

# RESILIENCE OF INTERNATIONAL TOURISM DEMAND IN THE COVID-19 ERA: A CROSS-COUNTRY STUDY

*A Thesis*

*Submitted in Partial Fulfilment of the Requirements*

*For the degree of*

Doctor of Philosophy

By

SHAKTI CHATURVEDI

(Roll number : 18214269)



To the

DEPARTMENT OF MANAGEMENT SCIENCES  
INDIAN INSTITUTE OF TECHNOLOGY, KANPUR

*May 2025*

## Certificate

This is to certify that the work done in the thesis titled “*Resilience of International Tourism Demand in the COVID-19 Era: A Cross-country Study*” by Shakti Chaturvedi (18214269) has been carried out under my supervision, and this work has not been submitted elsewhere for a degree.



**Dr. Devlina Chatterjee**

Professor

Department of Management Sciences

Indian Institute of Technology Kanpur

*May 2025*

## Declaration

This is to certify that the thesis titled “*Resilience of International Tourism Demand in the COVID-19 Era: A Cross-country Study*” has been authored by me. It presents the research conducted by me under the supervision of Dr. Devlina Chatterjee. To the best of my knowledge, it is an original work, both in terms of research content and narrative, and has not been submitted elsewhere, in part or in full, for a degree. Further, due credit has been attributed to the relevant state-of-the-art and collaborations (if any) with appropriate citations and acknowledgements, in line with established norms and practices.



**Name: Shakti Chaturvedi**

Roll Number: 18214269

Programme: PhD

Department: Department of Management Sciences

Indian Institute of Technology Kanpur

Kanpur 208016

## Synopsis

---

---

Name of Student	:	Shakti Chaturvedi
Roll number	:	18214269
Degree for which submitted	:	Doctor of Philosophy
Department Sciences	:	Department of Management
Thesis title	:	<i>Resilience of International Tourism Demand in the COVID-19 Era: A Cross-country Study</i>
Name of thesis supervisor(s)	:	Dr. Devlina Chatterjee
Month and year of submission	:	<i>May 2025</i>

---

---

International tourism is one of the significant contributors to the global economy. Tourism revenues accounted for around 10.3% of the global GDP and created 330 million jobs worldwide in 2019, as per the WTTC report of 2020. However, the global tourism sector suffered from an unprecedented shock arising out of restrictions to travel imposed during the COVID-19 pandemic. As per United Nations World Tourism Organization (UN Tourism, 2024) data, the number of international tourists dropped steeply from nearly 1.5 billion in 2019 to 405 million in 2020, which is a drop of about by 72%. This resulted in a drop of 49% in tourism revenue and a loss of almost 61 million jobs (WTTC, 2021).

The tourism industry has suffered from several shocks in the past, including natural disasters, political conflicts, economic recessions and epidemics. However, the COVID-19 shock differed from prior shocks in terms of its magnitude and the fact that all

countries were impacted simultaneously. Despite the fact that all countries were impacted to a similar extent during the pandemic, the recovery of tourism sector has been heterogeneous across nations. Further, the global economy went through an inflationary surge post-COVID-19, leading to a cost-of-living crisis and further challenges to the recovery of international tourism across destinations. These two independent shocks in quick succession have had a severe impact on all countries but some countries have fared better than others. The primary research question that we aim to address is this: what are the factors that make the tourism demand more resilient in some countries compared to others, and whether different kinds of shocks have different implications for the tourism industry. In this thesis, we aim to study the resilience of international tourism at the country level in the years from 2019 to 2023 which includes the impact of both COVID-19 as well as the cost-of-living crisis. The thesis consists of five chapters divided into two parts.

**Part A:** The primary objective of Part A consisting of Chapters 1, 2 and 3 is to analyse the heterogeneous trends in international tourism post-COVID-19 and to understand the factors that affect resilience of the tourism sector across different countries. Resilience is measured in two ways, viz. (i) in terms of the *magnitude of recovery* in key metrics such as tourist arrivals, and (ii) in terms of the *time to recovery* of key metrics to certain benchmark levels.

Chapter 1 of the thesis examines the temporal trends for the decline and recovery of international tourism across nations post-COVID-19. We used data for international tourist arrivals across 14 nations spread over 54 months between January 2018 and June 2022. Two distinct periods emerged. The first was a period of universal decline across 14 nations in 2020, followed by heterogeneous recovery starting from 2021. Based on the recovery in international tourism, we classified the nations into two groups: fast and slow-

growth nations. These trends have been analysed and their nature has been discussed in Chapter 1.

In Chapter 2, we attempt to build causal models to understand the impact of different factors on the decline and eventual recovery in terms of the total *magnitude of tourist arrivals*. We use panel data for tourism arrivals in 14 countries over 54 months spanning the period before, during and after COVID-19. We find that COVID-19 severity and government restrictions on travel both negatively impacted tourist arrivals, with COVID-19 severity having a more significant impact. We built separate models for two sets of countries: nine that experienced fast growth and five that experienced slow-growth. Government restrictions were the sole significant deterrents to recovery in both sets of countries. However, the impact of travel restrictions was larger for slow-growth nations. Finally, for a smaller set of three destination countries, we built models using data for each variable at both the source and destination countries. In addition to the stringency of destination nations, source destination restrictions on travel also affected recovery.

In Chapter 3, we study tourism resilience in terms of “*time to recovery*”. Studies into the resilience of tourism destinations have typically focussed on the magnitude of recovery, not the time to recovery. A longer recovery time may irrevocably change the economic conditions of tourism-dependent destinations. The temporal dimension is considered an essential aspect of resilience, which is the main theoretical contribution of this study. We use survival analysis to understand factors affecting post-COVID recovery time in international tourism. Accelerated failure time models were estimated for the time taken for international tourism to reach 30%, 60%, or 100% of pre-COVID levels across 34 nations. Independent variables include international travel restrictions, COVID-19 severity, and exchange rates. Travel restriction emerged as the only significant variable that increased the recovery time across three recovery levels.

**Part B:** This part looks at resilience of international tourism in a post-COVID-19 world.

The primary objective of Chapter 4 and 5 is to understand the impact of changes in cost-of-living on international tourism demand across different source and destination countries.

In Chapter 4, we examine the impact of an increase in cost of living in a source or destination on the demand for international tourism. COVID-19-induced supply chain imbalances and geopolitical conflicts have increased living costs in many parts of the world. We considered three destination nations, namely Bolivia, Cyprus, and the United States of America, and arrival of tourists from thirty source nations in total across the three destinations. In addition to changes in the cost of living at the source and destination, we included GDP per capita and geographical distance between the source and destination countries. Using annual data for tourism arrivals between different source-destination pairs in the years spanning 2010 to 2023, we build panel models. Contrary to expected trends, we find that the cost of living at a destination is positively related to visitors arriving from source nations. Possible reasons for this apparent anomaly are discussed. The compensatory lagged demand as spill-over from COVID-19 restrictions and the aspirational nature of international travel, with high travel costs impacting decisions more than small changes in inflation at the destination.

In Chapter 5, we look at whether an increase in the cost of living at a given destination affected the demand for different segments of the tourism market, proxied by different categories of accommodation choices. We chose Denmark as the destination and 32 source countries and used annual data from 2007 to 2023. Four types of accommodation were considered: hotels, hostels, travel resorts and camping sites. The key dependent variable was the number of overnight stays by tourists from a given source nation in each category. The key independent variables were the cost of living at the source and

destination. We find that the cost of living at the destination generally increased overnight stays overall which is similar to findings of Chapter 4. However, an increased cost of living in Denmark reduces the demand for overnight stays at hostels, but had no effect on the demand for overnight stays in any other category. Increase in cost of living at the source nation level did not have any impact.

The main findings of the thesis are as follows. First, we find that the decline in international tourism as a result of the COVID-19 pandemic and heterogenous recovery across nations in the post-pandemic era was primarily due to national policy rather than disease severity or vaccination programs. Second, the cost-of-living crisis did not affect demand for international tourism, possibly due to the resurgence of tourism post-COVID-19 pandemic and also because of the aspirational nature of international tourism. However, the cost of living did shift demand for different segments within the hospitality sector, with lower demand among budget traveller segments and no impact on demand for pricier options within the sector.

*“A process cannot be understood by stopping it.*

*Understanding must move with the  
flow of the process, must join it and flow  
with it.”*

*- Frank Herbert, Dune (1965)*

## Acknowledgement

This thesis would not have been possible without the valuable input, guidance, suggestions, and motivation provided to me by my supervisor, Dr. Devlina Chatterjee. I could not have asked for a better advisor to guide me on this journey of learning and discovery.

Thank you to the Department of Management Sciences and the Indian Institute of Technology, Kanpur. The resources, infrastructure, support, and opportunities you provided me made this thesis possible. I want to thank my comprehensive committee members, Dr. Vanamalla, Dr. Shankar Prawesh, and Dr. Kumar Ravi Priya, for their valuable suggestions and input. I would also like to thank Dr Jitender Kumar for his help and suggestions as part of my doctoral monitoring committee.

I would like to thank Dr. Shailendra Mohan Tripathi and the IIT Kanpur Counselling Service for their support. Also, I would like to thank my peers and seniors, including Dr. Mahfuzuar Rahman Barbhuiya, Madhav Sharma, Gaurav Gupta, Aman Pathak, Abhishek Kabra, Sistla Sesha Sai Srinivas, Mohd. Mujahid Khan, Amrita Kulshreshtha, Rahul Verma, Angana Baruah, and Mohd. Kamran Rais Khan, for all your help and encouragement.

To my family, Mummy, Papa, and my younger sister Shubhi, who have always encouraged me. Thank you.

Shakti Chaturvedi

*May 2025*

## Table of contents

Acknowledgement .....	x
List of Figures.....	xii
List of Tables .....	xiii
List of Abbreviations .....	xiv
<b>PART A: IMPACT OF COVID-19 ON INTERNATIONAL TOURISM ACROSS COUNTRIES: EXAMINATION OF TRENDS AND CAUSAL FACTORS AFFECTING MAGNITUDE AND TIME TO RECOVERY.....</b>	<b>1</b>
<b>Introduction to Part-A.....</b>	<b>2</b>
<b>Motivations for research into international tourism post-COVID-19 .....</b>	<b>4</b>
<b>Organisation of Part A .....</b>	<b>5</b>
<b>Chapter 1: Fall and Rise of Tourism in the COVID Era: Analysis of Temporal and Country-level Trends In International Tourist Arrivals During And After the Initial COVID Outbreak.....</b>	<b>6</b>
<b>Chapter 2: An analysis of causal factors behind the decline and rise in international tourism across destination nations post-COVID-19 .....</b>	<b>19</b>
<b>Chapter 3: Getting Back to Normal: Survival Analysis Models for Temporal Resilience of International Tourism Post-COVID-19.....</b>	<b>42</b>
<b>A* - Key Conclusions From Part A .....</b>	<b>63</b>
<b>PART B: IMPACT OF COST-OF-LIVING CRISIS ON INTERNATIONAL TOURISM ACROSS COUNTRIES: DESTINATION DEMAND AND ACCOMMODATION SEGMENTS .....</b>	<b>70</b>
<b>B. Introduction to Part B.....</b>	<b>71</b>
<b>Motivations for this Part .....</b>	<b>73</b>
<b>Organisation of Part B.....</b>	<b>73</b>
<b>Chapter 5: Impact of an increase in the cost of living on demand for overnight stays in different segments of the hospitality sector in a destination .....</b>	<b>91</b>
<b>B* - Key Conclusions From Part B .....</b>	<b>110</b>
<b>References.....</b>	<b>116</b>
<b>Appendix.....</b>	<b>137</b>

## List of Figures

<i>Figure A.1: Trend in annual total international tourist arrivals</i> .....	3
<i>Figure 1.1: Fast-growth nations in the sample</i> .....	14
<i>Figure 1.2: Slow-growth nations in the sample</i> .....	15
<i>Figure 2.1: Methodology for the studies</i> .....	26
<i>Figure 3.1: Resilience process visualised</i> .....	44
<i>Fig 3.2(a) – Initial 30% recovery</i> .....	55
<i>Fig 3.2(b) – Gradual; 60% recovery</i> .....	55
<i>Fig 3.2(c) – Complete; 100% recovery</i> .....	56
<i>Figure A*.1: Inbound travel scenario pre-pandemic</i> .....	66
<i>Figure A*.2: Post-COVID-19 travel scenario</i> .....	67
<i>Figure B.1: Trends in global inflation</i> .....	71
<i>Figure 5.1: Trends in aggregate overnight stays by accommodation type and cost of living in Denmark</i> .....	103
<i>Figure B*.1: Demand Supply Curves during the early years of the cost of living crisis</i> .....	113

## List of Tables

<i>Table 1.1: Decline and rise parameters of sample of countries</i> .....	16
<i>Table 2.1: Variables chosen for source country effect analysis</i> .....	30
<i>Table 2.2: Data summary table</i> .....	32
<i>Table 2.3: Panel modelling results for Phase 1</i> .....	33
<i>Table 2.4: Panel linear modelling results for Phase 2</i> .....	35
<i>Table 2.5: Destinations and source countries chosen</i> .....	36
<i>Table 2.6: Comparison of source destination random effects panel models for Study 2</i> .....	37
<i>Table 2.7: Comparison of destinations</i> .....	38
<i>Table 3.1: Average values of TravCntrl, NCDPM, and Exch of countries</i> .....	54
<i>Table 3.2: Results of Accelerated Failure Time Models Across Three Recovery levels</i> .....	58
<i>Table 4.1: Source nations by destination</i> .....	81
<i>Table 4.2: Description of variables in the study</i> .....	84
<i>Table 4.3: Results of regression analysis from Study 1</i> .....	87
<i>Table 5.1: Details of nations, overnight stays by accommodation type for Denmark in 2023</i> .....	98
<i>Table 5.2: Variable labels</i> .....	100
<i>Table 5.3: Shares by source market in total overnight stays in our sample</i> .....	102
<i>Table 5.4: Results of panel regression analysis</i> .....	105

## List of Abbreviations

ACTYPE – Accommodation Type

AFT – Accelerated Failure Time Models

AIC – Akaike Information Criterion

CAGR - Compound Annual Growth Rate

COVID-19 – Coronavirus Disease 2019

Cox PH – Cox Proportional Hazards

CPI – Consumer Price Index

FTA – Foreign Tourist Arrivals

GDP – Gross Domestic Product

HHI - Herfindahl-Hirschman Index

KM Estimator – Kaplan-Meier Estimator

LOESS - Locally estimated scatterplot smoothing

PMT – Protection Motivation Theory

PPP – Purchasing Power Parity

SARIMA - Seasonal Autoregressive Integrated Moving Average

STL - Seasonal-Trend decomposition using LOESS

UNWTO – United Nations World Tourism Organization (renamed in 2023 to UN Tourism)

WHO – World Health Organization

WTTC – World Travel and Tourism Council

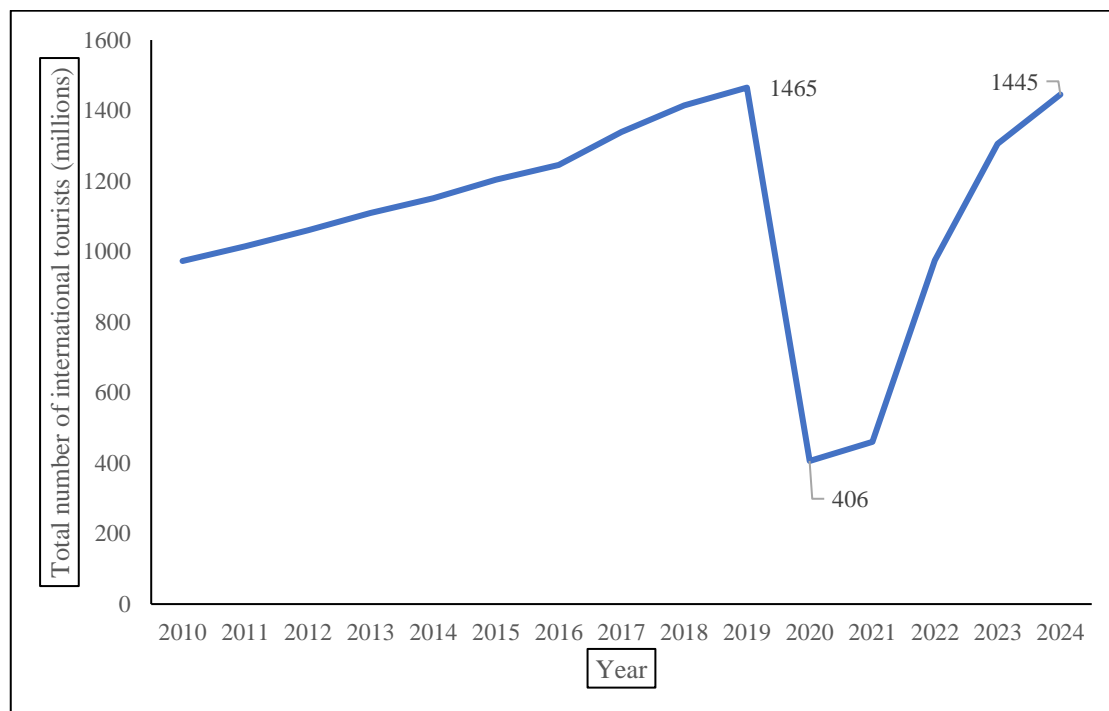
**PART A: IMPACT OF COVID-19 ON INTERNATIONAL TOURISM ACROSS  
COUNTRIES: EXAMINATION OF TRENDS AND CAUSAL FACTORS  
AFFECTING MAGNITUDE AND TIME TO RECOVERY**

### **Introduction to Part-A**

The travel and tourism industry is a major contributor to the global economy. In 2019, according to World Travel and Tourism Council (WTTC) data, tourism and allied industries contributed to around 10.3% of the global GDP, roughly 9 trillion US dollars (WTTC, 2024). The primary reason for the growth of the tourism sector has been the rise in international tourists since 2010. The United Nations Tourism Organization (UN Tourism, 2025) reported that tourism demand constituted 1.46 billion international tourists, which generated tourism receipts of 1.48 trillion US dollars worldwide in 2019, having grown at a CAGR of 4.18% per year from 2010. High receipts and contributions to global GDP were also reflected in the total jobs generated by international tourism and allied industries, which stood at 330 million jobs as per WTTC data in 2019. International tourism has faced multiple crises but has proven resilient in the long run. Past crises include terrorism (Liu & Pratt, 2017), ongoing climate change (Dogru et al., 2016) and natural disasters (Ghaderi et al., 2015). In 2020, the international tourism industry faced the most significant crisis in the 21<sup>st</sup> century. In March 2020, the World Health Organization (WHO) declared the initial outbreak of COVID-19 a pandemic (Cucinotta & Vanelli, 2020). COVID-19 spread rapidly across multiple nations, overloading multiple countries' healthcare systems (Sanyaolu et al., 2021). Given the novel nature of the disease, countries worldwide tried to reduce active cases by containing the spread of the pandemic (Debecker & Modis, 2021). This prompted national governments worldwide to adopt strict non-essential movement restrictions by imposing stay-in-place orders and restrictions on non-essential movement through lockdowns (Chen et al., 2022; Khoirunurrofik et al., 2022) and stopping cross-border travel. According to UN Tourism data, such measures negatively impacted international travel and tourism, with the

number of tourists dropping steeply by 72% between 2019 and 2020. This time series trend is visualised in the graph below.

