Chapter 9
Small Island Destinations and International Tourism: Market Concentration and Distance Vulnerabilities

Jorge R. Ridderstaat and Peter Nijkamp

9.1 Introduction

This study investigates the vulnerability of small island destinations (with a population of less than 1.5 million) to international tourism, considering that small island destinations operate almost exclusively in international markets (Reid and Reid 1997). Vulnerability is defined by Nelson et al. (2007) as the susceptibility of a system to perturbations and their ability to adapt to these distresses. There are many types of vulnerabilities that can affect a country or region. The International Monetary Fund, for example, looks at several indicators of external and domestic origin to assess the soundness of the public sector of countries (http://imf.org/external/np/exr/facts/vul.htm). They also look at indicators to assess a country's ability to avert liquidity crises or their sensitivity to market risk (including changes to interest rates and exchange rates). Besides economic vulnerability, countries may also be exposed to risks related to climate change, natural hazards (e.g., hurricanes and earthquakes), wars, terrorism, and health disasters (e.g., cholera), to name a few. These vulnerabilities can cause shockwaves that could threaten the development of nations or regions.

Each country, in principle, inhibits its own set of vulnerabilities, and certain groups of territories could have similar susceptibility issues, small island destinations being such a collectivity. Small island destinations are conventionally experiencing several challenges, including problems of remoteness, geographical dispersion, susceptibility to natural and man-made disasters, fragility of

J.R. Ridderstaat (✉)
Research Department, Central Bank of Aruba, Oranjestad, Aruba
e-mail: ridderstaatjr@gmail.com

P. Nijkamp
Faculty of Economics and Business Administration, Free University Amsterdam, Amsterdam, The Netherlands

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ecosystems, constraints on transport and communication, and lack of natural resources, for instance (Brigulio 1995; Nijkamp and Verdonkschot 1995; Encontre 1999; Hampton and Christensen 2007; Nunkoo and Ramkissoon 2010; Croes 2011; Seetanah 2011; Ridderstaat 2015). These face-offs make small islands vulnerable to forces outside their control, which could threaten the economies of these nations or regions (Brigulio 1995). Export concentration is typically pronounced in the case of small states (Brigulio et al. 2009), with tourism as a prominent export activity for many small island destinations (De Albuquerque and McElroy 1992). Islands often attract tourist numbers far exceeding their population (Hall 2010); in many instances tourism is one, if not the most, important contributor to the economy and labor of these islands (Sharpley 2003; Hampton and Christensen 2007).

Several small island destinations use tourism as a growth strategy to achieve a higher economic performance and development (Croes 2006). However, tourism is an open system, with an exposure to both human (inter)actions and acts of nature (Ridderstaat 2015), that can threaten the stability of small island destinations. For example, the global economic and financial crisis of 2007–2010 has shown to have spillover effects on tourism (Ridderstaat et al. 2013), and the environment in which tourist destinations operate has become increasingly uncertain (Lyon and Worton 2007; Tiernan et al. 2007). Vulnerability becomes an issue for small island destinations when their growth blueprint is highly concentrated around a single or a few large tourism markets. And while their typically large geographical distance from their tourist markets could often signal a degree of attractiveness, exotism, enticement, or exclusivity, it could also become a vulnerability in times of crisis, conflicts, or epidemics, as international tourists could change their mindset from long-haul travel to short-distance ones (Müller 1998; European Travel Commission 2009; Smeral 2009). The travel behavior of tourists could also suffer from possible corrective environmental measures to reduce emission from air travel (Gössling et al. 2010).

The previous observations suggest two specific dimensions that contribute to tourism vulnerability of small island destinations, i.e., market concentration and distance dependency. Tourism vulnerability in this regard depends on the level of heterogeneity of markets that comprise the tourism demand for each destination and the travel range of tourists.

The current study aims to make three contributions to the tourism literature. Firstly, this study contributes to further understanding of the nature of tourism export vulnerability of small island destinations by considering the tourism market structure, the travel distance, and the overall contribution of tourism to the economy. The literature on tourism vulnerability has up to now been quite vague on the features of tourism market vulnerability. Secondly, the study provides an analytical framework for tourism market vulnerability, which could serve as a benchmark tool in future studies on tourism market exposure. Thirdly, the study contributes to the literature by presenting a unidimensional assessment of the degree of tourism market vulnerability of small island destinations. Having a one-dimensional view could speed up the interpretation process and is particularly relevant when simultaneously considering multiple indicators of tourism market vulnerability.

The remaining part of the study is organized as follows. Section 9.2 discusses the literature on tourism vulnerability, with particular attention to tourism market dependency and travel distances. Section 9.3 reviews the data and describes the applied methodology, while Sect. 9.4 presents the empirical results. Section 9.5 concludes and provides policy implications and directions for future research.

9.2 Literature Review

Tourism is not an isolated phenomenon, but it is an open system that interacts with elements both inside and outside its boundaries (Hall and Lew 2009; McDonald 2009; Ridderstaat et al. 2013; Tita 2014). As an open system, it is exposed to human (inter)actions and/or acts of nature (Ridderstaat 2015) that could put its sustainability at stake, making destinations vulnerable to multiple types of shocks (Calgaro et al. 2014). This is particularly relevant for small island destinations, given that tourism is the economic lifeline for many of these nations, supporting income, jobs, foreign exchange, and the like (Mosdale 2006; Ridderstaat 2015).

