1970s with the use of input-output models. These typically estimated static economic impacts that are limited in their applicability. Building on these earlier models, Blake was one of the first to introduce computable general equilibrium models to tourism economics. More recent research, in which Blake has been instrumental, has extended and enhanced economic impact modelling in the following ways:

- The inclusion of forward-looking dynamics in economic impact modelling of tourism, which takes techniques for applied dynamic economic models used in other contexts and has adapted them for tourism impact modelling. The dynamic nature of these models allows the estimation of the economic impact that tourism has over time, the forward-looking nature of them allows for the estimation of investment and other effects that will come about because of future demand [R5].

- The inclusion of uncertainty [R2] and stochastic random effects [R1] in dynamic economic models of tourism allows the impacts of investment to be assessed based on uncertain anticipation about future tourism demand by allowing different growth paths to be modelled, giving the ability to estimate the effects of this uncertainty as well as of changes in the potential future growth paths.

- Demonstrating the importance of segmentation in econometric modelling of tourism demand, both in terms of tourists' purpose of visit and country of origin, and that models that do not include these effects are systematically biased [R3; R4].

These developments provide much more rigorous modelling methodologies to examine the impact of airport expansion; and the incorporation of forward-looking dynamics and segmented tourism demand modelling were both explicitly included in the model used in the Airports Commission report.

3. References to the research (indicative maximum of six references)

The papers below are published in peer reviewed journals.

R1 Liu, A., Song, H. and Blake, A. (2018). 'Modelling Productivity Shocks and Economic Growth Using the Bayesian Dynamic Stochastic General Equilibrium Approach'. *International Journal of Contemporary Hospitality Management*. DOI: 10.1108/IJCHM-10-2017-0686

R2 Pratt, S., Blake, A. and Swann, P. (2013). 'Dynamic General Equilibrium Model with Uncertainty: uncertainty regarding the future path of the economy', *Economic Modelling* 32: 429-439. DOI: 10.1016/j.econmod.2013.02.034

R3 Cortés-Jiménez, I. and Blake, A. (2011). 'Tourism Demand Modelling by Purpose of Visit and Nationality', *Journal of Travel Research*, 50(4):421-442. DOI: 10.1177/0047287510363615

R4 Pratt, S., McCabe, S., Cortés-Jiménez, I. and Blake, A. (2011). 'Measuring the Effectiveness of Destination Marketing Campaigns: comparative analysis of conversion studies', *Journal of Travel Research* 49(2):179-190. DOI: 10.1177/0047287509336471

R5 Blake, A. (2009). 'The Dynamics of Tourism's Economic Impact', *Tourism Economics*, 15(3):615-628. DOI.org/10.5367/000000009789036576

Grants:

G1 Department of Digital, Culture, Media and Sport, 2018, Impact of an EU exit on the DCMS sectors and regulatory areas [GBP36,000] (Blake)

G2 Airports Commission, 2014, Airport Expansion Options: Wider economy impacts [GBP60,000] (Blake and Seetaram).

G3 HM Revenue and Customs, 2012-13, The HMRC Regional CGE Model. [GBP52,500] (Blake).

G4 CutTourismVAT, 2012, VAT and Tourism. [GBP11,108] (Blake)

4. Details of the impact (indicative maximum 750 words)

The model has been used to inform various key policy decisions, including:

Airports Commission

The results from Blake and Seetaram's research [G2] and based on previous developments [R2, R5, G3], was part of an evidence base that led to the Airports Commission deciding to support a new runway at Heathrow in preference to expansion of Gatwick or extension of the current Heathrow Northern runway [E1]. In June 2018, based on this recommendation, the government formally approved plans for the new runway at Heathrow. In the final announcement of this approval, the Secretary of State for Transport gave the wider economic benefits as one of the key benefits of the Heathrow expansion:

"Expansion at Heathrow will bring real benefits across the country, including a boost of up to GBP74,000,000,000 to passengers and the wider economy, providing better connections to growing world markets, and increasing flights to more long-haul destinations." [E2a]

This followed from a statement in 2016 when the Under-Secretary for Transport announced that the Government accepted the findings of the Airports Commission report, using the wider economic impact of expansion as a key reason to expand Heathrow [E2b].

A spatial dynamic computable general equilibrium of the UK economy was then constructed and tested by Blake and Seetaram. The spatial element contained different regions of the UK, with the South East and the local areas around both Heathrow and Gatwick airports included as separate regions. The dynamic element followed the model methodology developed by Blake [R5]. The model was then used by external consultants Price Waterhouse Coopers (PwC) to provide estimates of the wider economic impact of airport expansion options, with the results presented in Chapter 7 of the Airports Commission report [E1, E3]. Figure 7.1 of that report gives a schematic overview of the model, with the 'wider economy and productivity' section being the model constructed by Blake and Seetaram. Figures 7.2 to 7.4 and Table 7.1 present the main results from this economic model.