*Figure A.1: Trend in annual total international tourist arrivals*



*Source: UN Tourism Data Dashboard*

In contrast, the previous steepest decline in international tourists in the 21st century was nearly ~4% between 2008 and 2009. This was caused by the global financial crisis and the H1N1 swine flu pandemic. However, the COVID-19 pandemic differs significantly from prior crises. Unlike the global financial crisis of 2008-09 that impacted certain countries more than others, COVID-19's impact was global and not confined to one area or limited to only certain economies (Jiménez-Guerrero et al., 2021). Further, unlike the H1N1 virus, the SARS-COV-2 virus's extended gestation period made detecting cases and isolating potential carriers difficult (da Costa et al., 2020), resulting in greater uncertainty and more stringent measures adopted by governments worldwide.

This sharp decline in international tourism led to the loss of 62 million jobs and a 62.5% drop in international tourism receipts between 2019 and 2020. The effects of the COVID-19 pandemic still reverberate through international tourism, which, despite vaccination and the development of treatment protocols for COVID-19, had still not reached pre-COVID-19 2019 numbers globally as of the end of calendar year 2024 (UN Tourism, 2025).

### **Motivations for research into international tourism post-COVID-19**

COVID-19, as noted above, is the most significant crisis international tourism faces in the 21<sup>st</sup> century. Understanding trends in international tourism across nations and factors that affect international tourism across nations becomes crucial in order to be better prepared for similar major crises in the future. Another characteristic of COVID-19 were the multiple waves of infections and fatalities as the virus mutated, which led to several periods with varying degrees of travel restrictions across nations. When we look at international travel at a cross-country level, combined with varying periods of closure and opening, we get, in retrospect, a somewhat quasi-experimental setting (Maciejewski, 2020) to study. Different levels of decline and recovery in international tourism have been observed across different nations. Understanding the heterogeneity of temporal trends across countries and identifying the factors that impacted the magnitude of recovery and time to recovery of international tourism are the primary research objectives that motivate this research. These insights will provide national governments and other key tourism stakeholders with actionable policies to ensure minimal impact on the tourism sector in the event of another crisis.

## **Organisation of Part A**

This part contains the first three chapters of the thesis and a concluding chapter examining the overall findings regarding COVID-19 and international tourism.

*Chapter 1: Fall and Rise of Tourism in the COVID Era: Analysis of Temporal and Country-level Trends In International Tourist Arrivals During And After the Initial COVID Outbreak*

*Chapter 2: An analysis of causal factors behind the decline and rise in international tourism across destination nations post-COVID-19*

The first two chapters examine cross-country trends in international tourism demand and empirically look at potential factors responsible for the same.

*Chapter 3: Getting Back to Normal: Survival Analysis Models for Temporal Resilience of International Tourism Post-COVID-19*

The third chapter deals with the temporal resilience of international tourism in terms of time to recovery across nations post-COVID-19

*Part A: Conclusions, Implications and Key Contributions*

We finally conclude Part A of the thesis centred around the COVID-19 pandemic with key conclusions, implications and contributions

## **Chapter 1: Fall and Rise of Tourism in the COVID Era: Analysis of Temporal and Country-level Trends In International Tourist Arrivals During And After the Initial COVID Outbreak**

### ***A.1.1 INTRODUCTION***

The magnitude of COVID-19 as a socioeconomic shock exceeds any other in the 21<sup>st</sup> century. High rates of infection and high fatality rates characterised the initial spread of COVID-19. As COVID-19 was communicable, it spread primarily through travel and exposure. As a result, national governments imposed restrictions on non-essential movement and travel across borders. Such restrictions negatively impacted the tourism industry (Priya et al., 2021; Chen et al., 2022), as discussed and shown in the introduction to this part of the thesis. In the early stages of the pandemic in 2020, the primary goal pursued by governments worldwide was saving lives. However, after 2020, the economic consequences of strict lockdowns on economies and associated livelihoods became a critical concern for countries worldwide. This led to the easing of some travel restrictions.

After the steep drop of 2020, international tourism saw a modest recovery in 2021, reaching 31% of pre-COVID-19 levels. Despite better recovery in 2022 to 66% of pre-pandemic levels, international tourism demand had yet to reach pre-COVID levels, even at the end of 2024 (UN Tourism, 2025). Further, it has been observed that the recovery of tourism demand has not been uniform across all countries and regions (UN Tourism, 2025). For instance, at the end of 2024, Asia and the Pacific regions recovered to 87% of 2019 levels, whereas Europe exceeded its 2019 levels.

The unprecedented shock to the tourism industry and its associated economic implications motivates this study. Also of interest to us was the apparent heterogeneity in recovery across nations regarding international tourist arrivals during the pandemic, as highlighted by multiple news reports (Daily Sabah, 2022; Sulaeman, 2022). Analysis of

international tourist arrivals across nations immediately before and after COVID-19 is a key first step to understanding what happened. Furthermore, identifying any visual or temporal trends can help identify causal factors for further analysis, which can help give vital policy changes to tackle similar future crises. This chapter looks at country-specific international tourism demand trends through the early COVID period in 2020 and thereafter. Using STL decomposition and segmented regression, we analysed time series country-level international tourist arrival data across 14 countries spread over 54 months from January 2018 to June 2022. We see two distinct periods emerge across nations following temporal analysis of the data. In 2020, we observed a universal global decline in international tourism across the chosen sample countries. From 2021, we see a recovery in international tourism happening across chosen countries. However, there is observed heterogeneity in recovery rates within the recovery phase, with some countries recovering faster than others.

The next section reviews some critical literature to provide background to the work. This is then followed by the research question, which motivates the study accomplished in this chapter. Followed by data collection and methodology. Finally, we present results and discuss the implications, limitations, and contributions of this study.

### ***A.1.2 LITERATURE REVIEW AND KEY RESEARCH QUESTION***

We first briefly examine past studies on shocks in tourism.

#### **A.1.2.1 Past shocks in tourism**

International tourism has faced multiple shocks in the past. Such shocks have included natural disasters (Chowdhury et al., 2019; Huang & Min, 2002), terrorism and political instability (Bonham et al., 2006; Wolff & Larsen, 2014), economic crises (Sadi & Bartels, 1998; Cellini & Cuccia, 2015) and disease outbreaks and pandemics (Kuo et al., 2009;

Page et al., 2012). Extant literature on the impact of shocks on tourism includes qualitative (Buultjens et al., 2016) and quantitative studies (Liu & Pratt, 2017; Rosselló et al., 2020). Qualitative research has used case studies such as Sri Lankan tourism post-civil war (Buultjens et al., 2016) or tourism in Bali post-terror attacks (Gurtner, 2016) to analyse the impact and resilience of the tourism industry at primarily a destination level.

Quantitative studies, in comparison, have had three primary objectives. First has been to analyse and describe past trends (Liu & Pratt, 2017); the second has been to forecast future trends and recovery (Danbatta & Varol, 2021); and finally, to understand possible dynamic causal relationships between the trends and other indicator variables (Barbhuiya & Chatterjee, 2020). For example, Liu and Pratt (2017) utilise auto-regressive distributed lag models on panel data to look at the long-term impact of terrorism on inbound tourism. Rosselló et al. (2020) also utilise panel data but on a gravity model to estimate the long-term impact of natural disasters on inbound tourism. Barbhuiya and Chatterjee (2020) used panel data and a random effects panel model to study the impact of natural disasters and internal conflict on tourism in India. Despite multiple shocks faced by international tourism, multiple quantitative studies have found it to be resilient against terrorism (Liu & Pratt, 2017), natural disasters (Ghaderi et al., 2015), and climate change (Dogru et al., 2016) over the long term. This study focuses on quantitative analysis of international tourist arrivals as this is crucial to gauging the resilience of international tourism to the COVID-19 pandemic. The following section looks into studies that have looked into post-COVID-19 tourism and tourism trends.

#### **A.1.2.2 Post-COVID-19 Studies on tourism and tourism trends**

Since 2020, several researchers have attempted to analyse the impact of COVID-19 on international tourism. For instance, qualitative studies such as Quang et al. (2022) looked at the response of Vietnamese tourism industry stakeholders to the pandemic; Isaac and

Abuaita (2021) focused on the impact of the pandemic on the specific location of Bethlehem.

Among quantitative work, studies have focused on identifying trends in specific locations such as Kemi in Finland (Ianioglo et al., 2020), Hong Kong ( Lee & Leung, 2022) and the Koziencie forest district in Poland (Ciesielski et al., 2023). Others have focused on global trend identification using econometric methods. For example, Souza et al. (2021) and Uğur & Akbıyık (2020) found a downward trend in international tourism by comparing the search volume of terms related to tourism before and after the initial COVID-19 shock. Authors have also tried to forecast tourism levels post-COVID-19. You et al. (2024) have tried to forecast tourist flows between Chinese Hong Kong, Japan and South Korea. Bufalo et al. (2024) have tried to forecast seasonally adjusted nights spent in tourist accommodations across Italy.

In the post-COVID era, owing to the varying times at which nations experienced different waves of the pandemic, observed and forecasted inbound tourist numbers have varied. Fotiadis et al. (2021) forecasted a worst-case scenario drop of 75.2% in international tourist arrivals in 2020 over 2019. This matched the actual drop of 72%, as per actual UN Tourism data. Conversely, Danbatta and Varol (2021) predicted a 10.22% increase in foreign tourists visiting Turkey in 2021. However, the actual increase was 94% over 2020 (Ministry of Culture and Tourism, Republic of Türkiye, 2022).

As noted in the introduction of the section, such deviations from forecasts, in addition to heterogeneity in international tourism demand recovery, lead to the key research question which drives this study.

### **A.1.2.3 Key research question**

The key research question motivating this study was

***RQ: “What are the country-specific trends in inbound tourism before and after the COVID-19 shock? Is there heterogeneity in performance across countries?”***

We have used country-level monthly data and two data analysis techniques detailed in the next section to study trends.

## **A.1.3 DATA AND METHODS**

### **A.1.3.1 Data**

The research question aims to understand country-specific recovery trends in tourism demand in the years spanning the pre- and post-COVID-19 shock. The key variable for this analysis was foreign tourist arrivals in a given destination nation measured at monthly intervals. After checking for data availability as of the 15<sup>th</sup> of March 2023 across publicly accessible national data portals, we chose 14 countries for this analysis. These 14 countries are Albania, Australia, Bahamas, Bolivia, Estonia, Indonesia, Malaysia, New Zealand, Singapore, Trinidad and Tobago, Turkey, United Kingdom and the United States of America. The national data portals used for data collection across all of the thesis studies can be found in the appendix to this thesis. These 14 countries combined represented approximately 17.6% of all international tourist arrivals in 2019 (UN Tourism Dashboard,2025). Data on foreign tourist arrivals (FTA) was collected for each of these 14 countries for 54 months from January 2018 to June 2022.

### **A.1.3.2 Methodology for Trend Analysis**

This study has used two methods to analyse trends in FTA across 54 months and 14 countries. The first was the STL decomposition of the time series FTA data. STL

decomposition separates time series data into seasonality, trend, and residual components using Loess smoothing (Bergmeir et al., 2016). It has been utilised as a starting point for tourism behaviour analysis studies, such as Liu et al. (2023). Of the three series generated post-STL decomposition, the main interest was in the trend of FTA at the monthly and national levels. For the STL decomposition of time series data from 14 countries from January 2018 to June 2022, we used the "forecast" package in R.

After STL decomposition, the FTA trends obtained for each country were log-transformed and subjected to segmented regression to identify structural breakpoints within the time series data. As detailed by Muggeo (2017), segmented regression is a piecewise regression technique that allows one to estimate regression models with unknown breakpoints. Within the sphere of tourism literature, segmented regression has been used to analyse the impact of policy, such as the change in the number of tourists flying to Italian regions by Vergori and Arima (2022). It has also been utilised in simulated impacts of climate change on hiking durations by Liu et al. (2021) to determine temperatures and humidity levels above which hiking hours across 100 Chinese cities could reduce. The objective with segmented regression was to find out the breakpoints in terms of international arrivals for each of the 14 countries. Breakpoints in the study denote months from the start of January 2018, when international tourism trends saw an upward movement after the COVID-19 pandemic.

The generalised segmented regression equation was of the type given below

$$\log(FTA_{trend_i}) = \alpha_0 + \alpha_1(\text{Month}) + \varepsilon_0 \quad - (1)$$

where "FTA<sub>trend<sub>i</sub></sub>" denotes the STL decomposed FTA trend data for each nation in the sample. "Month" denotes the month number from the beginning of January 2018. The

next section discusses the study's results, followed by conclusions, discussions and limitations of the present work.

#### ***A.1.4 RESULTS***

We start the discussion of results with summary statistics of the key variable, which is FTA. These are tabulated in the appendix to this thesis as the monthly average number of tourist arrivals and the standard deviation over the 54 months chosen in the study.

Regarding FTA, the three most significant countries were the US, Turkey, and the UK, all of whom were ranked in the top 10 in the UN Tourism rankings for 2019 (UN Tourism, 2021). Conversely, the smallest three destinations in terms of FTA are Trinidad and Tobago, Seychelles, and Bolivia. Another key point to note is the relatively high values of standard deviations in terms of monthly arrivals, which also points towards the volatility caused by the COVID-19 pandemic in cross-country international tourism. We will first discuss visual trends we identified using STL decomposition.

##### **A.1.4.1 Visual Trends in FTA at the national level before and after COVID-19**

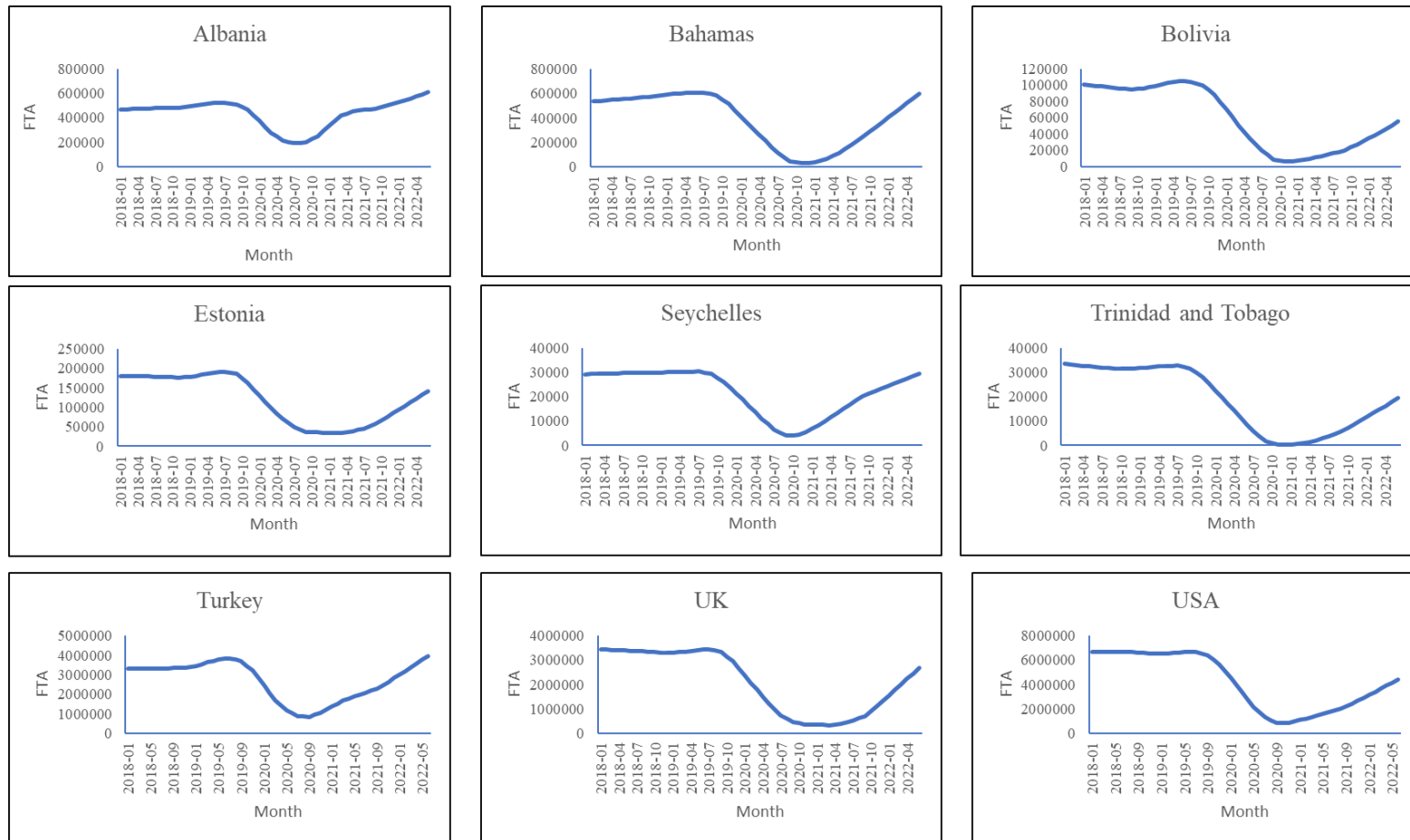
For the graphs in the figures, the y-axis represents decomposed FTA trend data, and the x-axis represents month and year. One pattern common to all the 14 nations of chosen sample of countries was a steep decline in the FTA trend in 2020. However, after 2020, visual heterogeneity has been noticed across nations.