The literature has covered to some extent the issue of vulnerability of small island destinations (Bull and Weed 1999; Encontre 1999; Armstrong and Read 2002; Jayaraman 2004; Croes 2006; Mosdale 2006; Scheyvens and Momsen 2008; Brigulio et al. 2009; Guillaumont 2010; Seetanah 2011), but has remained mostly superficial when it comes to the exact nature of these vulnerabilities. For example, according to Brigulio (1995), small islands are dependent on a very narrow range of goods and services, with the disadvantage of having too many eggs in one basket. However, the author does not elaborate further on the anatomy of these goods and services, at least in terms of their typical features. Alternatively, Mosdale (2006) alludes to a power relationship between developed (tourist origins) and developing countries (tourist destinations), thereby placing destinations in dependency to tourist-generating regions. However, the nature of this power relationship remains vague. Understanding the essence of the vulnerabilities of small island destinations could assist these nations or regions in building resilience against possible shocks originating from the core of vulnerabilities of these tourist places.

Small islands' economies have often been reliant on mass tourism for their development, with many destinations regularly concentrating on limited markets (Bull and Weed 1999; Sharpley 2003). For example, according to Bull and Weed (1999), the island of Malta was heavily dependent on one single market (British visitors), which has led to rapid growth in Malta's tourism, but has also proven to make this island's tourism particularly vulnerable at various times in its tourism development history. Similarly, the tourism market from the United Kingdom (UK) has been the dominant market in Cyprus, which has already proven vulnerable to developments in the previous country. For instance, in 2002, major British tour operators have cut capacity to Cyprus between 10 and 20 % (Sharpley 2003), which impacted tourism on the island. Further information provided by the latter author indicate that both Scandinavia and Germany each accounted for about 10 % of all

visitors, signaling further vulnerability of Cyprus to only a few major markets. Tita (2014) mentions the case of the Seychelles, which are vulnerable to business cycle developments in European countries, given that they are strongly dependent on tourism from these states. Tourism vulnerability in the above-provided examples originates from the dependency of small island destinations on one or only a few markets of origin. The risk of being affected by shocks from these markets of origin could, thus, be real and substantial.

Shocks due to high market dependency do not necessarily have to come from the market(s) of origin themselves, but can be triggered by intensified competition from rivaling destinations. A study by Romeu (2008) on the effects of the opening of Cuba for tourists from the United States (USA) showed that Cuba would gain market share, whereby some of the non-US visitors to Cuba would be redirected to other destinations in the Caribbean. However, the latter would not be the case for all Caribbean destinations, as many are ultimately at risk of losing a significant number of visitors. And while being just a hypothetical question at the time of the study, the announcement on December 17, 2014, of the intention of both the United States and Cuba to normalize relations has shown that many Caribbean islands are currently more vulnerable for Cuba as a destination than ever before. The examples above show the perils of small island destinations having little diversified tourism markets, whereby the concentration is on one or a few large countries of origin.

Even in the case of perfect diversification of markets of origin of tourists, small island destinations could still remain vulnerable to the distance that tourists need to travel to get to these places. Island destinations can often provide a degree of attractiveness, exotism, enticement, or exclusivity, to a trip, together with unique cultures and natural habitats (Scheyvens and Momsen 2008; Hall 2010). While transportation costs are vital, the inconvenience of tourists to travel to farther destinations may be mitigated by quality aspects of an island destination and the tourist motivations (e.g., desire to broaden cultural knowledge and discovering new places or recurring family visits) (Encontre 1999; Nicolau and Más 2006; Nicolau 2008). However, travel distance could become a vulnerability issue for destinations when considering that in times of crises, conflicts, or epidemics, international tourists tend to forego, reduce, or delay long-distance travel and trips that involve a flight (Müller 1998; European Travel Commission 2009; Smeral 2009). Moreover, the future of air transportation could suffer from environmental measures, such as fair pricing and regulatory or emission trading systems, aimed at reducing emissions from air travel (Gössling et al. 2010), which could also make long-distance travel less attractive. The reasonably isolated position of islands may make them highly susceptible to any regulatory structures put in place to manage these emissions (Hall 2010), adding further risks to the future of their tourism development.

The previous remarks show that developments in markets of origin at competing destinations as well as changes in the travel behavior of tourists could be at the originating end of export vulnerabilities of small island destinations. Identifying the causal factors of this vulnerability is a first step, given that measurement of these factors is a necessary ensuing phase, to better understand the position of small islands with respect to these factors of vulnerability. This is the theme of the next two sections.