This research, through the development of a novel and robust economic modelling technique, provided the Airports Commission and the UK Government, a more accurate and detailed analysis of the airport expansion options than could otherwise have been obtained. This led to a much greater evidence base for the decision over airport expansion and to more confidence within government on the option to be chosen, which was instrumental in the final decision that has been made, on a major infrastructure project that will have enormous benefits to the United Kingdom for decades. The modelling approach that was developed has expanded the capability of economic impact modelling to analyse the impact of proposed major investment projects in the future.

Brexit and the Department for Digital, Culture, Media & Sport (DCMS)

Results from a model developed by Professor Blake [G1] and based on previous innovations [R3, R5] are used by government (DCMS) to guide responses to Brexit and the implications that this has for DCMS sectors. In 2018, working with PwC, Blake constructed a model of the UK economy that PwC and Blake used to demonstrate the effects of Brexit on DCMS sectors [G1, E4]. This involved a greater degree of detail in digital, media, culture and sport sectors than is normally included in this type of model and included forward-looking dynamics in a model developed by Blake to demonstrate which of these sectors will be more impacted by different Brexit scenarios. The results of this work allow DCMS to target support to sectors that will be more adversely affected by Brexit, bringing greater ability to implement the most appropriate measures.

Cutting Tourism VAT

Blake's work on tourism and VAT [G4] using a type of model developed earlier [R5] led to appearances at two House of Commons Select Committees in 2015 [E5, E9]. The results have been referred to in Parliamentary debates and quoted widely in the media [E5, E6, E6a, E7, E8] and were presented to Treasury Minister, David Gauke. In July 2020 the UK government reduced tourism VAT as a temporary reduction from July 2020 to March 2021, but this could be extended or made permanent. The tourism sectors that this applies to (accommodation, visitor attractions and food and non-alcoholic beverages in restaurants) are the same sectors for which Blake's work predicted that the net fall in tax paid by these sectors in 2020 would be GBP4,100,000,000.

When announcing this decision, Chancellor Rishi Sunak declared that *"This is a GBP4,100,000,000 catalyst for the hospitality and tourism sectors"* [E10a], and in supporting

documentation HM Treasury [E10b] [Table 1] clarified that this VAT cut is expected to give a fiscal boost to tourism sectors of GBP4,100,000,000. Blake's work, as the first academic research [G4] on the effects of cutting VAT on tourism in the UK, and the results of his work, have been instrumental in the UK government viewing this type of tax reduction as a serious policy option that has now been implemented.

5. Sources to corroborate the impact (indicative maximum of 10 references)

E1 Airports Commission (2015), *Final Report*; p135 – 151 [online] Available from: https://bit.ly/3bfr4WM

E2a Hansard HC Deb. Vol.642 col 169, 5 June 2018 [online] Available from: https://bit.ly/2ZnZCk1
E2b Hansard HOL Deb. Vol. 776 col 134, 25 October 2018 [online] Available from: https://bit.ly/3arv477

E3 Price Waterhouse Coopers, 2021, *testimonial letter*, 6 January.

E4 Price Waterhouse Coopers, 2021, *testimonial letter*, 6 January.

E5 House of Commons, 2015, *Select Committee on Tourism: Report*, 6 January, p30 [online] Available from: https://publications.parliament.uk/pa/cm201415/cmselect/cmcumeds/614/614.pdf

E6 Cut Tourism VAT. 2015. *Margaret Ritchie MP asks Treasury on Professor Blake tourism VAT research - Cut Tourism VAT*. [online] Available at: http://www.cuttourismvat.co.uk/margaret-ritchie-mp-asks-tourism-questions-treasury.
E6a Witts, S., 2015. *MPs to lobby for cut in tourism VAT*. [online] bighospitality.co.uk. Available at: https://www.bighospitality.co.uk/Article/2015/07/21/MPs-to-lobby-for-cut-in-tourism-VAT

E7 HC EDM 36 *VAT on Tourism* 27 May 2015 [online] Available from: http://www.parliament.uk/edm/2015-16/36

E8 Gauke, D., 2014. *Tourism (VAT) debate | The Rt Hon David Gauke*. [online] Davidgauke.com. Available at: http://www.davidgauke.com/content/tourism-vat-debate

E9 House of Commons, 2015 *Northern Ireland Affairs Committee*, 25 November. Available at: https://parliamentlive.tv/event/index/b9522597-95f3-4d37-9053-4b8c29b44d7a

E10a HC *Economic Update* 2020, Vol. 678, col. 977, 8 July 2020 [online] Available from: https://hansard.parliament.uk/Commons/2020-07-08/debates/BE7ECA8F-A74C-4431-88C7-3CE3E424DA7E/EconomicUpdate.
E10b HM Treasury, 2020, *Plan for Jobs*, pp7 July [online] Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/898421/A_Plan_for_Jobs__Web_.pdf