Two visible patterns of nations emerge from the country-wise trendlines from 2021 onwards. The first was a group of nine nations, shown in Figure 1, whose STL decomposed trend lines were U- or V-shaped. These nine nations were Albania, Bahamas, Bolivia, Estonia, Seychelles, Trinidad and Tobago, Turkey, the United Kingdom, and the United States of America. The shapes suggest an earlier recovery, so we have classified

the above nine countries as having relative "fast growth" regarding recovery in FTA after COVID-19.

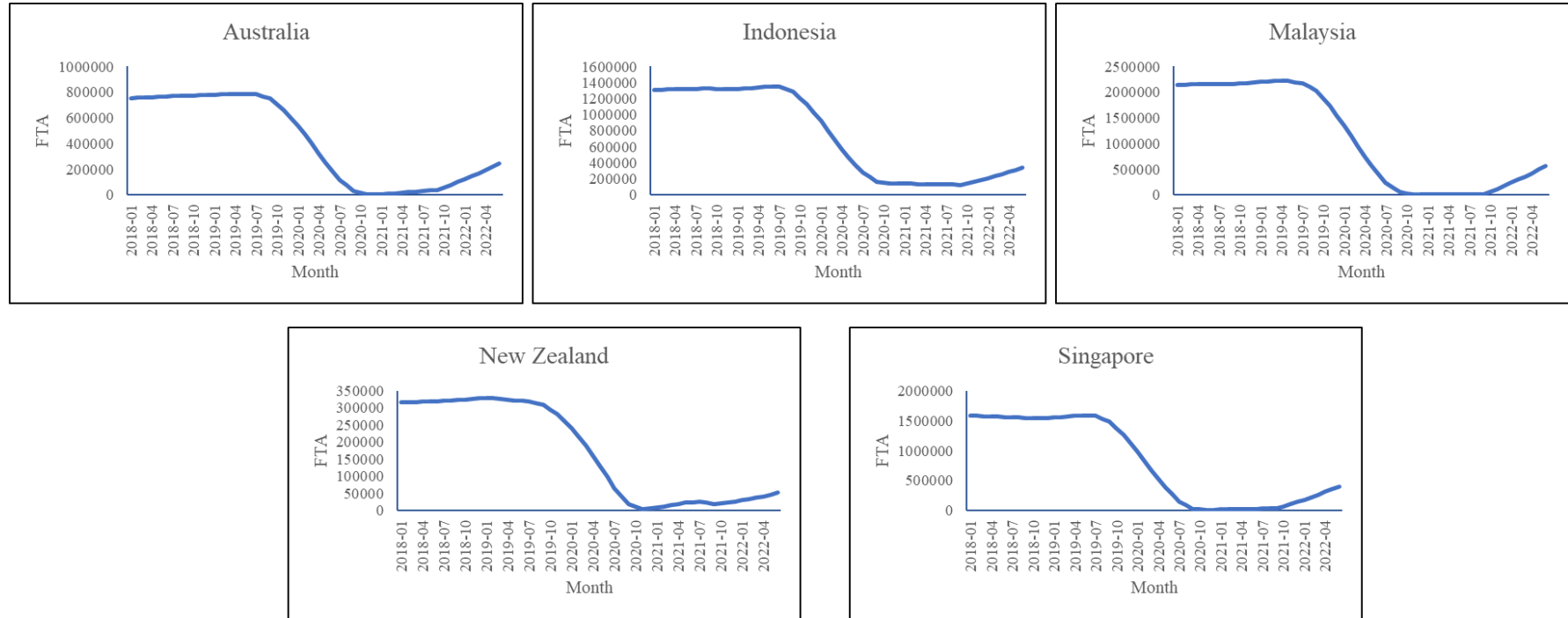
The second with the remaining five countries, namely Australia, Indonesia, Malaysia, New Zealand, and Singapore, is a visible L-shaped or flat trend, which points to a relatively later regrowth among the above five nations. We have categorised the nations whose decomposed time series trends are shown in Figure 2 as "slow growth" regarding recovery in FTA after COVID-19 compared to the earlier group of nine nations. The STL decomposed trend lines for all 14 nations are on the following two pages, labelled Fig. 1 and 2.

Figure 1.1: Fast-growth nations in the sample



Source: Authors

Figure 1.2: Slow-growth nations in the sample



Source: Authors

### A.1.4.2 Segmented Regression in FTA Trends at the national level before and after COVID

To further validate the visual findings we conducted segmented regression for the log of FTA vs. months. The segmented regression helped us determine each country's breakpoints and the slopes of tourist arrivals vs. time for the decline phase in 2020 and the subsequent rise phases from 2021 onwards. The details can be found in Table 1.1 below.

*Table 1.1: Decline and rise parameters of the sample of countries*

Country	Slope Decline Phase (log FTA) %	Breakpoint Month	Slope Growth Phase (log FTA) %	Average H1 2019 STL Trend FTA	Average H1 2022 STL Trend FTA	Recovery % (FTA H1 2022/FTA H1 2019)	Country growth type
Albania	-2.53	Sep-20	4.36	509870	567276	111.30%	Fast Growth
Turkey	-4.05	Nov-20	6.23	3652771	3483911	95.40%	
Seychelles	-5.2	Dec-20	8.54	30143	26990	89.50%	
Bahamas	-7.395	Feb-21	14.38	600185	500331	83.40%	
Estonia	-5.12	May-21	10.63	184620	117928	63.90%	
UK	-6.78	May-21	15.73	3357996	2115778	63.00%	
USA	-5.98	Feb-21	8.11	6591035	3769752	57.20%	
Trinidad and Tobago	-10.68	Mar-21	18.22	32306	15518	48.00%	
Bolivia	-7.39	Apr-21	11.71	102779	44706	43.50%	
Australia	-12.195	May-21	20.01	784266	182033	23.20%	Slow growth
Indonesia	-6.95	Sep-21	10.96	1333659	273273	20.50%	
Singapore	-12.81	Jul-21	25.93	1572155	289389	18.40%	
Malaysia	-14.76	Jul-21	35.96	2211306	394285	17.80%	
New Zealand	-9.31	Jun-21	7.24	325224	40216	12.40%	

*Source: Authors*

Fast-growth nations are present in the top half of Table 1.2, with slow-growth nations in the bottom half. An observation of breakpoint months confirms the STL classification and shows that fast-growth nations generally started their FTA recovery much earlier. This would also explain why their recovery percentages are higher than those of the slow-growth panel within the study period. Additionally, slow-growth nations started their recovery much later. For instance, the earliest to bounce back among slow-growth nations is Australia, whose recovery in terms of FTA starts a month later than Bolivia, which happens to be the slowest of the fast-growth countries. However, a look at the slopes reveals that while slow-growth nations have started recovering late, their slopes in the growth phase are larger than those of fast-growth nations, pointing to a potentially quicker recovery.

#### **A.1.5 DISCUSSION OF RESULTS AND CONTRIBUTIONS OF THE STUDY**

The primary motivation for this study was to understand trends in international travel across countries in the wake of COVID-19. To understand these trends, we took monthly international tourist arrivals for 14 countries from January 2018 to June 2022. This data was then subject to two different analyses.

The first was to understand trends in international tourist arrivals across nations visually. For this, we used STL decomposition. STL decomposition of temporal FTA data across 14 countries over the study period indicates two distinct phases. The first phase was a universal decline in tourism for all countries until the end of 2020. This sharply contrasted with the previous major crisis of 2008-09, where inbound tourism declined in a few nations, such as the United States of America (Trade.gov, USA, 2023), but increased in others, such as Bolivia (Instituto Nacional de Estadística, Bolivia, 2023). Post-2020, there was a phase of recovery. In the recovery phase, we identified two different groups of countries with different recovery rates in tourism demand. Of these, the first was a group

of 9 countries, including Albania, Bahamas, Bolivia, Estonia, Seychelles, Trinidad and Tobago, Turkey, the United Kingdom, and the United States. We have labelled them as "fast growth." The remaining 5 were Australia, Indonesia, Malaysia, New Zealand, and Singapore, which did not show significant recovery, which we labelled "slow growth".

Following the first set of results, the second part of the analysis was to validate the visual findings by establishing breakpoints across nations. Segmented regression on FTA data further revealed that fast-growth nations started recovering earlier than slow-growth nations. As a result, when comparing the average decomposed FTA trends from January 2019 to June 2022. We see fast-growth nations have done better. Bolivia, which showed the least recovery in fast growth nations at 43%, is still almost double Australia's 23% recovery. These findings point to the need to identify factors which may have contributed to heterogeneity in recovery.

This study's main contribution is finding and validating through trend and econometric time series analysis the evidence of a universal decline followed by a heterogeneous recovery in FTA across nations due to COVID-19.

#### ***A.1.6 LIMITATIONS OF STUDY***

The scope of this study was to identify and confirm trends. As a result, we have not been able to establish any causal factors that caused heterogeneity in the recovery of FTA across nations, which we have looked at in the next chapter.

## **Chapter 2: An analysis of causal factors behind the decline and rise in international tourism across destination nations post-COVID-19**

### ***A.2.1 INTRODUCTION***

In the previous chapter, we tried to understand what happened to cross-country international tourism demand across 14 nations due to the pandemic. The general pattern was a decline across all the chosen sample of nations in 2020, followed by heterogeneous recovery with two broad groups of nations being observed. Of the 14 nations we chose (Albania, Australia, Bahamas, Bolivia, Indonesia, Singapore, New Zealand, Malaysia, United States of America, United Kingdom, Turkey, Trinidad and Tobago, Estonia and Seychelles), nine were characterised by fast growth and five by slow growth during recovery phase. This chapter and study try to determine factors which may have caused these trends with a panel regression analysis.

While the decision to save lives was justified during the initial outbreak of the pandemic, the decline in tourism had a severe economic impact as it went on. This was reflected in the loss of roughly 61 million jobs in tourism and travel globally between 2019 and 2020 due to a decline in tourism (WTTC,2024). The primary research objective was to understand the causes of the decline in tourism in 2020. The secondary research question was related to heterogeneous recovery from 2021. We focused on the factors affecting recovery rates across both groups of nations we had discovered in Chapter 1. The tertiary objective was to understand whether the characteristics of a source country impacted tourism levels in a given destination country when we consider specific pairs of source and destination countries.

For the primary objective, we conducted a panel regression analysis with FTA at the monthly level as a key dependent variable. For 2020, the year of global decline, we built a singular panel model composed of all 14 nations. Based on protection motivation theory

(Rogers, 1975), we chose COVID-19 severity as proxied by the average of new COVID-19 deaths per million population in a destination country as an independent variable and the monthly averaged value of government stringency in a destination country. For the secondary objective, since we had two distinct groups of nations, we created different panel models for each of the two groups (fast growth and slow growth) using data from January 2021 to June 2022. The variables were the same as those for the first objective but with the addition of vaccination rates in a destination nation.

To examine whether source nation factors also affected inbound tourism to a destination formed the study's tertiary objective. We chose three destinations: Malaysia, the United States of America, and the Maldives. We created source and destination pairs for each and built panel models for each. Across all three studies in this chapter, we found that in 2020, the decline in tourism was prompted mainly by COVID-19 severity at destinations; however, post-2020, government stringency negatively impacted tourism recovery, with slow-growth nations being hit harder by restrictions. Government restrictions played a role at both the destination and source level in limiting potential tourists between nations. The rest of this chapter is organised as follows. First, we provide a background of the literature on factors affecting tourism post-COVID-19 and dive into chosen independent variables. Methodology, results, and a discussion of results will follow thereafter.

## ***A.2.2 LITERATURE REVIEW AND RESEARCH QUESTIONS***

### **A.2.2.1 Travel Intention post COVID-19 Theory and evidence**

Post-COVID-19, a tourist who wished to undertake international travel had to evaluate the risks and rewards associated with doing so. Risks in the case of travelling under COVID-19 included infection and fatality risk. For example, Kock et al. (2020) noted that perceived infectability to COVID-19 negatively impacted feelings towards crowds in 2020. Sánchez-Cañizares et al. (2021) noted that the perceived risk of COVID

negatively impacted both perceived behavioural control and attitude towards travelling in 2020.

Observed travel avoidance can partly be explained by the protection motivation theory (PMT) (Rogers,1975). PMT, which looks at human responses to fear appeals. It posits that threat appraisal and coping appraisal together determine the protection motivation of an individual. An appraisal of any threat comprises the severity and expected exposure to a threat. Conversely, coping appraisal stems from a belief in the efficacy of a coping response to a threat. Coping appraisal was challenged during the initial phase of the pandemic due to its novelty. Even before COVID-19, work utilising PMT had shown overcrowding to be an issue with holiday travellers in China (Lu & Wei, 2019), as it had the potential to reduce perceived leisure. In the case of Australian travellers going overseas to Southeast Asian destinations, Wang et al. (2019) found threat and coping appraisals to affect protection intentions, such as taking vaccines against rabies.

Post-COVID-19, the PMT has been used by Zheng et al.(2021), who found that pandemic travel fear was positively related to travel avoidance as a coping intention. Similarly, Qiao et al. (2022) found that for international flyers from South Korea to China in 2020, the perception of COVID-19 severity affected protection motivation among flyers, including the possibility of not travelling to China. Thus, the factor of perceived severity of COVID-19 in a destination becomes the first dependent variable chosen. As we use secondary data, we have included new COVID-19 deaths per million in a destination nation as a proxy for COVID-19 risk in a destination as a key independent variable. During COVID-19, national governments often were the sole policy makers regarding non-essential movement, so we examine their role.

#### **A.2.2.2 Role of governments in tourism and COVID-19 stringency**

Governments are key stakeholders in the tourism industry (Sautter & Leisen, 1999). This has been examined across multiple studies. Li and Dewar (2003) noted that the government tourism policy in Beihai, China, was a crucial determinant of tourist supply. Seetanah et al. (2010) noted that South Africa's open borders promoted inbound tourism. Detotto et al. (2021) highlighted that destination image and safety were dependent on the perception of the government's role. Yang et al. (2022) observed the significant role of good governance in the recovery of a destination following a natural disaster.

When the first COVID outbreak occurred in 2020, no effective treatment protocols or vaccines were available. The final decision-making power regarding non-essential travel fell solely on national governments. Governments across the world implemented restrictions to contain the spread of COVID-19, which included but were not limited to orders to stay in place, mandatory quarantines, a ban on non-essential travel, the grounding of trains and aeroplanes, and complete lockdowns (Khoirunurrofik et al., 2022). Such stringent measures negatively impacted tourism and allied industries. For example, in their study on Airbnb property pricing across 27 European countries between 2019 and 2020, Milone et al. (2023) found that increased government stringency led to declining demand and prices for Airbnb properties. The duration of stringent measures and travel restrictions also varied by country. New Zealand, for example, required potential travellers to undergo pre-departure testing as late as February 2022 (Bhamidapati, 2022). Maldives, on the other hand, opened up in 2020 itself (Visit Maldives, 2022). For these reasons, government stringency is one of the key independent variables. After 2021, vaccination against COVID-19 began across several nations (Our World in Data, 2024). As vaccinations can reduce the perception of risk for both tourists and national governments, their role is examined next.

### **A.2.2.3 Vaccination and COVID-19**

The rise in international tourists from 2021 coincides with the deployment of COVID-19 vaccines across nations. Anti-COVID vaccines have proven to reduce the adverse effects of COVID-19 (Shah et al., 2021; Eyre et al., 2022). Nations began authorisation and mass vaccination against COVID-19 in late 2020 (CNN, 2020). Within tourism, multiple authors have tried to examine the link between COVID-19 vaccination and travel intention. Ram et al. (2021) conducted a three-wave cross-sectional study on a potential vaccination effect on domestic tourism in Israel across June 2020, November 2020, and April 2021. They found that the main factor supporting travel was tourists' internal desire to travel, not vaccination. Conversely, using survey data from Spanish respondents, Boto-García and Pino (2022) found that those vaccinated against COVID-19 were more likely to go on vacation.

Additionally, as Hossain et al. (2022) noticed in Bangladesh, vaccinated people did not have issues with crowded locations. Hence, to better understand the effects vaccination could have on inbound tourism, we have taken the vaccinated population in the destination country as another critical, independent variable. Next, we list the research questions for this study.

### ***A.2.3 Research Questions***

This study was motivated by three research questions; the first two are related to factors affecting the decline and rise in international tourism post-COVID-19. The third relates to finding whether source nation factors impacted travel to a destination during COVID-19. These are listed on the next page.