9.3 Data and Methods

The basis for the analysis in this study is a list of 22 small island destinations, located in five different geographical regions (respectively, Caribbean, Europe, Oceania, South Asia, and Sub-Saharan Africa) (see Table 9.1). There is no consensus in the literature on what exactly constitutes a small island destination (Ridderstaat 2015). According to McElroy (2006), a small island is one that is smaller than 5000 km^2 in surface. Another definition applied by Croes (2011) and the World Bank (2000) considers small islands as territories that have a population of less than 1.5 million inhabitants. Generally speaking, population is used as a measure of country size (Brigulio et al. 2009), so the population definition of small islands will be followed in this study. The selection of the small island destinations was based on available data on international number of visitors over the period 2010–2014, whereby the information was segmented by (main) markets. These data were derived mostly from the tourist bureaus of the selected destinations and, in some instances, from the central banks of the islands. The authors strived to get a minimum of 70 % of the total number of stay-over tourists explained by their markets of origin.

The collected data were first processed to determine the proportion of each of the individual markets of origin in the total number of visitors per destination, whereby the authors worked with average data over the period under review. This is because of lack of data for certain islands during specific years in the assessed period. Next, the authors determined the joint ratio of these markets in the total number of stay-over visitors per destination. The latter is a first indicator of market vulnerability of each of the destinations. In order to further analyze the market susceptibility of the destinations, the authors calculated a market vulnerability ratio (MVR) indicator, which is determined in a number of phases. First, the difference is calculated between the actual market share of each main market of a destination and the average contribution of all main markets to the total number of visitors to the destination. The latter is equal to the ratio between the total contributions of the destination's main markets in the overall number of visitors divided by the number of countries of origin, considered as main markets. For example, if the total contribution of the main markets of the destination equals to 80 %, with four main markets, the average contribution per main market would be 20 % (=80 % divided by 4). In case a market actually has a share of 40 % in the total number of visitors, the difference between the actual market share and the average market share of all markets of the destinations would then amount to 20 % (40 % minus 20 %). This difference is subsequently squared and summed up with the other differences. Next, the outcome is divided by a similar calculation, but now for all destinations together. In formula, the MVR is calculated as follows:

$$\mathrm{MVR}_i = \frac{\frac{1}{n} \times \sqrt{\sum_{j=1}^{n} \left(X_{i,j} - \left(\frac{\mathrm{TCM}_i}{n}\right)\right)^2}}{\frac{1}{N} \times \sqrt{\sum_{i=1}^{N} \left[\sum_{j=1}^{n} \left(X_{i,j} - \left(\frac{\mathrm{TCM}_i}{n}\right)\right)^2\right]_i}} \tag{9.1}$$

Table 9.1 Selected small island destinations and their characteristics

	Region	Population (end 2014)	Area (in squared kilometers)	Direct and indirect contribution of tourism (2014) economy	Labor
Anguilla	Caribbean	16,449	90.0	59.6	61.7
Antigua and Barbuda	Caribbean	92,561	440.0	64.0	58.2
Aruba	Caribbean	106,858	180.0	86.8	89.1
Bahamas	Caribbean	382,343	5507.0	48.0	56.8
Barbados	Caribbean	286,342	431.0	36.5	36.0
Cayman Islands	Caribbean	61,609	196.0	26.1	28.0
Curacao	Caribbean	153,500[a]	444.0	28.0	n.a.
Cyprus	Europe	1,184,652	9251.0	24.0	25.4
Dominica	Caribbean	72,143	750.0	31.9	29.0
Fiji	Oceania	895,824	18,274.0	38.7	27.2
Grenada	Caribbean	107,236	310.0	20.8	19.3
Kiribati	Oceania	104,607	811.0	24.4	20.9
Maldives	South Asia	336,921	298.0	93.2	86.2
Malta	Europe	424,204	316.0	26.3	27.2
Mauritius	Sub-Saharan Africa	1,319,906	2040.0	25.6	24.3
Montserrat	Caribbean	5121	102.0	15.0	n.a.
Seychelles	Sub-Saharan Africa	90,829	459.0	54.4	54.7
Saint Kitts and Nevis	Caribbean	54,916	261.0	23.4	22.3
Saint Lucia	Caribbean	182,973	616.0	39.6	43.0
Saint Maarten (Dutch)	Caribbean	39,000[b]	87.0	n.a.	n.a.
Saint Vincent and Grenadines	Caribbean	108,300	389.8	21.3	19.5
Vanuatu	Oceania	257,359	12,190.0	67.4	20.9

Source: World Travel & Tourism Council; wikipedia; http://countrymeter.info; Worldbank
[a]2013
[b]2012

where

MVR = market vulnerability ratio
TCM = total contribution of main markets
i = specific small island destination
j = specific country of origin
n = number of markets at a specific destination
N = total number of markets at all destinations

The higher the MVR, the higher the vulnerability of a destination to tourism demand developments in the most important markets.

A second calculation of market vulnerability is made by estimating the main market vulnerability ratio (MMVR), which is equal to the individual destination's main market ratio (MMR) divided by an average of the main market ratio of all destinations. In formula:

$$\mathrm{MMVR}_i = \frac{\mathrm{MMR}_i}{\frac{\sum \mathrm{MMR}_i}{N}} = \frac{1}{N} \times \frac{\mathrm{MMR}_i}{\sum \mathrm{MMR}_i} \tag{9.2}$$

where

MMVR = main market vulnerability ratio
MMR = main market ratio

The higher the MMVR, the higher the vulnerability of a destination to tourism demand developments in the most important market.

