



Research note

Structural breaks in international tourism demand: Are they caused by crises or disasters?

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HIGHLIGHTS

- We study the number and date of structural breaks in international tourism demand.
- We use Bai and Perron (1998) structural break test for 25 countries and Madeira.
- We fill a gap in the literature regarding the *ex-post* detection of tourism crisis.
- We compare the date of tourism crises to the dating of these structural breaks.
- We observe those tourism crises are largely consistent with the dates of breaks.

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ABSTRACT

It is recognised that the tourism industry is vulnerable to some form of crises or disaster. However, despite the attention given to the nature and consequences of tourism crises and disasters, there is a gap in the literature regarding the *ex-post* detection of these events. In this article, we estimate both the number and date of structural breaks in international tourism arrival series for 25 countries and Madeira Island using the Bai and Perron (1998) structural break test. We compare the date of tourism crises and disasters to the dating of these structural breaks. We observe that tourism crises and disasters are largely consistent with the dates of breaks. Therefore, this method allows us to solve a gap in the tourism industry related to the correct allocation of negative shocks in international tourism arrival demand to crisis or disaster phenomena.

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1. Introduction

Tourism crises and disasters are not new phenomena. The media is replete with negative reports of well (and lesser)-known examples of events such terrorist attacks, natural disasters, political instability, outbreak of war, economic recession, biosecurity, disease threats and other negative events that threaten the tourism industry. As reported by Ritchie (2008), whatever the source of these negative events, the subsequent decrease in international tourist arrivals may have a significant social and economic impact both for the destination and the wider global economy.

After the publication of Faulkner's (2001) seminal work on tourism crises and disasters, an increasing number of articles have

been published on this subject, especially in crisis and disaster management. This is due to the fact that, as mentioned by Speakman and Sharpley (2012: 67), even though the tourism industry continues to grow in scope and scale, such events appear, perhaps inevitably, to occur with increasing frequency, to the extent that "tourism destinations in every corner of the globe face the virtual certainty of experiencing a disaster of one form or another at some point in their history" (Faulkner, 2001, p. 142).

Nevertheless, despite the growing number of studies in the tourism field on tourism crisis management there is no clear and commonly accepted definition and statistical methodology that allows us to define a crisis or disaster event in the tourism sector. In part this problem is explained by the fact that most of these studies may have simply adopted a qualitative case study research design that is by nature not quantitative. The majority of the studies on tourism crises and disasters appear to be concerned with prevention, planning, response and recovery of such events (see, e.g.,

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Ritchie, 2008; Hall, 2010). The only references in this respect are limited to the definition of the terms crisis and disaster¹ without defining a methodology for *ex-post* detection of these negative events.

The present paper differs from previous studies as we seek to fill a gap in the literature regarding the *ex-post* detection of tourism crises and disasters. Accordingly, given the nature of these events – “a sudden unpredictable catastrophic change over which it has little control” (Faulkner, 2001), we propose the Bai and Perron (1998, 2003a, b) (hereafter BP) structural break method to estimate both the number and date of structural breaks in international tourism arrival series for 25 countries and Madeira Island. This method has been widely used in different sectors of activity in the determination of structural changes. After that, we compare the date of tourism crises and disasters to the dating of these structural breaks. We observe that tourism crises and disasters are largely consistent with the dates of breaks.

Therefore, this method contributes in two ways to the literature related to crisis or disaster events in the tourism sector. First, this method allows us to close a gap in the tourism industry related to the correct allocation of negative shocks in international tourism arrival demand to crisis or disaster phenomena. As stated by Intriligator, Bodkin, and Hsiao (1996: 579) “a break in structure is always a serious matter because it implies that none of the statistical techniques (hypothesis testing, confidence intervals, etc.) is valid any longer. Moreover, the substantive conclusions about the system being modeled that one might wish to draw are also vitiated, to a greater or smaller extent”. Thus, we should be careful in interpreting the results of studies using international tourism demand data that did not take into account these structural breaks, to the extent that their results can be biased. Second, this method can be an important tool for monitoring the impact of a crisis event on the performance of the sector and to provide useful information to develop adequate policy responses to governments, destination managers and hotel managers. A crisis event that causes a structural break should require a specific policy and a greater allocation of resources by policymakers.²

The structure of the remaining paper is as follows. Section 2 provides some conceptual background and a review of previous studies about tourism crises and disasters and Bai and Perron's method and Section 3 the econometric procedure. Data is presented in Section 4, and Section 5 reports and discusses the results. The conclusion, limitations and future research appear in Section 6.