***RQ1: In 2020, what factors caused the decline in tourism demand?***

***RQ2: In 2021, after the commencement of mass vaccination drives, what factors affected the recovery of inbound tourism demand? Did these factors differ across fast and slow-growth nations?***

***RQ3: In addition to the characteristics of the destination nation, did the characteristics of the source country impact inbound tourism demand for a particular destination nation?***

#### ***A.2.4 DATA AND METHODS***

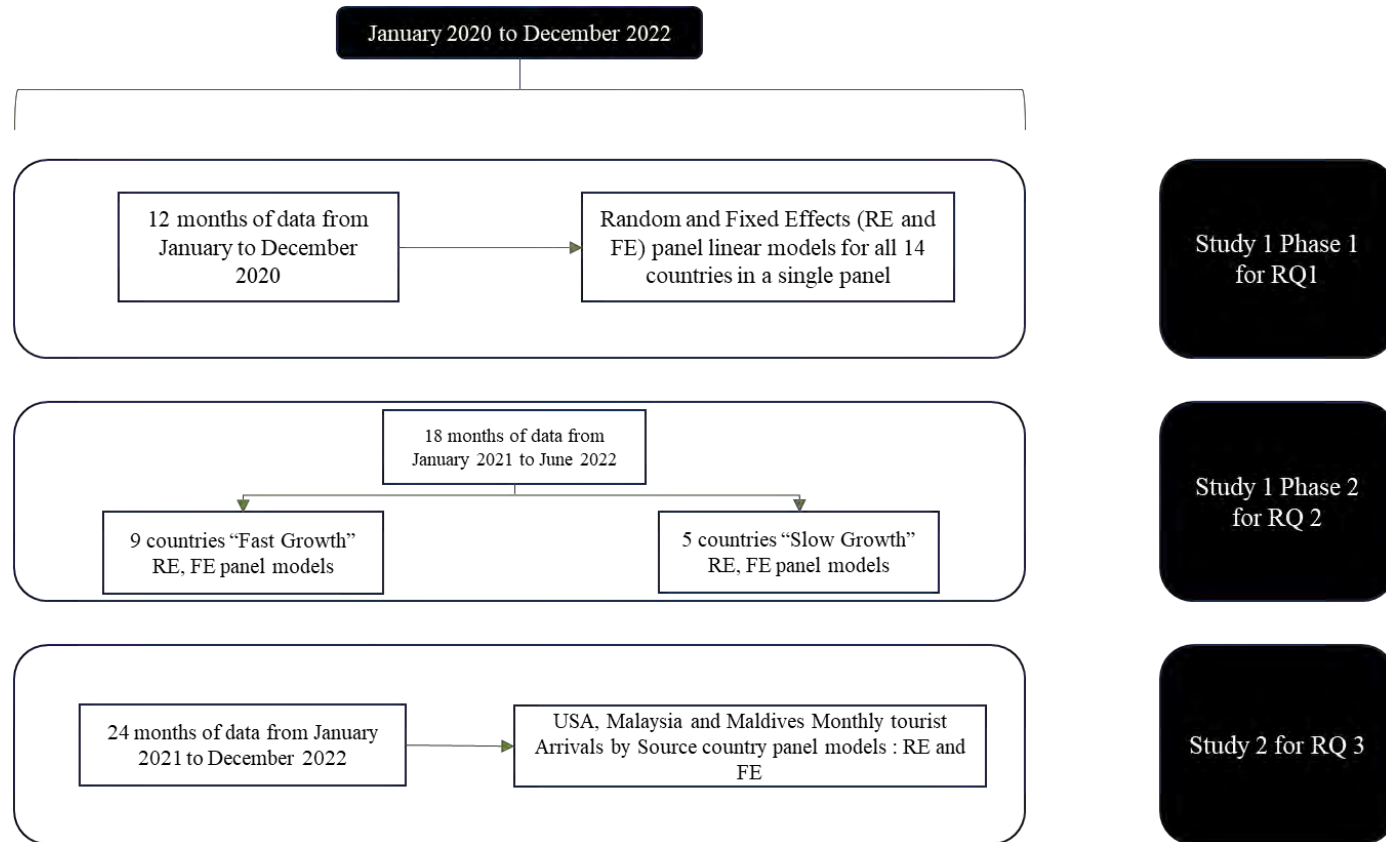
##### ***A.2.4.1 Data***

This study continues the work done in Chapter 1. Hence, we have used the same 14 nations for whom we collected data on international tourism demand from publicly accessible national data portals for this study's first two research questions. We used data from the COVID-19 data explorer on the portal "Our World in Data" (Our World in Data, 2024) for the independent variables of disease severity, government stringency, and vaccination levels. The stringency index is based on Hale et al. (2021), which used nine items on ordinal scales to measure the extent of stringent measures national governments took during COVID-19 from 2020 to 2022. Time-series data was collected for each variable monthly for 54 months from January 2018 to June 2022 for each of the 14 countries. Additionally, to understand if any factor from source nations impacted tourism post-vaccination. From their national data portals, we took inbound tourism from multiple source countries for Malaysia, the USA, and the Maldives for 24 months between January 2021 and December 2022.

#### **A.2.4.2 Methodology**

Figure 1 on the following page provides a schematic description of the methodology used for the three studies as per the research questions. A detailed description of each can be found in the next section.

Figure 2.1: Methodology for the studies



Source: Authors

#### *A.2.4.3.1 Study 1 Phase 1: Factors that affected the decline of tourism demand in the year 2020*

We built a dynamic causal model with monthly panel data from January 2020 to December 2020 to determine the effect of two key independent variables on international tourist arrivals. These two variables were (i) stringency index (STR) and (ii) new deaths due to COVID-19 per million (NDM). Anti-COVID-19 vaccinations in 2020 had only started across a few nations and thus have been dropped for this phase. The panel thus, comprised all 14 countries, as they all witnessed a decline in tourist arrivals in 2020.

All the data series for this study were subject to the Im, Pesaran, and Shin (2003) unit root test for stationarity using the “plm” package in R (results provided in the appendix). If the initial data series was not stationary, we checked the first difference of the data series. If the first difference was non-stationarity, we took the log of the first difference of the data series. For phase 1, the first difference of all data series was stationary. We then fit random and fixed effects models following Okafor and Yan (2022). A Hausman test was conducted to choose the appropriate model given the data. The Hausman test indicated that the random effects specification better approximates the data for phase 1. Hence, the generalised panel linear model was as specified below

$$\Delta FTA_{it} = \alpha_0 + \alpha_1(\Delta NDM_{it}) + \alpha_2(\Delta STR_{it}) + \varepsilon_0 \quad (1)$$

Where  $\Delta FTA_{it}$  denoted a change in tourist arrivals over the previous month in country  $i$  at month  $t$  over month  $t-1$ ,  $\Delta NDM_{it}$  and  $\Delta STR_{it}$  denoted the same for new deaths per million due to COVID-19 and government stringency, respectively.  $\alpha_1$ ,  $\alpha_2$  denote coefficients,  $\alpha_0$  the intercept in case of a random effects model and  $\varepsilon_0$  the error term. Panel linear modelling was done using the "plm" package in R.

#### ***A.2.4.3.2 Study 1 Phase 2: Factors that affected tourism recovery across slow and fast growth nations***

To investigate the second research question, we added a variable that indicated the level of vaccination coverage in a country in addition to new COVID-19 deaths per million and government stringency. The data selected ranged from January 2021 to June 2022 to maintain consistency across the chosen 14 countries. Before modelling, the analysis, such as unit root tests, was the same as in phase 1. We divided the 14 countries into two specific groups: one was that of fast-growth nations and another that of slow-growth nations. This was done because we assumed the factors affecting recovery may differ across these two groups. The first difference in log values of all the dependent and independent variables was found to be stationary across the two panels.

Additionally, the Hausman test found the random effects model to be a better estimator for both the fast and slow recovery panels. The results for the unit root tests and the Hausman test for phase 2 can be found in the appendix to this thesis. The linear panel models for both panels of fast and slow-growth nations were of the general form-

$$\Delta \log (FTA_{it}) = \beta_0 + \beta_1 \Delta \log (NDM_{it}) + \beta_2 \Delta \log (STR_{it}) + \beta_3 \Delta \log (VAX_{it}) + \phi_0 - (2)$$

Where  $\Delta \log (FTA_{it})$  denotes a change in logarithmic values of FTA for a country  $i$  in a given month  $t$  over  $t-1$ ,  $\Delta \log (NDM_{it})$ ,  $\Delta \log (STR_{it})$ , and  $\Delta \log (VAX_{it})$  denote the same for new deaths, stringency, and vaccination levels, respectively.  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  denote coefficients,  $\phi_0$  the error term, and  $\beta_0$  the intercept term in the case of the random effects model.

#### ***A.2.4.3.3 Study 2: Potential Source Factors Affecting Tourism across slow and fast growth destinations***

Results from both phases of Study 1 indicated that government stringency was a critical factor for inbound tourism to a destination. We wanted to expand upon this by looking at source country and destination pairs and understanding whether any source factors affected international tourism to a destination post-2020. For this, the USA and Malaysia were chosen as destination countries from the fast and slow growth panels, respectively. 13 source nations were chosen for the USA and 8 for Malaysia based on data availability. To control for any destination stringency post-vaccination, we chose the Maldives as the third country, which had minimal restrictions on international travel and was open to all travellers from July 15th 2020 (Visit Maldives, 2022). For the Maldives, we chose ten countries as sources. Data was taken at a monthly level similar to phase 2 of study 1, with data from 24 months between Jan 2021 and December 2022 taken for the study to account for potential effects of vaccination. The variables chosen are given in the table below (Table 2.1), and the source nations chosen for each destination can be found in Table 2.5 under the results section.

Table 2.1: Variables chosen for source country effect analysis

Serial Number	Variable Label	Variable Description	Source	Data Period
1	OTTD <sub>ibt</sub>	Outbound Tourists To Destination 'b' at the end of the month 't' from source country 'i'	Country Govt Portals	24 months From January 2021 to December 2022
2	NDMSrc <sub>it</sub>	New COVID Deaths per Million monthly averaged at the end of the month 't' from source country 'i'	OWID Portal	
3	NDMDest <sub>bt</sub>	New COVID Deaths Per Million at destination 'b' monthly averaged at the end of the month 't'	OWID Portal	
4	StrSrc <sub>it</sub>	Stringency of source country 'i' averaged monthly at the end of the month 't'	OWID Portal	
5	StrDest <sub>bt</sub>	Stringency of destination b averaged monthly at the end of the month t	OWID Portal	
6	VaxSrc <sub>it</sub>	Fully Vaccinated population in source country i at the end of a month t	OWID Portal	
7	VaxDest <sub>bt</sub>	Fully vaccinated population in destination country b at the end of the month t	OWID Portal	
8	Exchange <sub>ibt</sub>	Average currency exchange rate between source i and destination b in month t	Exchange Rates.org, OPX.com, Fx Rate.net	

Source: Authors

The general panel linear models were of the form.

$$\begin{aligned} \Delta \log (OTTD_{ibt}) = & \beta_0 + \beta_1 \Delta \log (NDMSrc_{it}) + \beta_2 \Delta \log (NDMDest_{bt}) + \beta_3 \Delta \log (StrSrc_{it}) + \\ & \beta_4 \Delta \log (StrDest_{bt}) + \beta_5 \Delta \log (VaxSrc_{it}) + \beta_6 \Delta \log (VaxDest_{bt}) + \\ & \beta_7 \Delta \log (Exchange_{ibt}) + \phi_0 \end{aligned} \quad -(3)$$

We built separate panel linear models for the Maldives, Malaysia, and the USA, following the same method as Study 1 with OTTD<sub>ibt</sub> as the dependent variable. We found the log of the first difference of all variables to be stationary across all three destinations.

Additionally, the Hausman test found the random effects model to be a better estimator for the selected data across all three destinations. We now discuss the results of the three studies.

### **A.2.5 RESULTS**

We present the descriptive statistics for the four main variables: Foreign Tourist Arrivals (FTA), New COVID-19 Deaths Per Million (NDM), Government Stringency Index (STR), and cumulative month-ending fully vaccinated population in a destination (VAX). Summary statistics for these variables are tabulated on the next page.

Table 2.2: Data summary table

Country	FTA <sup>(a)</sup>		NDM <sup>(b)</sup>		STR <sup>(b)</sup>		Population Vaccinated June 2022 <sup>(c)</sup>
	Period Average	Standard Deviation	Period Average	Standard Deviation	Period Average	Standard Deviation	
Albania	416219	354114	1.36	1.51	47.93	20.64	1248781
Australia	404615	372336	0.45	0.73	51.63	17.68	21647523
Bahamas	382856	257012	2.21	2.795	59.84	19.51	157964
Bolivia	58121	45480	1.97	2.07	45.68	28.65	6022786
Estonia	114729	81215	2.16	2.39	36.26	16.21	842526
Indonesia	720303	581130	0.62	1.07	59.51	15.13	168544951
Malaysia	1083940	1037195	1.15	2.19	56.84	21.43	27305486
New Zealand	170639	166742	0.3	0.77	39.53	22.86	4113624
Seychelles	21461	11504	1.72	2.52	52.46	23.72	80726
Singapore	781486	749063	0.28	0.53	48.2	13.16	5074890
Trinidad and Tobago	18508	14937	2.86	3.91	60.38	22.96	714047
Turkey	2562190	1698521	1.28	1.06	49.04	23.21	53088281
UK	2025809	1421442	2.94	3.72	50.45	24.28	50189173
USA	4096894	2571450	3.29	2.42	52.6	19.02	223413198
OVERALL	918411.97	1519828.9	1.61	2.4	50.74	21.77	

Note: (a) Data collected and averaged over 54 months from Jan 2018 to Jun 2022

(b) Data collected and averaged over 30 months between Jan 2020 to Jun 2022

(c) Data collected over 18 months from Jan 2021 to Jun 2022

The countries where COVID-19 was most severe, measured by new COVID-19 monthly deaths per million, were the USA, UK, and Trinidad and Tobago. The lowest severity was recorded across Singapore, Australia, and New Zealand. Trinidad and Tobago, the Bahamas, and Indonesia adopted the most stringent government measures per Hale et al.'s 2021 stringency index. The top three destinations in terms of FTA are the US, UK, and Turkey.

### ***A.2.5.1 Study 1 Phase 1: Causal models for decline in tourism in 2020***

To compare the coefficients better, we normalised NDM and STR, represented in the results by  $NDM\_Norm_{it}$  and  $STR\_Norm_{it}$ . These were substituted in place of independent variables in Equation 2. Details of unit root tests can be found in the Appendix Section. Using the Hausman test, the random effect model was the better fit.

The results for the random effects model for the same are given below:

*Table 2.3: Panel modelling results for Phase 1*

Item	Random Effects Model Coefficients for Study 2	P- values
Intercept	-53705#	< 0.06
$\Delta NDM\_Norm_{it}$	-908830***	< 0.001
$\Delta STR\_Norm_{it}$	-668695***	< 0.001
Adjusted R squared	0.22	
Chi-Squared	45.06	
p-value of statistic	0.000000000164	

*Note: Significance codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '#' 0.1, NA – Not Applicable*

As we can see, both NDM and STR negatively hit the change in tourist arrival across all 14 nations in our panel in 2020. However, if we compare effect sizes controlled by normalisation, NDM has a greater effect size than STR. Thus, change in NDM had more negative impact on change in FTA compared to STR in 2020.

### **A.2.5.2 Study 1 Phase 2: Causal models for recovery of countries by growth rate after 2021**

As noted by results in Chapter 1, foreign tourist arrivals started seeing an upward trend post-2020. The recovery rates differed across the 14 countries, with nine countries

experiencing faster growth and five lagging, which shows heterogeneity. We labelled the two groups as fast growth, comprising nine countries, and slow growth, comprising five countries. We created two panel linear models, one for the fast growth group and another for the slow growth group, using data for 18 months, from January 2021 to June 2022.

2021 saw the start of mass vaccination campaigns across nations worldwide. In addition to the variables in Phase 1, we included data on the fully vaccinated population in a country (VAX) to account for vaccination. For both slow and fast growth panels, the log of the first difference in all variables, i.e., FTA, NDM, STR, and VAX, was stationary. Hence, they have been taken for both the random and fixed effects panel linear models of the form described by Equation 3. The Hausman test across both panel models finds random effects models to be a better estimate. The results of panel regression across both panels are tabulated on the next page.

Table 2.4: Panel linear modelling results for Phase 2

Item	Fast Growth Panel Random Effects Model	Slow Growth Panel Random Effects Model
Intercept	0.12*** ( < -0.0006)	0.11# ( < -0.08)
$\Delta(\log(\text{NDM}))_{it}$	0.0006 (-0.44)	-0.0004 (-0.62)
$\Delta(\log(\text{STR}))_{it}$	-0.61*** ( < -0.001)	-1.55*** ( < -0.001)
$\Delta(\log(\text{VAX}))_{it}$	-0.0006 (-0.27)	0.000095 (-0.93)
Adjusted R squared	0.07	0.24
Chi-Squared	13.79	30.03
p-value	0.004	< 0.001

Note: Significance codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '#' 0.1

in brackets p values, NA – Not Applicable

For the fast growth panel, we find that only a positive per cent change in stringency significantly negatively affects the per cent change in tourist arrivals. The results for the slow-growth panel are similar to those for the fast-growth panel. However, stringency is found to have a larger negative effect size in the slow-growth panel than in the fast-growth panel.

Despite similar-looking results, the adjusted R-squares reveal a significant difference in Study 1 Phase 2. The adjusted r-squares are above 20% for slow growth compared to 6.6% for fast-growth countries. Indicating that stringency had greater explanatory power as an inhibiting factor for tourism growth. Curiously enough, the level of vaccination or change in the same at a destination does not turn out to be significant.

***A.2.5.3 Study 2: Destination factors affecting outbound travel to a destination after 2021***

Using the Hausman test across all three destinations, we found the random effects model to be the better fit. Hence, the panel models were of the form described in Equation 4. We now describe the final results of the panel regressions for the three destinations. For Malaysia, we found that the variable Exchange rate caused data singularity issues; hence, it was dropped from the analysis for the Malaysian panel. The details of the destination and source nations, along with the average cumulative percentage share of source nations in total arrivals, are given in Table 2.5. Table 2.6 provides the results of the random effects panel regression model for the three destinations we have chosen in this study.