A third dimension investigated in this study has to do with the distance of each tourist market to the destination and vice versa. One indicator of remoteness is the weighted average distance (WAD) between a destination and its main contributing markets. In other words, the WAD provides an indication of the distance (going to and coming back) in kilometers that one visitor has to travel to reach the destination and return back home afterwards. Such an indicator has been applied by Romeu (2008), where it was used as a proxy for travel costs. The WAD is calculated by determining the total number of kilometers traveled by all visitors to a destination, considering the weight of each market in the total number of stay-over visitors to a destination. The formula for calculating the WAD is as follows:

$$\mathrm{WAD}_i = \sum_{j=1}^{n} w_{i,j} \times D_{i,j} \,\text{for}\, w_{j,i} = \frac{T_{i,j}}{\sum T_{i,j}} \tag{9.3}$$

where

WAD = weighted average distance between a destination and its main tourist markets
D = distance
T = number of stay-over visitors

The higher the WAD, the larger the travel distance per tourist between the destination and its main tourist markets of origin, the more vulnerable a destination could be for the effects of crises, conflicts, epidemics, or for punitive measures to reduce air travel emissions.

The previous calculation methods provide a multidimensional portrait of tourism market vulnerabilities of the selected small island destinations. The weaknesses of a multidimensional system of indicators are that each indicator could differentiate from the others in terms of its development, requiring an individual analysis of each variable, which could be a cumbersome process. For this purpose, this study calculated an overall index of tourism market vulnerability using the three previously calculated indicators, i.e., the MVR, the MMVR, and the WAD. For comparative purposes, these variables were first transformed into a unitless index using the following formula:

$$I_i = \frac{X_i - \text{Min}(X_{\text{AC}})}{\text{Max}(X_{\text{AC}}) - \text{Min}(X_{\text{AC}})} \tag{9.4}$$

where

I = index
X = variable representing either MVR, MMVR, or WAD
AC = all countries (i.e., all i's)
Min = minimum value
Max = maximum value

This produces a series of outcomes that vary between zero and one. In other words, one of the outcomes (more specifically the one where $X_i = \text{Min}(X_{\text{AC}})$) would equal zero. Because of this, and for further calculation purposes, the authors added the value 1 to all outcomes, so that the minimum and maximum values of all three indices would now lie between one and two. To determine the one-dimensional index, the authors considered as well the relevance of tourism in the GDP of the selected destinations, i.e., the index form of this indicator. Ultimately, the index of tourism market volatility (ITMV) was essentially based on the method of calculation (geometric mean of three variables) that was also applied in the Human Development Index of the United Nations Development Program (2010). The difference here is that four variables are used instead of three:

$$\begin{aligned} \text{ITMV}_i &= \left[\sqrt[4]{\text{ITMV} \times \text{IMMVR} \times \text{IWAD} \times \text{ITCE}}\right] - 1 \leftrightarrow \text{ITMV}_i \\ &= \left([\text{ITMV}]^{\frac{1}{4}} \times [\text{IMMVR}]^{\frac{1}{4}} \times [\text{IWAD}]^{\frac{1}{4}} \times [\text{ITCE}]^{\frac{1}{4}}\right) - 1 \end{aligned} \tag{9.5}$$

where

ITMV = index of tourism market vulnerability
IMMVR = index of main market vulnerability
IWAD = index of weighted average distance
ITCE = index of tourism contribution to the economy

The value one is deducted again from the outcome of the calculated ITMV to ensure anew that the value of the index falls between zero and one.

The next section will review the findings of the indicators presented in Sect. 9.3.

9.4 Empirical Findings

Some socioeconomic and geographical characteristics of small islands are provided in Table 9.1. The majority of the selected small island destinations were located in the Caribbean (14 out of 22), followed by Oceania (3 out of 22) and, respectively, Europe and Sub-Saharan Africa (both two countries). Seven of the selected islands (31.8 %) had a population of less than 100,000 inhabitants. Eleven destinations (50 %) had a population between 100,000 and 500,000, whereas one destination had a population between 500,000 and 1 million. Two of the selected destinations had a population of more than 1 million, but less than the 1.5 million maximum defined at the beginning of the study. Fourteen of the selected destinations had a surface area of less than 500 km^2, whereas three destinations had an area between 500 and 1000 km^2. The remaining set (five destinations) had a surface area larger than 1000 km^2, with Fiji being the largest. The latter implies that the smallest island (Saint Maarten) was more than 200 times smaller than the largest island (Fiji). Tourism was in the majority of cases both directly and indirectly responsible for at least 25 % of economic activity or employment on the islands, with the Maldives being the most tourism-dependent island.

Figure 9.1 shows a word cloud of the representative influence of origin markets of the stay-over visitors. The figure shows Australia, the United States, and Russia being the three largest markets of origin of the stay-over visitors, followed by 27 other home countries and regions of the tourists visiting these small island destinations.

