

1. Introduction

Volatility in monthly international tourist arrivals is defined as the squared deviation from the mean monthly international tourist arrivals. Consequently, volatility is directly related to the (possibly time-varying) standard deviation, which is a common measure of risk in finance. The conditional volatility in two data series are analysed in the monograph, specifically monthly international tourist arrivals to seven Small Island Tourism Economies (SITEs), namely Barbados, Cyprus, Dominica, Fiji, Maldives, Malta and Seychelles, and monthly country risk returns for six separate SITEs, namely the Bahamas, Cyprus, Dominican Republic, Haiti, Jamaica, and Malta.

Monthly international tourist arrivals and country risk returns exhibit distinct seasonal patterns and positive trends. Moreover, they have increased rapidly for extended periods, and stabilised thereafter. Most importantly, there have been increasing variations in monthly international tourist arrivals and country risk returns in SITEs for extended periods, with subsequently dampened variations. Such fluctuating variations over time are interpreted as the conditional volatility in tourist arrivals and risk returns, respectively, and can be modelled using modern financial econometric time series techniques.

There are several reasons why we need to model and forecast the uncertainty or volatility in international tourist arrivals. First, governments as well as tour operators need to examine the underlying uncertainty that is intrinsic to the total numbers, as well as in the growth rate, of monthly international tourist arrivals, and country risk ratings and risk returns. Second, in the literature it is widely believed that the forecast confidence intervals are time varying. Therefore, more accurate confidence intervals can be obtained by modelling the conditional variance of the errors. Finally, if the heteroscedasticity in the errors is examined carefully and is dealt with accurately, more efficient estimators for the parameters in the conditional mean can be obtained.

This monograph models the conditional volatility of the logarithm of monthly international tourist arrivals and the growth rate of monthly international tourist arrivals in a univariate as well as multivariate framework for seven SITEs. The sample periods for these seven SITEs are as follows: Barbados, January 1973 to December 2002 (Barbados Tourism Authority); Cyprus, January 1976 to December 2002 (Cyprus Tourism Organization and

Statistics Service of Cyprus); Dominica, January 1990 to December 2001 (Central Statistical Office); Fiji, January 1968 to December 2002 (Fiji Islands Bureau of Statistics); Maldives, January 1986 to June 2003 (Ministry of Tourism); Malta, January 1968 to February 2004 (National Statistics Office) and Seychelles, January 1971 to May 2003 (Ministry of Information Technology and Communication). In the case of Cyprus, monthly tourist arrivals data were not available for 1995, so the mean monthly tourist arrivals for 1993, 1994, 1996 and 1997 were used to construct the data for 1995 in estimating the trends and volatilities in international tourist arrivals.

The monograph also models the conditional volatility of the numbers, logarithms, annual difference, and the log-difference of monthly international tourist arrivals to the Maldives from its eight major tourist source countries, namely Italy, Germany, UK, Japan, France, Switzerland, Austria and the Netherlands, from January 1994 to December 2003 (Ministry of Tourism). The monograph also models the conditional volatility of country risk returns (log-difference of the country risk ratings) for six SITES. The monthly International Country Risk Guide (ICRG) data for the Bahamas and Cyprus are available from December 1984 to May 2002, Dominican Republic, Haiti and Jamaica from January 1984 to May 2002, and Malta from April 1986 to May 2002.

In this monograph, the GARCH family of models, particularly the symmetric GARCH(1,1) and asymmetric GJR(1,1) models to be explained below, in both the univariate and multivariate frameworks, are estimated to examine the features of conditional volatility in monthly international tourism arrivals in seven SITES.

This monograph is about addressing the importance of conditional volatility (or uncertainty) in monthly international tourist arrivals and country risk indicators. Conditional volatility is examined and the macroeconomic implications for SITES are appraised. There exists heteroscedasticity in monthly international tourist arrivals and country risk ratings and there are considerable ramifications for SITES. Hence, heteroscedasticity is explicitly accommodated to address a variety of issues, such as uncertainty surrounding tourist arrivals and country risk ratings. Second, the conditional volatilities are estimated, and an economic interpretation from the estimated results is provided. In achieving these two objectives, the monograph presents an extensive assessment of the important characteristics and the impact of tourism in small island economies in relation to their gross domestic product, balance of payments, employment, and foreign direct investment, among other factors. An important feature of the monograph is that it is an entirely new area of research on Small Island Tourism Economies.