*Table 2.5: Destinations and source countries chosen*

Destination	Source Nations Chosen For Analysis	Cumulative average % of monthly total Inbound tourism to by source nations between Jan 2021 to December 2022
USA	Canada, Colombia, India, Mexico, UK, Argentina, Brazil, France, Germany, Italy, Peru, South Korea, Spain	77.58%
Malaysia	Thailand, Indonesia, Singapore, Philippines, India, Japan, South Korea, Australia	76.89%
Maldives	Thailand, Indonesia, Singapore, Philippines, India, Japan, South Korea, Australia, USA, UK	36.20%

*Source: Authors*

Table 2.6: Comparison of source destination random effects panel models for Study 2

Item	Malaysia Random Effects Model		USA Random Effects Model		Maldives Random Effects Model	
	Coefficien t	p-value	Coefficien t	p- value	Coefficien t	p- value
Intercept	0.007	-0.89	0.045#	0.08	0.03	0.49
$\Delta(\log(\text{NDMSrc}_{it}))$	-0.0002	-0.88	NA	NA	0.002	0.25
$\Delta(\log(\text{NDMDest}_{bt}))$	-0.11	-0.11	-0.1566**	0.003	-0.0003	0.19
$\Delta(\log(\text{StrSrc}_{it}))$	-0.61**	-0.009	-0.2140*	0.03	-0.81***	5.42e-09
$\Delta(\log(\text{StrDest}_{bt}))$	-2.22***	< 2.22e-16	-0.3705	0.10	NA	NA
$\Delta(\log(\text{VaxSrc}_{it}))$	-0.0002	-0.84	-0.00068	0.30	0.0004	0.55
$\Delta(\log(\text{VaxDest}_{bt}))$	0.0005	-0.59	NA	NA	-0.0005	0.37
$\Delta(\log(\text{Exchange}_{ibt}))$	NA	NA	-0.39	0.52	-1.28	0.14
Adjusted R-squared	0.76		0.33		0.24	
Chi-squared	584.26 on 6 degrees of freedom		108.61 on 5 degrees of freedom		91.49 on 6 degrees of freedom	
P-value	Less than 2.22e-16		Less than 2.22e-16		Less than 2.22e-16	

Note: Significance codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '#' 0.1 NA – Not Applicable

Source: Authors

We get source stringency as a statistically significant travel deterrent for the USA. Additionally, we get COVID-19 severity in the USA proxied by NDMDest as a significant travel deterrent. In Malaysia, like the USA, source stringency was a statistically significant deterrent to travel to Malaysia. However, stringency in Malaysia itself deterred travel post-2021. For the Maldives, data on destination stringency was not available. Even then, we see that the stringency of the source nation is a statistically significant deterrent to travel. A further comparison of the three destinations and their results is tabulated on the next page.

*Table 2.7: Comparison of destinations*

Parameter	Model 1: Malaysia	Model 2: USA	Model 3: Maldives
Destination Stringency	High	Medium	Low
Effect size comparison of destination and source stringency	Destination Stringency >> Source Stringency	Destination Stringency $\approx$ Source Stringency	Destination Stringency << Source Stringency
Adjust R-squared	Highest	Medium	Lowest

### **A.2.6 DISCUSSION AND CONTRIBUTION**

Tourism has faced shocks in the past. However, their impact has been more localised than that of COVID-19. The severe decline in global tourism has been due to the COVID-19 pandemic. When government restrictions were relaxed, there was some recovery in tourism demand worldwide. However, this recovery was nonuniform across nations. Given this background, we posed three research questions addressed in this chapter using two studies.

In its first phase, the first study attempted to identify factors that affected the decline in tourism post-COVID-19. While both stringency and new deaths from COVID-19 negatively impacted international tourist arrivals, new deaths due to COVID had a more significant effect in 2020. This result has its basis in both the PMT and the behavioural economics framework suggested by Song and Lin (2023) where they note an undesirable experience as an environmental factor negatively affecting travel demand.

The second phase of the first study looked at the causal factors that affected inbound tourism worldwide after vaccination had started. We used two panels, one of fast-growth

nations and another of slow-growth nations. Estimated panel linear models showed that government stringency was the sole statistically significant factor affecting foreign tourist arrivals across both panels. The negative effect of stringency was more pronounced in slow-growth nations. In this analysis, vaccination levels in a destination did not statistically significantly affect arrivals across both slow and fast-growth nations.

Finally, the second study dealt with source country factors affecting travel to a destination. We found that across the USA (fast growth), Malaysia (slow growth), and Maldives (low destination stringency), the stringency of both the source country and the destination negatively impacted travel. The results from the second part might hint as to why vaccination has not turned out to be significant. For the US and Malaysia, vaccinations were required to undertake international travel, which is a part of stringency. For the Maldives, such requirements were very relaxed. However, many of its key source markets required complete vaccination to leave the country.

We build upon the findings of Okafor and Yan (2022), who used data from 1<sup>st</sup> January 2020 to 17 September 2021 and found government stringency to deter international tourism. First, we note that COVID-19 severity was the primary factor affecting the decline in tourism in 2020. Second, we found that vaccinations in a destination did not affect arrivals in the recovery phase, even when controlling for recovery rates and source nations. However, the government-imposed curbs on travel significantly impacted tourism across both slow and fast-growth nations. The effect of restrictions is bi-directional, i.e., the restrictions matter at the source and destination nation level regarding international tourism demand. The contributions come from extending existing findings and providing new insights by looking at source destination nation pairs.

### **A.2.7 POLICY IMPLICATIONS**

This chapter leads to several possible policy implications that might help the tourism industry recover faster from similar shocks in the future.

The first implication is related to the level of stringency adopted by destinations. Across the panel of countries, we found that slow-growth nations were hit worse by stringent guidelines. As a result, going forward, national governments will have to be more circumspect about lockdowns.

The second implication is related to communication and messaging. Sönmez and Graefe (1998) theorised that travel decision-making post-terrorist incidents were influenced by external communication, including government-issued advisories and risk perception. Multiple authors have studied messaging in the wake of COVID-19. Lu and Atadil (2021), in the case of air travel to China, suggest leveraging news and media to shape destination image following a significant crisis and reduce fake or misleading messages. A study on air travel attitude and lead time across 45 countries by Gallego and Font (2022) notes how messaging has to be tailored differently to different markets as each market has different attitudes towards travelling post-COVID-19. Thus, a tourist destination's messaging and marketing strategy following a significant tourism shock needs further study.

### **A.2.8 LIMITATIONS**

This work has some limitations. Certain variables which are hard to quantify but of importance to international tourism such as attitudes of locals towards tourism (Thomason et al, 1979; Harrill & Potts, 2003) could not be included in our study. The availability and granularity of secondary data limit our model. So, while COVID-related metrics such as vaccinations, new deaths, and government stringency are available daily,

tourist arrivals are not, which limits the ability to investigate further. Future work in the area can examine how government and tourism industry messaging has varied across the pandemic. The effect of such changes on tourist arrivals can be investigated.

## **Chapter 3: Getting Back to Normal: Survival Analysis Models for Temporal Resilience of International Tourism Post-COVID-19**

### ***A.3.1 INTRODUCTION***

The global travel and tourism industry suffered tremendous losses due to the COVID-19 pandemic. The sector's contribution to the global GDP plummeted by 49% between 2019 and 2020 to approximately 5 trillion US Dollars in 2020. These losses were particularly severe for countries predominantly dependent on tourism (Watson & Deller, 2022; Dioko, 2022). In the wake of this decline, the resilience of tourist destinations assumes great importance since a resilient tourism industry is critically important in realising the United Nations' sustainable development goals (Li et al., 2024) and maintaining livelihoods. In this chapter, we focus on the resilience of international tourism post-COVID-19.

In the extant literature on tourism resilience, many studies have focused on the magnitude of recovery within a given time frame, and few have looked at the temporal aspects of resilience. A shorter recovery period is critical to avoid the obsolescence and decay of tourism destinations and their downstream effects on the entire economy (Romao et al., 2016). While several countries have experienced a rise in tourism demand post-COVID, the recovery pattern over time has been heterogeneous across nations (Katunga, 2024; Guild, 2024). This leads to our primary research question, viz., what factors result in quicker recovery of the tourism sector in some countries compared to others? Prior studies focussing on time to recovery have used firm-level data (Yang et al., 2021). No extant studies have looked at the time to recovery of the tourism sector at a country level. To address this research gap, we adopt a survival analysis approach to study the factors that affect the time needed to recover the tourism demand across countries.

We define three levels of recovery, viz. 30%, 60% and 100% of pre-COVID tourism as benchmark recovery levels. Thirty-four countries were included in our study; these

countries, in aggregate, accounted for 45% of inbound tourism in 2019 (as per UN Tourism data). We gathered monthly data on international tourist arrivals spanning 72 months between January 2017 and December 2022. It is to be noted that only some of the 34 countries have witnessed the recovery of tourism within the given time frame. Thus, our data is right censored and can be modelled using survival analysis methods.

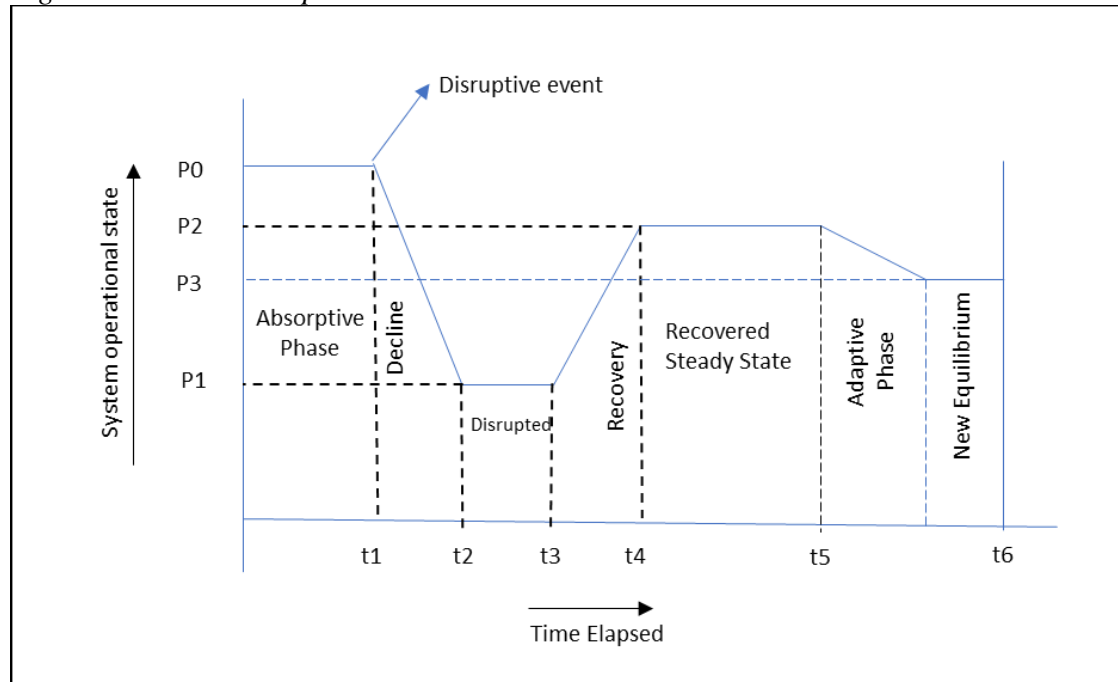
The dependent variable is the time to recovery observed between April 2020 and December 2022. The main independent variables consist of restrictions on international travel, COVID-19 severity, and exchange rates of the destination country impact recovery times. Accelerated failure time models were estimated using different baseline survival functions, and the models with the best fit are reported here. This study finds that government restrictions on international travel led to increased recovery times across all three levels. This suggests that heterogeneity in the temporal resilience of international tourism was primarily due to supply-side factors. We discuss the policy implications of our findings.

### ***A.3.2 Theoretical Background***

#### **A.3.2.1 Definition and conceptualisation of system resilience**

Resilience has been defined as the ability of a system to "*bounce back*" after a significant shock or disruption (Hosseini et al., 2016). This broad definition of resilience encompasses several related but slightly differing concepts, such as the robustness of the system, its ability to absorb shocks and continue to function, as well as the ability to transition to the earlier or newer equilibrium states within a reasonable period. The resilience of a system consists of three capacities: absorptive, adaptive, and transformative (Alizadeh et al., 2024). These are visualised on the next page, with time on the x-axis and system state on the y-axis.

Figure 3.1: Resilience process visualised



Source: Adapted and modified from Assad et al., 2019

The absorptive capacity of a system refers to the magnitude of shock a given system can face without declining or shifting from its pre-shock equilibrium position (Yuan et al., 2022). If the system cannot absorb the shock, it transitions into a state of decline. The recovery phase refers to the time the system takes to revert to its original state (Fountain et al., 2020). A significant shock can sometimes transition the system to a new equilibrium state. The adaptive or transformatory phase indicates the shift to a new state of equilibrium. This transformation enables a tourism system to survive within a different social, political, environmental or technological paradigm (Tsao et al., 2016).

Two distinct dimensions of resilience are relevant: the magnitude of recovery post-shock and the time taken to recover to a desired pre-shock level (Platt et al., 2016). DesJardine et al. (2019) emphasise the difference between these two aspects of resilience, identifying the first as the stability dimension and the second as the *flexibility* dimension of resilience. Johansson & Lundberg (2017) argue that temporal expectancies, temporal organisation and temporal control are important factors that impact organisations' short-term and long-

term resilience. Qualitative responses gathered by Ntounis et al. (2022) indicate that the seasonal nature of tourism demand results in time dependence on tourism revenue. Higher recovery times mean lost opportunities that could result in huge losses and even bankruptcy. Ntounis et al. (2022) included a variable called "Cease Trading Estimation" in their Business Resilience Composite Score (BRCS), which measured the time duration of pandemic closure that a particular business would be able to survive. Thus, several authors have noted that the temporal dimension is a key aspect of resilience within the tourism sector.

#### **A.3.2.2 Measurement of resilience in tourism**

Depending on the specific dimension they are interested in, a researcher may adopt different approaches in measuring the resilience of a system. The magnitude of recovery of system parameters to pre-shock levels could be measured by observing the system after a fixed time frame post-shock (Huang & Min, 2002; Ilseven & Puranam, 2021). Conversely, temporal resilience can be measured by fixing a desired recovery level and observing the time to reach these levels (Yang et al., 2021; Henry & Ramirez-Marquez, 2012; Cassottana et al., 2019). Both of these aspects of resilience have important economic and policy implications and, hence, need to be studied independently.

Multiple studies have measured tourism resilience in terms of the extent of recovery of system parameters after a shock. These include qualitative case studies (Harvie & Saleh, 2008; Lamanna et al., 2012; Chatterjee & Okazaki, 2018) and quantitative studies (Liu & Pratt, 2017; Huang & Min, 2002). Some studies have used hierarchical models for destination resilience using primary data (Dai et al., 2019). Other quantitative studies have estimated causal models using cross-sectional regression models (Liu & Pratt, 2017), SARIMA models (Huang & Min, 2002) and panel cointegration methods (Aranda-

Cuéllar et al., 2021). Some authors have quantified the absorptive capacities by comparing habitat structure before and after a shock (Victoria-Salazar et al., 2017). These studies have focussed primarily on the magnitude of recovery within a fixed time frame.

Aronica et al. (2022) used data from several pandemics in the pre-COVID-19 era and identified global temporal patterns of the decreased and eventual recovery of tourism demand. Their study looked at temporal trends but did not look at causal factors. Some authors have looked at the temporal aspects of resilience within the organisational resilience literature (DesJardine et al., 2019; Azeem et al., 2023). Sastri et al. (2024) used survival analysis methods to understand the factors impacting the time to recovery of hotels and restaurants in Indonesia post-COVID-19. However, they are interested in the survival of individual organisations and look at data from a single country. No extant studies have looked at the time to recovery of the tourism sector at a national level and across countries. We have tried to address this research gap in our study.

### **A.3.2.3 Government restrictions on travel post COVID-19**

National and local governments play a critical role in the recovery of tourism after a significant shock (Yang & Huang et al., 2022). High rates of spread of the pandemic, as well as the severity of outcomes, led to stringent restrictions being placed on non-essential movement worldwide (Hale et al., 2021), including total lockdowns, curfews, and ban on international travel (Khoirunurrofik et al., 2022). These restrictions varied both temporally in a country and across nations worldwide. For example, the Maldives opened itself fully to international tourists as early as July 2020 (Visit Maldives, 2022), whereas Vietnam opened itself much later on March 15th, 2022 (Conde Nast Traveller India, 2022). Such restrictions directly affect how quickly international tourism can recover in a country after the COVID-19 shock (Yang & Mao et al., 2022). Hence, we have used

government imposed restrictions on international travel as a key independent variable.

#### **A.3.2.4 Severity of COVID-19 in a destination**

Post-COVID-19, the individual tourist faced a risk of contracting the disease, which likely influenced their decision to travel. This has been found in multiple studies on tourists post-COVID-19. For example, Zheng et al. (2021) found through a survey of Chinese travellers that travel fear comprised of COVID-19 severity and perceived susceptibility negatively impacted travel intention. Similarly, Sánchez-Cañizares et al. (2021) found that perceived COVID risk negatively influencing intention to travel. As COVID-19-induced travel avoidance depends upon COVID-19 severity, it is an important independent variable. In order to gauge how severe COVID-19 has been in a particular nation, we have taken new COVID-19 deaths per million in a destination nation as a proxy for COVID-19 severity.

#### **A.3.2.5 Exchange rates of a destination nation**

In the case of international tourism, exchange rates between source and destination nations are a key variable affecting any international tourist's adequate spending capacity. This has been found in prior research by Kim and Lee (2017), who found that exchange rates between the Japanese yen and the South Korean Won significantly affected inbound tourism to Korea from Japan. Ding and Timmer (2023), similarly, in their study of exchange rate elasticity and tourism pricing, found that the exchange rate between the US dollar and the country of origin significantly determined hotel prices and tourist arrivals. For our study, we have also taken the exchange rate between the USD dollar and that of the destination nation as a proxy for the money constraint a potential international tourist might face while undertaking international travel post COVID-19 as an independent variable.

### A.3.3 Methodology and Data

#### A.3.3.1 A Brief Overview of Survival Analysis

Below, we provide a brief overview of survival analysis for completeness. Survival analysis is a statistical approach for analysing the time taken for any event to occur (Clark et al., 2003). The event of interest could be related to a negative outcome, such as death (Yap et al., 2012), recidivism (Spivak & Damphousse, 2006) or bankruptcy of firms (Carreira & Texeira, 2011). Events could also be related to a positive outcome, such as the birth of the first child after marriage (Logubayom & Luguterah, 2013) or reemployment (Gémar, 2006), and length of stay in tourism destination (Gokovali et al., 2007).