The relationship between the small island destinations and the countries of origin of the tourists is further explained in Table 9.2. On average, 5.8 markets accounted for 84.0 % of the total number of stay-over visitors to the selected small island destinations, with the lowest quantity being found in the case of the Cayman Islands (2 markets explaining 84.8 % of the total number of stay-over visitors) and the

Fig. 9.1 Word cloud of most important countries of international tourism to small island destinations

Table 9.2 Contribution of main market (average 2010–2014)

	Region	Markets that together contribute to more than 70 % of all stay-over visitors	Contribution (in %) of main markets to overall stay-over tourism	Contribution of largest tourism market	Data over period
Anguilla	Caribbean	United States (64.6 %), United Kingdom (4.4 %), Canada (4.6 %), Caribbean (16.6 %)	90.2 %	United States (64.6 %)	2010–2013
Antigua and Barbuda	Caribbean	United States (36.2 %), United Kingdom (28.4 %), Canada (9.8 %), Caribbean (14.3 %)	88.8 %	United States (36.2 %)	2010–2013
Aruba	Caribbean	United States (60.3 %), Venezuela (15.1 %), Canada (4.7 %), Colombia (1.9 %), Netherlands (4.4 %), United Kingdom (1.4 %)	87.9 %	United States (60.3 %)	2010–2014
Bahamas	Caribbean	United States (78.9 %), United Kingdom (1.7 %), Canada (9.1 %)	89.7 %	United States (78.9 %)	2010–2013
Barbados	Caribbean	United Kingdom (33.2 %), United States (24.7 %), Canada (13.2 %), CARICOM (17.3 %)	88.4 %	United Kingdom (33.2 %)	2010–2013
Cayman Islands	Caribbean	United States (78.3 %), Canada (7.3 %)	84.8 %	United States (78.3 %)	2010–2014
Curacao	Caribbean	Netherlands (34.7 %), United States (14.8 %), Venezuela (17.7 %), Aruba (5.1 %), Suriname (2.7 %)	75.0 %	Netherlands (34.7 %)	2010–2013
Cyprus	Europe	United Kingdom (41.0 %), Russia (17.4 %), Sweden (4.8 %), Greece (5.3 %), Germany (5.7 %), Switzerland (1.9 %)	76.1 %	United Kingdom (41.0 %)	2010–2014
Dominica	Caribbean	Caribbean (56.5 %), United States (19.6 %), United Kingdom (6.3 %), Canada (3.4 %)	85.8 %	Caribbean (56.5 %)	2010–2013

(continued)

Table 9.2 (continued)

	Region	Markets that together contribute to more than 70 % of all stay-over visitors	Contribution (in %) of main markets to overall stay-over tourism	Contribution of largest tourism market	Data over period
Fiji	Oceania	Australia (50.8 %), United States (8.4 %), United Kingdom (3.3 %), New Zealand (15.6 %), Canada (2.1 %), China (3.5 %), Japan (1.5 %), Korea (1.8 %)	85.9 %	Australia (50.8 %)	2010–2012
Grenada	Caribbean	United States (26.3 %), United Kingdom (22.1 %), Canada (7.1 %), Caribbean (22.3 %)	77.8 %	United States (26.3 %)	2010–2013
Kiribati	Oceania	Australia (22.2 %), United States (6.3 %), United Kingdom (3.5 %), New Zealand (8.7 %), Fiji (14.1 %), Nauru (4.6 %), Japan (4.8 %), Germany (7.0 %)	71.1 %	Australia (22.2 %)	2010–2011
Maldives	Oceania	China (23.1 %), United States (1.6 %), United Kingdom (10.4 %), Italy (7.7 %), Russia (6.8 %), Japan (4.0 %), Korea (2.7 %), India (3.3 %), France (5.9 %), Germany (9.4 %), Switzerland (3.4 %)	77.8 %	China (23.1 %)	2010–2014
Malta	Europe	United Kingdom (30.3 %), United States (1.2 %), Ireland (1.9 %), Italy (14.8 %), Spain (4.2 %), Belgium (1.9 %), Russia (2.1 %), France (7.2 %), Germany	79.0 %	United Kingdom (30.3 %)	2010–2013

(continued)

Table 9.2 (continued)

	Region	Markets that together contribute to more than 70 % of all stay-over visitors	Contribution (in %) of main markets to overall stay-over tourism	Contribution of largest tourism market	Data over period
		(9.4 %), Austria (1.5 %), Switzerland (1.7 %), Netherlands (2.7 %)			
Mauritius	Sub-Saharan Africa	France (28.2 %), United Kingdom (9.6 %), Reunion (13.9 %), South Africa (9.1 %), Italy (4.7 %), India (5.6 %), Germany (5.8 %), Switzerland (2.5 %)	78.5 %	France (28.2 %)	2010–2014
Montserrat	Caribbean	Caribbean (35.2 %), United States (26.7 %), United Kingdom (25.8 %), Canada (6.7 %)	94.5 %	Caribbean (35.2 %)	2010–2013
Seychelles	Sub-Saharan Africa	France (17.1 %), United States (1.7 %), United Kingdom (6.1 %), Reunion (2.0 %), South Africa (5.8 %), Italy (12.0 %), Spain (1.3 %), Belgium (1.2 %), Russia (5.7 %), China (1.9 %), India (1.2 %), United Arab Emirates (5.1 %), Germany (13.2 %), Switzerland (4.0 %), Mauritius (1.7 %)	82.5 %	France (17.7 %)	2010–2014
Saint Kitts and Nevis	Caribbean	United States (62.8 %), United Kingdom (8.0 %), Canada (6.4 %), Caribbean (18.3 %)	95.5 %	United States (62.8 %)	2010–2013
Saint Lucia	Caribbean	United States (39.8 %), United Kingdom (23.1 %), Canada (11.4 %), Caribbean (18.4 %)	92.7 %	United States (39.8 %)	2010–2013