2. Literature review

2.1. Tourism crises and disasters

The important question we seek to discuss in this section is the definition of a criterion/detection methodology of the presence of a crisis or disaster event in the tourism sector. Scott and Laws (2005: 152) present a table with different definitions of the terms crisis and disaster. We present three of these definitions. Reilly (1993) defines crisis as “a situation which is harmful and disruptive, of high magnitude and is outside the firm's typical operating frameworks”. Carter (1991, p. xxiii) defines a disaster as “an event, natural

or man-made, sudden or progressive, which impacts with such severity that the affected community has to respond by taking exceptional measures”. Finally, the Pacific Asia Travel Association (PATA) (1991) describes a tourism crisis as “a disaster, whether natural or man-made, that has the potential to totally disrupt the tourism industry”. As Faulkner (2001: 137) emphasizes, all these definitions have transformational connotations, with each event having potentially negative outcomes.

The question is how to know when there is “in practice” a tourism crisis or disaster. Hall (2010: 403) refers that “any period where international tourism numbers only increase by 2% or less often appears to be described as a crisis for the industry”. We are of the opinion that this is a simplistic definition that may explain the high number of researches on crises in the tourism sector. In fact, the author emphasizes a substantial number of publications that have looked at tourism crises. He reports 103,000 publications whose abstracts refer to crises, tourism crises and different types of crises. However, Brecher (1978) highlights the danger of oversimplification and the importance of recognizing that the crisis can be a complex phenomenon, given the chaotic nature of crises and disasters and the uncertainty that surrounds them. Given that crises and disasters can lead to chaotic situations and complex interrelations between human and natural systems, the comprehension of the relationship between cause and effect and the implications of decisions and actions is a complicated process (Faulkner, 2001). In this sense Brecher (1978) highlights the seven aspects of the crisis that must be analyzed – source, gravity, complexity, time, communication patterns, outcomes and potential intensity.

The study of crisis events and disasters in the tourism sector, in particular the impacts of such events on the tourism industry and the responses of industry and the relevant government agencies are extremely important (Faulkner, 2001). The author states that tourism, as an area of human activity is no less prone to disasters than any other. However, the recovery of this industry from a crisis is far more complicated than for other industries (Cavlek, 2002). A very strong partnership and coordinated work among the government, national tourism organizations, foreign tour operators, local travel organizers, and local hospitality officials are essential, according to Cavlek (2002: 487). Each needs to participate to an important degree in order to secure the fulfilment of several important actions. These include successful rebuilding of the destination image, overcoming any adverse policy resulting from the crisis, short-term restoration and long-term reconstruction of the damaged tourism facilities and infrastructures, effective management of media coverage, reduction of barriers and travel facilitation, and business and consumer regulation support and subsidies (Cavlek, 2002; Steiner et al. 2013).

The past few years seem to confirm the scenario that tourism is no less prone to disasters than any other industry, by showing an increasing number of disaster and crisis which affect the tourism industry, ranging from human-to nature-influenced incidents. Are examples of these events the terrorist attacks, natural disasters, political instability, outbreak of war, economic recession, biosecurity and disease threats (for detailed information about the various studies carried out on tourism crises and disasters, see, e.g., Ritchie, 2008; Hall, 2010).

Finally, although various studies have extensively investigated crisis phenomena by using quantitative approaches in order to identify disruptions in tourist arrivals (e.g. Cavlek, 2002; Enders, Sandler, & Parise, 1992; Steiner et al., 2013), none presents a methodology for identifying tourism crises or disasters. The identification of a “real crisis” is often a complex issue for several reasons. Sometimes countries suffer damage caused by a “ripple” effect that goes far beyond the destinations and parties directly

¹ Scott and Laws (2005) present in Table 1, of your study, various definitions of terms crisis and disaster.

² The chapter 2.4. – “Policy Responses to the Global Economic Crisis” in Steiner et al. (2013) reviews information on measures undertaken to mitigate the impact of the crisis on the tourism sector. These measures range from marketing and promotion, business regulatory support and subsidies, consumer regulatory support and subsidy, reducing barriers and facilitating travel to long-term investment and regulations.

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