Survival analysis studies typically use a fixed time window to record an event's occurrence or non-occurrence. If the event does not occur within this window, it is treated as a censored data point. The data is said to be left censored if the event occurred prior to observation. If the event did not occur within the observation period, it is said to be right-censored. The occurrence of an event within the observation window is termed a failure. Given a theoretically infinite observation period at  $t=0$ , no subject fails, and  $t \rightarrow \infty$  all subjects fail. There are two distinct approaches to understanding the probability of the occurrence of an event captured by the survival and hazard functions described below. The *survival function* is the probability of survival of a subject or subjects beyond a specific time  $t$ , denoted by  $S(t)$ . The survival function is written as

$$S(t) = P(T_1 > t) = 1 - F(t) \quad -(1)$$

where  $F(t)$  is the cumulative probability density function for the probability of failure. The hazard function gives the probability of a subject's instantaneous failure at a given time, given it has survived till a time  $t$ , and is denoted by  $h(t)$ .

$h(t) = P(\text{individual fails within a time between } t \text{ and } t + \Delta t \mid \text{individual survived till } t)$

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{P(t \leq T < t + \Delta t \mid T \geq t)}{\Delta t} \quad -(2)$$

There are three main ways to analyse time-to-event data: non-parametric (Kaplan Meier estimator), semi-parametric (Cox proportional hazards model), and parametric methods (Accelerated failure time models).

The Kaplan-Meier (KM) estimator is a non-parametric method for determining the survival function. The KM curve depicts the number of surviving entities on the y-axis and the time elapsed on the x-axis. At time  $t=0$ , all entities are assumed to survive, with the first event recorded as a drop in the number of surviving entities. The resulting curve resembles a step-down function. Since KM curves are non-parametric descriptions of survival times, they cannot be used to estimate causal models. It is primarily an exploratory tool used to compare the survival probabilities of different groups of subjects visually. Parametric survival functions are used to specify causal models, with time to event modelled as a function of explanatory factors. The conditional probability of survival beyond time  $t$ , given a set of covariates  $Z$ , is given as:

$$S(t|Z) = (S_0(t)) * e^{g(z)} \quad -(3)$$

$$g(Z) = \alpha_0 + \beta_1(X_1) + \beta_2(X_2) \dots + \beta_k(X_k) \quad -(4)$$

Two different ideas are incorporated within this specification of the accelerated failure time (AFT) models. The first is a baseline distribution function for survival time given by  $S_0(t)$ . The other part is related to a function of the covariate vector  $Z$  given by  $g(Z)$ , which may *accelerate* the probability of failure within a given period. Functions often used as baseline survival functions include exponential, Gaussian, Weibull, gamma, logistic, and log-logistic functions. We use the Akaike Information Criterion (AIC) to choose the best model, where low AIC values indicate a better fit.

The use of survival analysis within tourism literature has primarily focussed on the survival of firms. For instance, Falk (2013) utilised a Cox proportional hazards model to study the survival of ski lift operators in Austria. Similarly, Lado-Sestayo et al. (2016) and Gémar et al. (2016) have studied the survival of the hospitality industry in Spain. Post-COVID-19, some authors have looked at the survival of individual firms (Leurcharusmee et al. (2022); Tarapituxwong et al. (2023). Sastri et al. (2024) used survival analysis to study the factors that affected the time-to-recovery of different strata of the hotel and restaurant industry in Indonesia. There are no studies that we know of that have looked at the factors that have impacted the time-to-recovery of international tourism across a set of countries, and this is the specific research question that we address in this study.

#### ***A.3.4 Data***

We collected data on monthly international tourist arrivals across 34 countries from their national databases (details provided in the Appendix section). These 34 nations accounted for 45% of inbound tourism in 2019 (UN Tourism, 2024). For 33 countries, we have data from January 2017 to December 2022; for Thailand, we had access to data starting from January 2018.

Since tourism is a seasonal activity, there are significant variances in monthly tourist arrivals throughout the year. Considering this, we created month-wise benchmarks for tourism demand using data from the pre-COVID-19 period of January 2017 to December 2019. For example, for January in Australia, the benchmark was calculated as the average of inbound tourism to Australia in January 2017, January 2018, and January 2019. Using these benchmarks, we calculated the percentage recovery in tourism in a particular month between April 2020 and December 2022 (during and post-COVID).

### *A.3.5 Model Specification*

We considered the Accelerated Failure Time model and the Cox proportional hazard model to understand factors impacting recovery time. We used the Schoenfeld tests (Lin & Wei, 1991) for the proportionality of hazards, which indicated that the hazards were not proportional; hence, we opted to use AFT models for our data.

The World Health Organisation (WHO) declared COVID-19 a pandemic on March 11th, 2020 (Cucinotta & Vanelli, 2020). Hence, we have taken April 2020 as the starting point for the period within which tourism recovery may have occurred. We have considered data till December 2022, based on availability at the time of data collection as of May 2024. Within this observation window, the time taken in months from March 2020 to reach a set recovery level was our primary dependent variable, which was labelled "rec\_time". The event may or may not have occurred within the observation period – thus, some of the data would be right censored. The status of an individual country in terms of whether the event occurred or was censored was a binary variable named "Censtatus".

Independent variables in our analysis included new COVID-19 deaths per million, local currency exchange rate vs the US Dollar, and international travel control exercised by destination nations. The variables for new COVID-19 deaths per million and international travel control exercised by a destination nation were taken from the Our World in Data Portal (Our World in Data, 2024). International travel controls by a nation are based on Hale et al. (2021), where a 5-point scale is used from 0 to 4, with zero denoting no measures and four denoting total border closure. Exchange rates with respect to USD were taken from Exchange Rates.org (Exchange Rates.org, 2024). We transformed these three independent variables into their averages for each country for the 33 months under study between April 2020 and December 2022. New COVID-19 deaths per million have

been labelled "NCDPM," international Travel restrictions – "TravCntrl," and exchange rates as – "Exch".

The model is specified as follows:

$$S(rec\_time_i|NCDPM_i, TravCntrl_i, Exch_i) = (S_0(rec\_time_i)) * e^{g(NCDPM_i, TravCntrl_i, Exch_i)} - (5)$$

$$g(NCDPM_i, TravCntrl_i, Exch_i) = \alpha_0 + \beta_1(TravCntrl_i) + \beta_2(NCDPM_i) + \beta_3(Exch_i) + \Omega\varepsilon_i$$

-(6)

In Equation 6,  $\alpha_0$  denotes the intercept, and  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  denote coefficients for TravCntrl, NCDPM, and Exch, respectively.  $\Omega$  is the scale parameter, and  $\varepsilon_i$  denotes random errors.

### ***A.3.6 Results***

We first provide descriptive statistics for our sample of nations, particularly before and after COVID-19 tourism levels. Within the set of countries included in this study, Spain, the USA, and the UK were the three most popular destinations in terms of monthly international tourists in the pre-COVID era. The countries with the lowest tourist arrivals were Fiji, Trinidad and Tobago, and Seychelles. In the post-COVID-19 scenario, Spain and the USA remain the most popular. However, Turkey overtook the UK in terms of tourist arrivals. There was no change in ranking regarding countries with the lowest tourist arrivals.

Table 3.1 provides the means of independent variables. Due to their relatively low populations, Bosnia and Herzegovina, Croatia, and Romania had the highest number of new COVID-19 deaths per million (NCDPM). Cambodia, Singapore, and India had the lowest average NCDPM numbers. International travel control (TravCntrl) was most strict

in Japan, New Zealand, and Australia. The least strict travel control was found in Bosnia and Herzegovina, Albania, and Estonia. When we look at local currency exchange rates vs the US dollar, Vietnam, Indonesia, and Cambodia are the least expensive destinations. On the other hand, the UK and the EU nations that use the Euro are the most expensive.

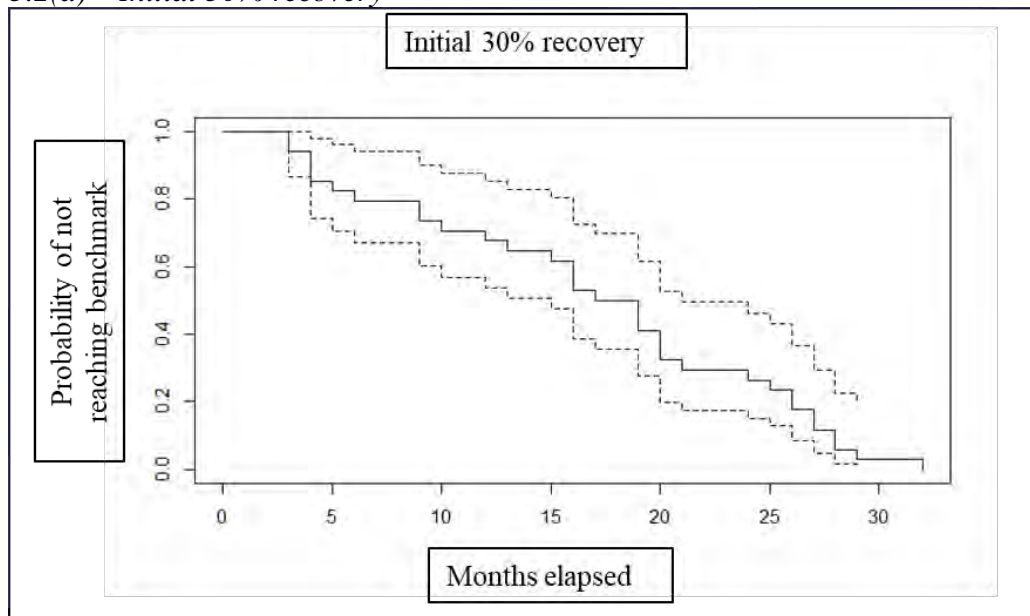
Table 3.1: Average values of TravCntrl, NCDPM, and Exch in our sample

Name of country	New COVID-19 Deaths Per Million	International Travel Control	Exchange rate/USD
Albania	1.26	1.2	0.01
Australia	0.68	2.68	0.73
Bahamas	2.05	1.79	1
Bolivia	1.81	2.14	0.15
Bosnia and Herzegovina	4.99	1.02	0.58
Cambodia	0.18	1.63	0
Canada	1.27	2.56	0.77
Colombia	2.73	2.22	0
Costa Rica	1.74	1.24	0
Croatia	4.34	1.54	0.15
Cyprus	1.39	1.69	1.13
Estonia	1.99	1.23	1.13
Fiji	0.94	2.66	0.47
Finland	1.53	1.9	1.13
France	2.45	1.8	1.13
Germany	1.95	1.97	1.13
India	0.37	2.41	0.01
Indonesia	0.58	2.3	6.80E-05
Japan	0.46	3.1	0.01
Malaysia	1.08	2.15	0.24
Mauritius	0.79	2.06	0.02
New Zealand	0.45	3.06	0.67
Philippines	0.56	2.32	0.02
Romania	3.41	1.67	0.23
Seychelles	1.6	1.95	0.07
Singapore	0.31	2.01	0.73
Spain	2.31	2.11	1.13
Sri Lanka	0.77	1.82	0
Thailand	0.47	2.18	0.03
Trinidad and Tobago	2.78	2.27	0.15
Turkey	1.18	1.78	0.1
UK	3.13	1.57	1.3
USA	3.18	2.23	1
Vietnam	0.44	2.58	4.00E-05

### A.3.6.1 Kaplan Meier Survival Plots

We constructed three Kaplan-Meier curves for each level of recovery given below in Figures 2(a) to 2(c).

*Fig 3.2(a) – Initial 30% recovery*



*Fig 3.2(b) – Gradual; 60% recovery*

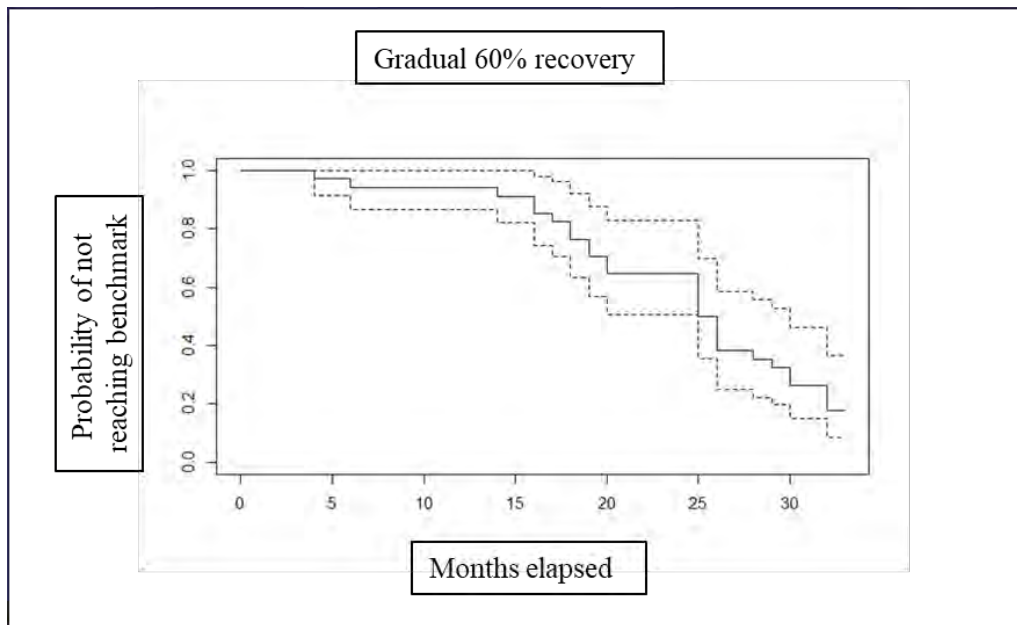
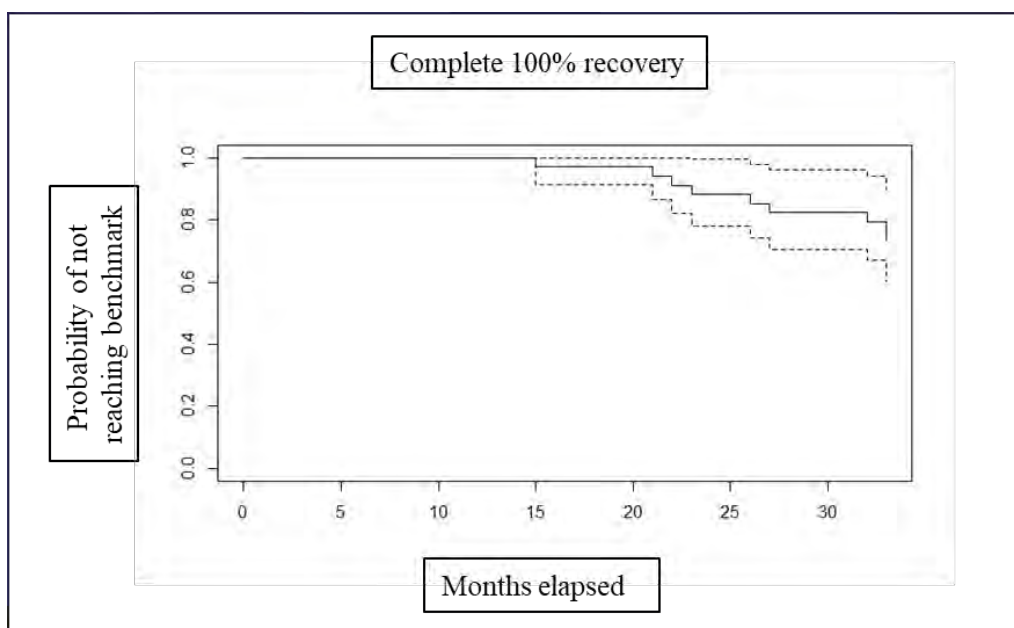


Fig 3.2(c) – Complete; 100% recovery



Source: Authors

The Kaplan-Meier curves in Figures 2(a) to 2(c) indicate that while most countries had achieved a 30% recovery within the observation window, very few had recovered to 100% of the pre-COVID levels of tourism. In Figure 2a, when the benchmark is 30% recovery, we can see that different countries achieve recovery at different times, but there is a continuous trend of 30% recovery across countries within the observation period. However, when we set the benchmark at 60% (Figure 2b), we notice three distinct sets of countries: very few that recovered within 5 months, several that recovered within 12 to 24 months, and a few late recovery countries that continued to recover in the 24-to-33-month period. Some did not achieve the 60% recovery. Finally, in Figure 2c, for a benchmark set at 100% recovery, we notice that very few countries achieved this level, and among those which did, most achieved it after 20 months.

### **A.3.6.2 Results from AFT Models**

As mentioned in the methodology section, after constructing the KM curves, both Cox-PH and AFT models were estimated. Schoenfeld tests were conducted to test whether the assumption of constant proportionality of hazards was valid. The Schoenfeld tests indicated that the null hypothesis of proportional hazards is rejected. Hence, we went ahead with estimating AFT models for the three recovery levels.

The choice of the underlying error distribution for the base survival function within the AFT models was guided by the fit of the model, as measured by AIC. Thus, we fit several models using the exponential, Gaussian, Weibull, gamma, logistic, and log-logistic functions. We calculate the AICs for models using these six distributions. The Gaussian distribution for all levels of recovery yielded the lowest AIC values.

Table 3.2 provides the results for the final AFT models. Across all three recovery levels, we found that international travel control exercised by a destination country was the only statistically significant explanatory variable with p-values below the 95% threshold. The p-values for each of the variables are given within brackets. The coefficients for travel control were positive, indicating that high levels of governmental control increased the time to recovery. The magnitude of this coefficient was particularly high for 100% recovery. Interestingly, neither of the other variables, viz., new COVID deaths per million or exchange rates, were statistically significant in these AFT models.