(continued)

Table 9.2 (continued)

	Region	Markets that together contribute to more than 70 % of all stay-over visitors	Contribution (in %) of main markets to overall stay-over tourism	Contribution of largest tourism market	Data over period
Saint Maarten (Dutch)	Caribbean	United States (52.5 %), Canada (8.6 %), Venezuela (0.7 %), Netherlands (3.7 %)	71.2 %	United States (52.5 %)	2010–2013
Saint Vincent and Grenadines	Caribbean	Caribbean (31.4 %), United States (28.8 %), United Kingdom (19.6 %), Canada (9.7 %)	89.5 %	Caribbean (31.4 %)	2010–2013
Vanuatu	Oceania	Australia (60.5 %), New Zealand (12.9 %), New Caledonia (11.8 %)	85.3 %	Australia (60.5 %)	2010–2013

Source: tourism statistics from destinations and authors' calculations

highest number at the Seychelles (16 markets explaining 82.5 % of the total number of stay-over tourists). This is a first indication of vulnerability of the islands to only a few markets. In the case of nine small island destinations (40.9 %), there was one particular market that explained more than 50 % of all stay-over visitors coming to the island (Anguilla, Aruba, Bahamas, Cayman Islands, Dominica, Fiji, Saint Kitts and Nevis, Saint Maarten, and Vanuatu). For example, the US market accounts for slightly more than 78 % of all stay-over visitors to both the Bahamas and the Cayman Islands. The average contribution of the most important market of each of the selected destinations was 43.8 %, which can be considered high. Furthermore, it indicates that these small island destinations are susceptible to developments in one single main market.

Further evidence of vulnerability can be derived from the vulnerability ratios provided in Table 9.3. The MVR is the highest for the Cayman Island and the Bahamas and the lowest for the Seychelles and the Maldives. The MMVR shows an almost similar picture (the Bahamas and the Cayman Islands ranked, respectively, on the 1st and 2nd place, and Kiribati and the Seychelles on, respectively, the 21st and 22nd place). These two ratios show that the Bahamas and the Cayman Islands are the most vulnerable destinations when it comes to tourist market dependency.

The calculated WAD as an indicator of market remoteness is also provided in Table 9.3. The minimum travel distance (going to and coming back) for a tourist was on average 4111 km in the case of Malta, and the highest travel range was 14,664 km for a tourist visiting Kiribati. Most of the travel distances (72.7 %) were in the range between 5000 and 10,000 km. With a typical cruising airplane speed between 878 and 926 km per hour (source: en.wikipedia.org/wiki/cruise_%

Table 9.3 Market vulnerabilities and remoteness

	Market vulnerability ratio	Rank	Main market vulnerability ratio	Rank	Weighted average distance (in km) 1]	Rank
Anguilla	9.7837	4	1.4735	3	7070	16
Antigua and Barbuda	4.1923	11	0.8257	12	8981	7
Aruba	6.7352	8	1.3754	6	7062	17
Bahamas	15.8605	2	1.7997	1	5362	20
Barbados	3.0063	16	0.7573	15	9914	5
Cayman Islands	19.8286	1	1.7860	2	5771	19
Curacao	4.0062	14	0.7915	14	9290	6
Cyprus	4.3720	10	0.9352	10	7457	13
Dominica	8.3474	7	1.2888	7	4317	21
Fiji	4.4192	9	1.1587	9	11,483	4
Grenada	2.8822	17	0.5999	19	8620	9
Kiribati	1.6462	20	0.5064	21	14,664	1
Maldives	1.3630	21	0.5269	20	14,064	2
Malta	1.8621	19	0.6911	17	4111	22
Mauritius	2.1322	18	0.6432	18	7874	11
Montserrat	4.1122	13	0.8029	13	7206	15
Seychelles	0.9497	22	0.4037	22	13,878	3
Saint Kitts and Nevis	9.0574	5	1.4325	4	7382	14
Saint Lucia	4.1303	12	0.9078	11	8945	8
Saint Maarten (Dutch)	8.6845	6	1.1975	8	8000	10
Saint Vincent and Grenadines	3.3605	15	0.7162	16	7780	12
Vanuatu	10.3488	3	1.3800	5	6207	18

Source: authors' calculations

28aeronautics%29, visited March 28, 2015), this implies that visitors in this distance range would have to spend between 5 and 11 h to get to their destination (not counting waiting time at airports). In the case of Fiji, Kiribati, the Maldives, and the Seychelles, the travel distance for a tourist ranged between 10,000 and 15,000 km, implying a travel time between 11 and 17 h, making them the remotest islands in the investigated list of small island destinations.

The results from the previous analysis show that the indicators of tourism market vulnerability are not homogeneous in nature and could show different outcomes for each island. For example, while the Bahamas has the highest MMVR and the second highest MVR, it is ranked on the 20th place when it comes to the WAD (obviously because of its high dependence and close proximity to the United States). This calls for a unidimensional analysis of these indicators. Table 9.4 provides the index forms of these indicators together with an index of tourism contribution to the GDP and an

Table 9.4 Index of tourism market volatility

	Index market vulnerability ratio	Index main market vulnerability ratio	Index weighted average distance	Index contribution of tourism to GDP	Index tourism market vulnerability
Anguilla	0.4679	0.7663	0.2804	0.5021	0.4944
Antigua and Barbuda	0.1718	0.3023	0.4615	0.6215	0.3790
Aruba	0.3065	0.6961	0.2796	0.8253	0.5083
Bahamas	0.7898	1.0000	0.1186	0.3880	0.5354
Barbados	0.1089	0.2533	0.5499	0.2848	0.2898
Cayman Islands	1.0000	0.9902	0.1573	0.1271	0.5095
Curacao	0.1619	0.2778	0.4908	0.1620	0.2664
Cyprus	0.1813	0.3807	0.3171	0.0541	0.2267
Dominica	0.3919	0.6340	0.0195	0.2203	0.2970
Fiji	0.1838	0.5408	0.6986	0.2923	0.4146
Grenada	0.1024	0.1405	0.4273	0.0690	0.1769
Kiribati	0.0369	0.0735	1.0000	0.0939	0.2492
Maldives	0.0219	0.0882	0.9431	1.0000	0.4418
Malta	0.0483	0.2059	0.0000	0.1353	0.0945
Mauritius	0.0626	0.1716	0.3566	0.1505	0.1807
Montserrat	0.1675	0.2859	0.2933	0.0000	0.1805
Seychelles	0.0000	0.0000	0.9255	0.5589	0.3163
Saint Kitts and Nevis	0.4295	0.7369	0.3100	0.0860	0.3709
Saint Lucia	0.1685	0.3611	0.4581	0.2801	0.3126
Saint Maarten (Dutch)	0.4097	0.5686	0.3685	n.a.	n.a.
Saint Vincent and Grenadines	0.1277	0.2239	0.3476	0.0780	0.1900
Vanuatu	0.4979	0.6993	0.1987	0.5766	0.4810

Source: authors' calculations

overall index of tourism market vulnerability. The overall index can be explained in the same way as the individual indices, i.e., values should lie between zero and one, with the latter indicating the highest level of vulnerability. The results show that the Bahamas and the Cayman Islands have the highest degree of vulnerability according to this index, closely followed by Aruba, Anguilla, and Vanuatu. Alternatively, Malta, Grenada, Mauritius, Montserrat and Saint Vincent, and the Grenadines have the lowest degree of tourism market vulnerability.

The relationship between the individual indicator and the overall index can be further investigated by plotting them as bar charts (see Fig. 9.2) or as a scatter charts

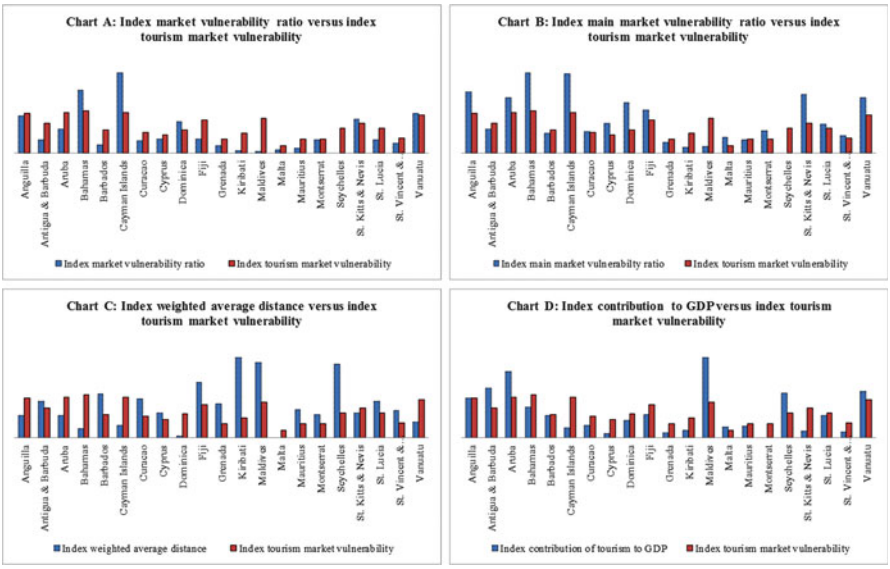

Fig. 9.2 Comparison of individual indices and the index of tourism market vulnerability