*Table 3.2: Results of Accelerated Failure Time Models Across Three Recovery levels*

Model Parameters	Model 1 - 30% recovery		Model 2 - 60% recovery		Model 3 - 100% recovery	
	Gaussian		Gaussian		Gaussian	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Intercept	-0.03	(9.97E-01)	8.91	(1.83E-01)	14.53	(0.27)
TravCont	9.66***	(2.20E-04)	9.61***	(4.40E-04)	13.25*	(0.038)
NCDPM	-1.17	(2.99E-01)	-1.35	(2.39E-01)	-1.43	(0.48)
Exch	-1.798	(0.47)	-2.334	(0.35)	3.125	(0.49)
Log of Scale parameter	1.85***	(< 2e-16)	1.86***	(< 2e-16)	2.23***	(< 2e-16)
Scale	6.38		6.39		9.3	
Log Likelihood	-111.2		-96.8		-41.7	
Recovered	34		28		9	
Not Recovered	0		6		25	

*Note: Values in brackets denote p-values  
Stars denote levels of significance Where \*\*\* - 0.001, \* - 0.05*

*Source: Authors*

### ***A.3.7 Discussion of Results***

In order to arrive at a standard notion of recovery across destinations, we decided to look at percentage recovery compared to pre-COVID levels of tourism instead of absolute numbers of tourist arrivals. In particular, we fixed a 30%, 60% and 100% recovery threshold following Yang et al., 2021.

From an initial analysis of recovery trends, we find the following. All nations have attained the initial 30% recovery level. Initial recovery times across nations are randomly distributed, with nations like Albania reaching the benchmark in 3 months, whereas

popular destinations like Japan took 32 months. This is also visible in the Kaplan-Meier curves for the initial recovery of nations. Moving on to a gradual 60% recovery, while most nations in our sample have crossed the threshold, many key tourist destinations, such as Thailand, Japan, Singapore, Sri Lanka, Vietnam, and the Philippines, have not. Among the recovered nations, recovery times are also randomly distributed in months, as seen in the Kaplan-Meier curves. Only 9 out of 34 nations in our sample have successfully rebounded to 100% of pre-COVID levels. Considering the UN world tourism rankings from 2019 (UN Tourism, 2021), only 3 of the top 50 destinations, namely the United Kingdom, France, and Turkey, have recovered entirely. The other six nations to fully recover are relatively smaller destinations. An analysis of the Kaplan-Meier curve of complete recovery reveals that the recovery times for these six nations are mostly clustered towards the end of our study period.

Estimated accelerated failure time models reveal one primary result: across the three recovery levels, international travel control exercised by destinations significantly and positively increased recovery time. This result is similar to studies by Yang & Mao et al. (2022), Koçak et al. (2023) and Liu et al. (2024).

The study results indicate that new COVID deaths per million did not have a statistically significant impact on time to recovery. Yang & Mao et al. (2022) found that pandemic severity had a statistically significant impact, leading to a drop in tourism demand. However, our study differs in two key ways: Yang & Mao et al. (2022) used data from the early stages of the pandemic when pandemic severity was at its peak and hence had a more significant effect. Also, they consider the magnitude of the impact while we are concerned about the time to recovery.

Finally, we find that exchange rates did not significantly impact the time to recovery. This may be due to the asymmetric effects of exchange rates on tourism demand, where the

source country's currency has a greater impact than the destination's currency (Yamaka et al., 2023). These results are similar to those of Wamboye et al. (2020), who also did not find exchange rates to affect tourist arrivals in Tanzania.

### **A.3.8 Conclusions**

COVID-19 was an unanticipated and unprecedented shock, leading to the worst global recession since the Second World War (Dasgupta, 2022). Given the rapid spread of the pandemic and its severity in terms of mortality, governments and organisations were forced to adopt policies geared towards saving lives rather than livelihoods. One such policy was the closure of national borders to reduce the spread of COVID-19 via international travel (Russell et al., 2021). The need to contain the pandemic resulted in catastrophic losses in the international tourism industry. The aftereffects of this disruption continue to plague the tourism sector four years later.

We use survival analysis methods to understand the temporal dimension of resilience, viz., time to recovery to a specific desired level of tourism activity. We build several accelerated failure time models with the time to recovery as the dependent variable. The study results indicate that some countries, especially smaller destinations, recovered fast when nations lifted restrictions. In the wake of the pandemic, governments worldwide have tried to compensate for lost business with financial support and stimulus packages (Estiri et al., 2022). However, an overly cautious approach regarding restrictions has associated economic and societal costs (Tchouamou Njoya, 2022).

The policy and managerial implications of this study are as follows. Certain basic principles such as correct risk assessment, appropriate caution, and clear communication (Aven and Renn, 2018) may guide future governmental policies for building a strong, sustainable and resilient tourism sector. Khurana et al. (2021) found that good governance played the most important role in rebuilding industries in the post-COVID era.

Technology enabled solutions may provide some relief to the tourism industry when faced by such large disruptions. Technological innovations led to a change in paradigm in other sectors by ushering in "work-from-home" (Bick et al., 2023) and "virtual classrooms" (De Oliveira Dias et al., 2020). The COVID-19 pandemic has seen tourism and hospitality organisations develop innovations concerning cleanliness and non-physical interaction (Park et al., 2022). A promising innovation is virtual tourism, which may not supplant physical travel to destinations but may act as an alternative source of revenue and promotion when physical travel is curtailed (Lu et al., 2022).

#### ***A.3.9 Contribution, limitations and future work***

The theoretical contribution of this study lies in emphasising "time to recovery" as a critical dimension of resilience within the tourism industry. While temporal aspects have been explored in studies of organisational resilience, they have not been studied in the context of the tourism industry. The methodological contribution lies in using survival analysis methods to analyse time to recovery. Survival analysis methodology allows benchmarks for different recovery levels to be set, and accelerated failure time models allow for the inclusion of different explanatory variables. Finally, the empirical contribution lies in the identification of governmental stringency as the primary factor that had a significant impact on time to recovery of the tourism industry in the wake of the COVID-19 pandemic.

This study has certain limitations. A tourism system's resilience comprises absorptive, decline, recovery, and adaptive phases. This analysis has focused primarily on the recovery phase. We could not examine the differences in absorptive capacities across nations since the COVID-19 shock was unanticipated and sudden. Future studies may address the need to build an ongoing resilience score considering absorptive capacities.

Comparative assessment of temporal resilience to short-term shocks and long-term disruptions will provide objective data.

## **A\* - Key Conclusions From Part A**

Part A of this thesis is comprised of three chapters that examine the impact of COVID-19 on international tourism demand at the country level. In particular, we look at

- (i) Temporal trends in the decline and subsequent rise of international tourism across fourteen countries using monthly data for 54 months from January 2018 to June 2022,
- (ii) Factors affecting recovery of tourism demand for the 14 countries above using monthly data across the same period
- (iii) Factors affecting the temporal resilience (i.e. the time to recovery) of international tourism demand for 34 countries using monthly data for 72 months from January 2017 to December 2022.

The significant findings from these three studies are as follows.

1. Regarding temporal trends, we noticed heterogeneity across the 14 countries we examined. While international tourism declined sharply across all 14 countries in 2020, some countries experienced a slower recovery than others. These differences in temporal trends have been discussed in Chapter 1.
2. In Chapter 2, we fit models to understand the factors that impacted tourism demand during the decline phase (in 2020) and the recovery phase (starting from 2021). The decline in tourism demand was affected primarily by the severity of COVID-19 and the stringency of governmental restrictions imposed in a particular country. In the recovery phase, the only significant factor that impacted recovery was government stringency related to cross-country movement.

3. In Chapter 3, we examine the issue of temporal resilience across 34 countries. Temporal resilience was measured by the time it took for tourism demand to reach certain benchmark levels. These benchmarks levels were fixed based on different percentages (30%, 60%, 100%) of pre-COVID tourism demand. Using survival analysis models, we find that governmental restrictions on movement were the sole determinant of the temporal resilience of tourism demand in a given country.

### **Proposed Theory of Factors Affecting Post-COVID Tourism Demand**

Below, we discuss the microeconomic theory underlying the demand and supply within the tourism sector. Next, we discuss the aggregation of individual demand for tourism at the country level. Understanding the theoretical models that underlie the aggregate demand and supply of tourism allows us to propose a theoretical explanation for the observed trends in recovery and temporal resilience of post-COVID tourism across destinations.

Morley (1992) concisely summarises the micro-economic theory that explains the nature of tourism demand. In particular, he points out that several different goods and services, such as food, accommodation, entertainment, retail services, transport, and public amenities, combine to provide an overall tourism experience for the consumer. Some of these goods and services are privately produced, while others are public goods. They are complementary in consumption. Goods and services used for creating the tourism experience cannot be stored or transported to a location other than the destination. Thus, the tourist has to choose to travel to the destination rather than the other way around. Further, tourism expenditure is of a discretionary nature and has high income elasticity. International tourism is imported by individuals and is subject to high variability based on individual economic resources. Morley (1992) proposes a theoretical framework for

tourism demand using the principles of utility maximization and uses a two-stage decision-making process to indicate factors that impact (i) whether a given individual will decide to undertake tourism and (ii) the choice of destination after deciding to travel. Morley proposes a multi-linear demand model where a tourist tries to maximize utility subject to time and income constraints. Morley (1995) states that providing an aggregate demand curve is difficult due to a wide range of factors influencing tourism demand at both a tourist and an individual level. However, Some factors found to impact tourism demand in a given destination nation include relative prices (O'Hagan & Harrison, 1984; Algieri, 2006), level of tourism infrastructure (Phakdisoth & Kim, 2007) and transportation cost from source markets (Lim, 1997; Divisekara, 2003).

As explained above, tourism is a composite of different goods and services that together provide a specific experience to the tourist. For this reason, the supply side of tourism includes all aspects of business which facilitate leisure experiences (Smith, 1988). These include but are not limited to destination-level transportation services, accommodation and retail services and the local hospitality industry (Zhang et al., 2009). Governments are key facilitators and stakeholders in tourism supply (Sautter & Leisen, 1999). Prior to the pandemic, the primary role of local and national governments was to facilitate international tourism. This was done through promotion and marketing (Qin et al, 2011), visa policies (Çakar et al., 2018; Song et al., 2017), and providing security and stability through police and other law enforcement institutions (Liu & Pratt, 2017).

COVID-19 did not cause any damage to infrastructure, leaving supply-side factors majorly unharmed. As the pandemic began, the only factor that could have led to reduced demand was a fear of the pandemic, which we empirically found for 2020. With time, these fears eventually abated. What changed during COVID-19 were primarily government restrictions on movement, which evolved according to the severity of the

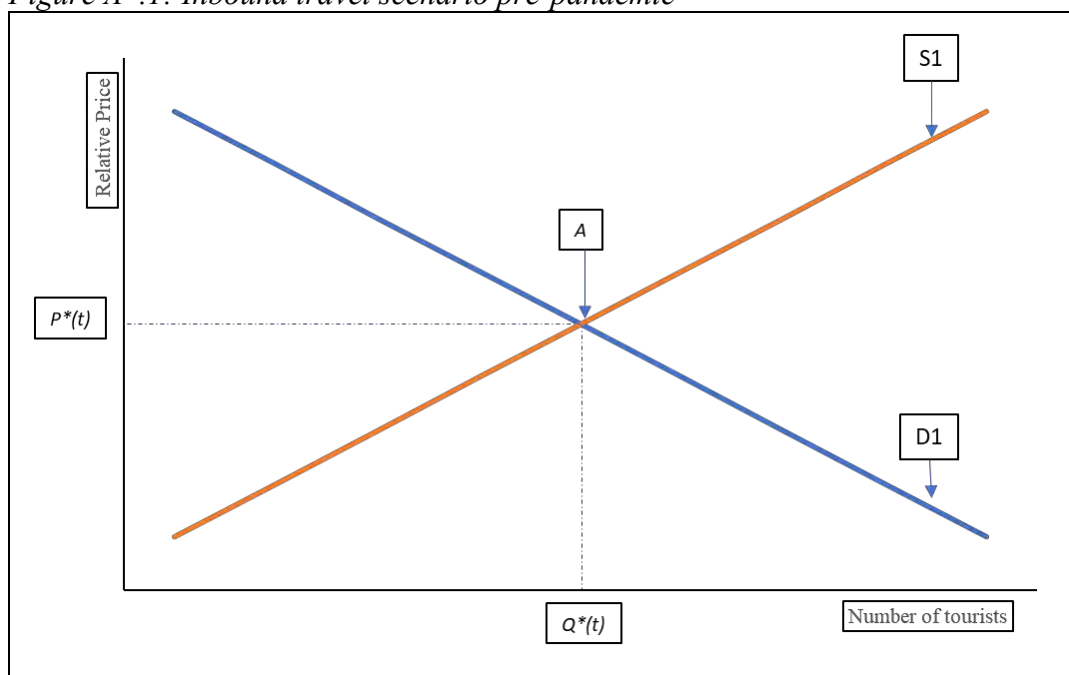
disease. We found these restrictions on movement to be the sole major factor that impacted both the level of tourism and its recovery following the pandemic.

We have adapted Camilleri's (2018) demand and supply curves to explain a destination's pre- and post-COVID-19 international tourism demand. We have made a few basic assumptions to come at the same following from Morley (1995)

- (i) We assume that all tourists' shares of total income are nearly constant.
- (ii) We assume all individuals have similar utility functions regarding a destination.
- (iii) We also assume that each tourist's Engel curves represent a linear relationship of income to expenditures.

We first show the pre-COVID-19 inbound travel scenario for a given destination at a given point in time in Figure 1 below.

*Figure A\*.1: Inbound travel scenario pre-pandemic*

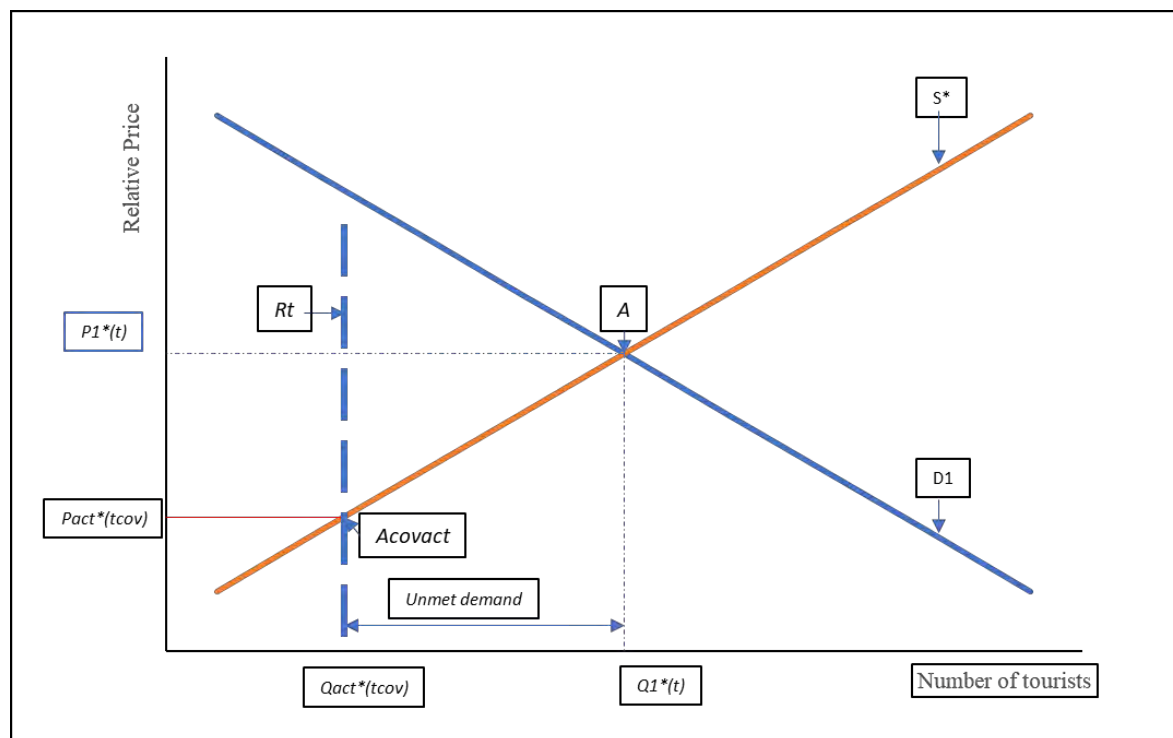


Source: Authors

In the figure, the Y-axis denotes the relative price at a destination, which has been noted as a key determinant of inbound tourism demand. Along the X-axis, we have the aggregate number of tourists. The supply and demand curves for the destination are denoted by  $S1$  and  $D1$ , respectively. Before the pandemic, the intersection of  $D1$  and  $S1$  is at point  $A$ , which denotes the relative price  $P^*(t)$  at which the maximum number of tourists given by  $Q^*(t)$  is recorded in the destination.

The post-pandemic scenario regarding the same is shown in Figure 2 below. We have assumed a time “ $tcov$ ” After the pandemic, there was no change in supply, as tourism-related key infrastructure was physically unaffected. Demand also was not suppressed for a long time. Thus, curves  $S1$  and  $D1$  remain unaffected. However, government restrictions denoted by dashed line  $Rt$  acted akin to an import restriction on tourists, shifting the pre-pandemic equilibrium to a new point.

Figure A\*.2: Post-COVID-19 travel scenario



Source: Authors

Due to restrictions, we can see that the equilibrium point shifts to  $A_{covact}$ , where the number of tourists is much lower at  $Q_{act}^*(tcov)$ , and the relative price is now  $P_{act}^*(tcov)$ . There is thus a loss in the number of tourists given by

$$QI^*(t) - Q_{act}^*(tcov) \quad - (1)$$

As  $Q_{act}^*(tcov)$  depends upon the level of stringency a government exercised. The difference given by (1) denotes unmet demand. The longer a nation persisted with stringency in inbound tourism, the longer the unmet demand persisted, thus leading to longer recovery times.

The ongoing cost-of-living crisis followed COVID-19. In the next part of this thesis, we investigate its effects on inbound travel.