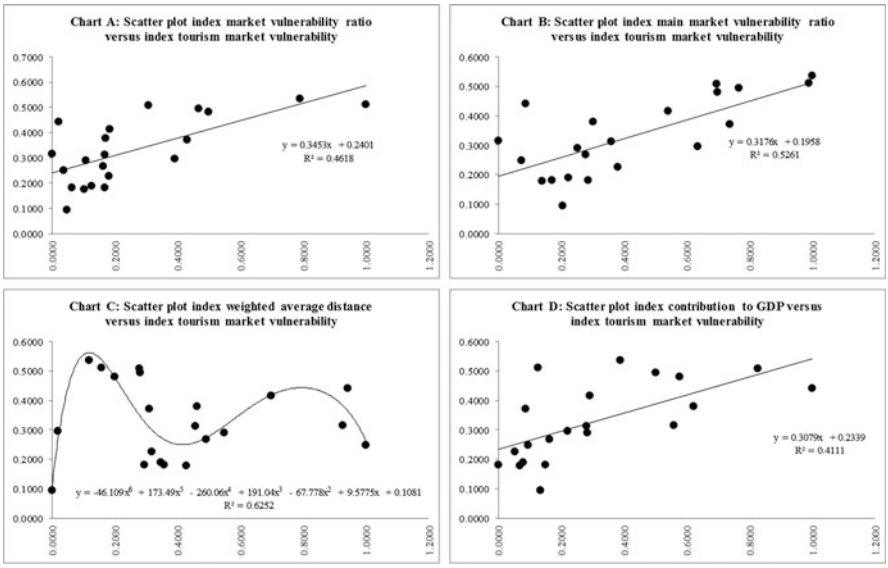

Fig. 9.3 Scatter plot of individual indices and the index of market vulnerability

(see Fig. 9.3). The four charts in Fig. 9.2 show from a visual inspection that there is some relationship between each individual index and the aggregate index of tourism vulnerability. A scatter plot of the data shows that the first, second, and fourth index could, to some extent, be modeled by a linear equation, but the scatter

between the index of the weighted average distance and the aggregated index of tourism vulnerability could not be modeled by a simple linear regression, but by a polynomial trend line, possibly indicating that the link between the index of weighted average distance and the index of tourism market vulnerability is likely more complicated than the other three cases.

The previous analysis provides a framework for further investigation into the vulnerability of destinations with respect to tourism markets. The evaluation also shows the diversity that could exist in each individual indicator, suggesting a possible usefulness of a unidimensional approach when assessing the vulnerability of nations with respect to their tourist markets.

9.5 Conclusion

This study investigated the vulnerability of small island destinations for the markets of origin of their tourists. The results show that tourism to many small islands is often determined by a few number of markets, generally with one large dominant market. Moreover, the results indicate that the distance between the destination and its markets could be considerable. Furthermore, the results also show that, although small island destinations show similar symptoms of vulnerability toward tourist markets of origin, the degree of vulnerability varies from country to country, depending on how they score on each individual indicator of vulnerability and the importance of tourism to their economies.

These findings are important, because they shed light on the vulnerability conditions of small island destinations with respect to the structure of their tourist markets of origin, the travel distance, and the overall contribution of tourism to their economy. The results also provide a framework for analysis of tourism market vulnerability, while providing a methodology to determine a one-dimensional indicator of this vulnerability.

The results could assist managers and policy makers in delineating strategies to limit their destination's vulnerability and to build resilience to cope with crises, conflicts, epidemics, and the like that could influence their international tourism development. For example, destinations could try to build loyalty relationships with their visitors by stimulating them to come back frequently (e.g., each year). This entails that destinations should have an adequate view on what induces tourists to become loyalists frequently returning to the same tourist place. For instance, a recent study by Frangos et al. (2015) showed that repeat visitors to Athens (Greece) care more about the price of the trip and the sunny natural environment of Athens and Greece generally.

Some limitations may apply to the data in this study. Firstly, data on international visitors were in some cases not fully available for certain destinations, inducing the authors to work with average data. In other cases, no data was available at all for certain small island destinations, causing their full omission from the study. This complete elimination could have an effect on the overall

picture on tourism market volatility in small island destinations. Secondly, and considering the first limitation, the study does not provide an overview of how tourism market vulnerability has developed over time in the destinations, but was limited to just comparison with other small island destinations. Benchmarking a small island destination against itself over time could provide additional information on the direction of tourism market vulnerability, for example, whether the destination's authorities are successful in mitigating the tourism market vulnerability. Thirdly, calculating the WAD in some instances was a challenge, particularly in the case of a large country of origin like the United States, with multiple international airports and lack of data on the port of departure of tourists to the destination. Working with data on the top 15 airports only could be a limitation to the study.

Future research should firstly consider expanding the scope of the investigation by including larger islands or mainland countries as tourist destinations. Also, future studies should consider benchmarking countries against themselves, by comparing tourism market vulnerability over a longer time horizon than the one applied here. These study intentions could provide a better understanding of the tourism market vulnerability concept and could allow countries to eventually become more resilient to this type of vulnerability.

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