#### Key Policy Implications from Conclusions to Part A

- On the demand side, international tourism is based on individuals' desire to experience something different from their usual environment. Expectation of variety and experiences is one of the primary drivers of international tourism.
- On the supply side, different countries differ in terms of their economic, socio-political, climatic, and geographic conditions, as well as the historical and cultural attractions that spur tourism demand in that country. Further, the economic dependence on the tourism sector for the country as a whole also differs significantly.
- Given that both demand and supply of tourism are rooted in heterogeneity across countries, every country has to adopt its tourism policies that consider this heterogeneity which is an inherent characteristic of the tourism sector.
- This is why countries that adopt the same policies without considering their inherent differences will not be resilient in the case of sudden shocks. Smaller

countries may be able to recover even after adopting stringent policies. However, larger countries, or those that are more costly to travel to, may not have that flexibility.

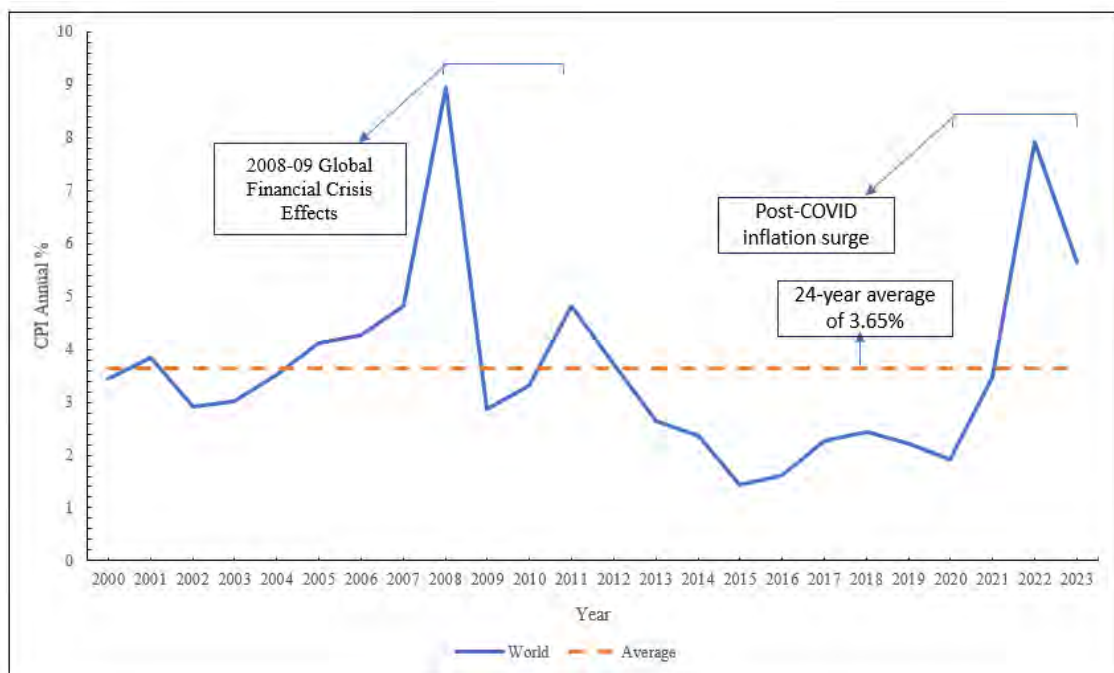
- It is important to understand that jumping onto the same bandwagon may not work, and every country has to tailor its policies based on its own

**PART B: IMPACT OF COST-OF-LIVING CRISIS ON  
INTERNATIONAL TOURISM ACROSS COUNTRIES:  
DESTINATION DEMAND AND ACCOMMODATION  
SEGMENTS**

## B. Introduction to Part B

In July 2022, the United Nations Development Programme (Molina et al., 2022) issued a report regarding a global inflationary surge caused by several factors, including the Russia-Ukraine war. As per this report, several countries globally were experiencing higher inflation levels, mainly due to a rise in food and energy prices. Given that these commodities form a large percentage of the budgets of people living in poverty, such inflation affected the poor and marginalised sections severely. As per the UNDP report, this inflationary surge could push nearly 71 million people into poverty. As can be seen from Figure 1, which captures temporal trends in global inflation (Ha et al., 2023), the present rates of inflation are the highest since the financial crisis in 2008-2009.

*Figure B.1: Trends in global inflation*



*Source: Ha et al., 2023*

Several factors could be considered as possible causes for the recently witnessed surge in global inflation. Moosavi et al. (2022) note an adverse effect of COVID-19-induced movement restrictions on the supply chains of essential goods worldwide, leading to

increased prices of imported goods. Barakat et al. (2023) noted that the Russo-Ukrainian conflict has increased the inflation of essential items like food and fuel worldwide. The UNDP report (Molina et al., 2022) finds that the price of natural gas increased by 166.8% over the 12 months ending on 31<sup>st</sup> May 2022. Much of this increase was observed after the commencement of the conflict.

The ongoing cost-of-living crisis follows closely on the heels of the COVID-19 pandemic, which, as noted in the previous part of this thesis, caused a severe disruption in international tourism. The present inflationary surge affects the demand and supply sides of the tourism sector. Countries that have experienced high inflation levels may see a dip in outbound tourism demand. Higher expenditure on essential commodities will reduce the available budget for leisure activities. This would hinder the ability of international tourists to pay for leisure, which is a key constraint to travel (Crawford et al., 1991). The impact of an increase in the cost of living in the country of origin on international tourism has been studied by Daniel and Rodrigues (2012) and Gounopoulos et al. (2012). While Daniel and Rodrigues (2012) find a negative impact of the rise of the cost of living in the origin country, Gounopoulos et al. (2012) find that there is limited impact.

Additionally, in the destination country, high inflation levels will raise the prices of tourism goods and services such as transport and hospitality services. This leads to an increase in the cost of tourism, which would impact those destinations that have experienced a higher increase in the cost of living. Given the availability of substitute destinations, these differences in the cost of living may cause some tourists to travel to cheaper destinations. The impact of such changes on tourism inflows in a particular destination has been modelled by Martin and Witt (1988) and Divisekara (2003). Martin and Witt (1988) modelled tourism demand as a function of the cost of travel as well as

the cost of living in the destination country. Differences in the cost of living at the source and destination countries have been modelled by considering the relative price in the source and destination countries (O'Hagan & Harrison, 1984; Algieri, 2006). Relative prices have been measured as a ratio of destination to source nation inflation measured in terms of consumer price index (CPI) multiplied by the ratio of exchange rate of source nation by destination nation. Algieri (2006) and Assadzadeh et al. (2014) estimated empirical models and found that the cost of living negatively impacted inbound tourism at a destination. However, this impact has varied by destination (Khalid et al., 2019).

### **Motivations for this Part**

We see that an increased cost of living in the country of origin reduces the budget share available for discretionary expenditures such as tourism. Further, an increase in the cost of living at the destination may result in higher tourism prices, further reducing demand. The cost-of-living crisis may further aggravate the economic impact of the COVID-19 shock on international tourism.

This may impact the economic survival of the tourism and hospitality sector at a destination, with many already facing cashflow constraints due to COVID-19 (Gan et al., 2024). For this reason, it is important to understand the impact of the increased cost of living on the demand for tourism services. Analysing the impact of the cost-of-living crisis on international tourism demand will help bridge key knowledge gaps and help frame solutions to make international tourism more resilient. The analysis of the cost-of-living crisis consists of two studies in Chapters 4 and 5 of this thesis.

### **Organisation of Part B**

Part B of the thesis has two main chapters.

*Chapter 4: Has the cost-of-living crisis impacted international travel? A source-destination pair panel regression analysis.*

The first study in this part examines the impact of the increase in the cost of living on the *aggregate demand in a given destination* for international tourism. We have looked at source-nation pairs and have tried to determine whether the cost of living of either source or destination nation has impacted travel between the two.

*Chapter 5: Impact of an increase in the cost of living on demand for overnight stays in different segments of the hospitality sector in a destination*

The second study in this part examines the impact of the increase in cost of living on the *demand for different segments of accommodation in a fixed destination*. Accommodation cost is a key component of total travel costs (Brida & Scuderi, 2013). Thus, one particular way potential tourists can overcome constraints imposed by the cost-of-living crisis is to choose opt for relatively inexpensive accommodation in a destination. In the final chapter of this part and thesis, we examine the impact of the cost-of-living crisis on different accommodation segments by foreign tourists coming to Denmark.

## **Chapter 4: Has the cost-of-living crisis impacted international travel? A source-destination pair panel regression analysis.**

### ***B.4.1 Introduction***

The COVID-19 pandemic and its aftermath led to one of the worst economic recessions faced by all countries globally since the Second World War (Dasgupta, 2022). This was caused by governmental restrictions on cross-border travel, loss of employment due to lockdowns and restrictions on movement even within countries, and disruptions in international trade. In a review of papers on supply chain disruptions, Moosavi et al. (2022) found that COVID-19 led to a direct shortage of vital items such as food. These disruptions have also led to a global rise in the price of food items (Romei, 2024), causing a surge in inflation worldwide. This is supported by data from the World Bank in 2024, which reported that in 2022 and 2023, the global average rise in consumer price inflation was 8% and 5.7%, respectively. These were the highest global two-year percentage changes in CPI values recorded in nearly 17 years.

Geopolitical conflicts, most notably the ongoing Russo-Ukrainian War, which began in February 2022, have further exacerbated the inflationary surge. Multiple authors (Liadze et al., 2023; Meng & Yu, 2023) have reported a rise in food and energy prices as a direct consequence of the conflict, leading to a global cost-of-living crisis. In the context of tourism, several prominent international tourism destinations have experienced a cost-of-living crisis. These include high-income nations such as the UK, Germany, Italy, and Sweden (Grailey et al., 2024), as well as developing nations like Nigeria (Oyadeyi et al., 2024). Additionally, the Russo-Ukrainian war has negatively impacted tourism and allied industries, such as airlines (Chu et al., 2024; Martins & Cró, 2024). A potentially slow recovery in tourism has economic consequences for nations in the form of lost growth and employment (Rasool et al., 2021; Hemmington & Neill, 2022; Portella-Carbó et al.,

2023). Therefore, in addition to recovering from the disruption caused by the COVID-19 pandemic, international tourism now faces an additional challenge due to the ongoing cost-of-living crisis.

The increase in the cost of living has been heterogeneous across nations (Ha et al., 2023). Additionally, countries differ in terms of political, natural, cultural, and economic factors that may lead to variations in tourism demand. As such, the impact of cost-of-living increases on tourism will not be uniform across different countries. It is essential to note that the global tourism industry is still recovering from the COVID-19 shock. Tourism demand across different destinations has been disrupted due to COVID-19 (as noted in Chapters 1, 2, and 3 of this thesis), with some newer destinations gaining favour over more established ones. In the wake of the COVID-19 crisis, amidst new patterns of international tourism that are emerging, the impact of a rise in the cost of living at both the source and the destination countries has not been explored in extant literature. In this paper, we aim to address this gap, which is particularly significant in the context of the tourism industry, which has been redefined in the wake of the COVID-19 pandemic.

The main objective of this chapter was to examine the impact of the cost of living of both source and destination nations on inbound tourism across multiple destinations. We considered three destination nations: Bolivia, Cyprus, and the United States of America. For each destination, we collected annual data on inbound tourism from a total of 30 source nations over 14 years from 2010 to 2023. We built panel regression models with the dependent variable being the number of visitors to a particular destination from a source nation. Each source-destination pair was a unique observation within our dataset. The key independent variables include the cost of living, measured as the annual increase in inflation at both the source and destination, GDP per capita at both the source and

destination (in terms of purchasing power parity), and geographical distance between the source and destination nations.

Additionally, we include a dummy variable for each year to account for temporal factors in the panel models with entity- and time-fixed effects. The estimated coefficients from panel regression models suggest that tourism arrivals between a given source-destination pair are positively correlated with the increase in the cost of living at the destination. Our results are similar to those of other studies (Kumar et al., 2020), indicating that international tourism may exhibit some characteristics of a Veblen good, particularly in the immediate aftermath of COVID-19. The following section examines key background literature on the cost of living and tourism.

#### ***B.4.2 Key concepts and literature***

##### **B.4.2.1 Impact of Changes in the cost of living on international tourism**

A cost-of-living crisis occurs whenever real wage growth is outstripped by inflation (Hourston, 2022). An increase in the cost of essentials reduces money available for leisure activities such as tourism. Inflationary surges and induced cost-of-living crises have frequently occurred at the national level, and their impact on international tourism demand has been extensively studied at both national and international levels. International tourist arrivals to a destination are the primary dependent variable in such studies.

At the national level, studies have been conducted in Russia (Algieri, 2006), Tanzania (Wamboye et al., 2020) and South Korea (Li et al., 2011) among multiple destinations. Algieri (2006) found that a high cost of living in Russia negatively impacted tourism receipts for inbound tourism to Russia. Wamboye et al. (2020) conducted a panel data analysis of international arrivals to Tanzania, finding that the cost of living in Tanzania, as measured by the Consumer Price Index (CPI), negatively impacted tourist arrivals.

Several authors have noted a heterogeneity in the impact of an increase in the cost of living on inbound tourism, depending on the source countries of tourists. For example, Yorucu and Mehmet (2011) noted in a study of tourist arrivals to Cyprus that the elasticity of demand, as a function of the destination's cost of living, varied by source nation. Gounopoulos et al. (2012) noted that the impact of the cost of living in Greece on inbound tourism also varied according to the source nation. Unlike the previous studies, which looked at only a single destination, Khalid et al. (2019) and Athari et al. (2021) considered tourism flows between multiple source-destination pairs over several years to understand the impact of increases in the cost of living over a larger cross-section of countries. Khalid et al. (2019), fitted a panel gravity model using data from 200 countries spanning the period 1995-2010. They found that an increase in inflation at both the destination and source nation levels reduced tourism flow between the two; this, however, varied by destination. Within the same study using inbound tourism data for 76 destinations spanning the period 1995-2017 Athari et al., (2021), found that the level of political risk was a key determinant of tourist demand. In countries with high levels of political risk, an increase in the cost of living was associated with a marginal increase in tourism flows. In a study on inbound tourism to Pacific Island nations, Kumar et al. (2020) found that while the cost of living proxied by inflation mostly had a negative impact on travel between a source-destination pair, there were also instances of the cost of living having a positive impact, which was put down to the fact that specific Pacific Island destinations are considered luxury destinations. Similarly, Shaheen (2019) found that religious tourism for Hajj to Saudi Arabia also exhibited characteristics akin to a Veblen good, i.e., despite an increase in relative price, most source nations experienced an increase in tourism. These findings suggest that while an overall increase in the cost of living does decrease inbound tourism, the nature of tourism and perception of destination, along with

the nature of the source nation, also play an important role. Additionally, there are instances of a rise in the cost of living being positively correlated with tourism demand, as seen by Kumar et al. (2020) and Shaheen (2019).

As can be seen from the review of the existing literature, several authors have found that an increase in the cost of living, as proxied by inflation, negatively impacts international tourism demand. However, it is worth noting that each of these studies was conducted using data from a period without any significant shocks, particularly one with a magnitude comparable to that of COVID-19. The compounded effect of the two independent shocks of COVID-19 and the cost-of-living crisis could lead to either an increase or a decrease in global tourism demand, and we investigate this phenomenon in this study.

#### **B.4.2.2 Unmet international tourism demand from COVID-19**

The current cost-of-living crisis follows the COVID-19 pandemic, during which international tourism plummeted to zero in multiple countries for several years due to travel restrictions (Tourism Authority of Thailand, Vietnam National Authority of Tourism, 2025). This led to unmet demand for international tourism across nations, as summarised at the end of part A of this thesis. In a survey conducted between January and February 2021, Fedeli et al. (2022) found that travel desire existed independent of confidence in COVID-19 vaccines, mainly arising from sociopsychological needs. Such desire for travel can fuel aspirations, and tourists with high aspirations are found to spend more on travel (Alfarhan et al., 2023).

So, we have an interaction of two factors, namely

1. The increased costs of travel due to the global cost of living crisis
2. Aspirational travel due to unmet demand created during COVID-19

It is with this in mind that we frame our research objectives and research question

### ***B.4.3 Research objectives and question for our study***

The research objective of this study is to understand the impact of the present cost-of-living crisis on international tourism at a cross-country level. As the profile of inbound tourists varies by destination and the source country of the tourist, it is critical to examine how the cost-of-living crisis at both the source and destination impacts tourism flows. To study the impact of the cost-of-living crisis on inbound tourism across various destinations, we have conducted a panel regression analysis across Bolivia, Cyprus, and the United States of America. For each of these destinations, we examine how tourist arrivals from different source countries are affected by increases in the cost of living at both the source and the destination. We include several other variables as control variables. This study thus seeks to answer:

***RQ: Does the difference in cost of living between a source and destination country affect international tourism demand across nations?***

An explanation of our study's methodology, essential variables, data collection, analysis, and results follow this section. These are then followed by a discussion of our research's results, implications, and limitations.

### ***B.4.4 Methodology and Data***

#### ***B.4.4.1 Choosing Countries, data and a time frame for analysis***

After scanning national data portals for annual data on international tourist arrivals, we shortlisted 38 nations. Three destinations were chosen for further analysis due to the availability of tourism demand data from source nations: Bolivia, Cyprus, and the United States of America. In 2019, the number of inbound tourist arrivals across these three destinations was registered as nearly 85 million tourists. The cost-of-living crisis has impacted all three destinations heterogeneously, as evident in the change in annual

inflation across nations (Ha et al., 2023). While Cyprus experienced an average annual inflation rate of 0.5% between 2010 and 2019, it saw a six-fold increase to an average annual inflation rate of 3.44% between 2020 and 2023. Conversely, Bolivia, which averaged around 4.3 percent in the same period, saw its annual inflation rate dip to an average of 1.5 percent between 2020 and 2023. We then chose source countries for each of our destinations based on those source nations that supplied the highest percentage of tourists for each. This left us with 30 source nations across our three destinations. We have looked at annual data from 2010 to 2023. The table below showcases the source nations chosen by destination, along with the cumulative share of these nations in the total number of international tourists to the destination in calendar year 2023.

*Table 4.1: Source nations by destination*

Destination	Source Nations Chosen	Per cent of the total international represented by source nations for destinations in 2023
Bolivia	Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Ecuador, France, Germany, Ireland, Israel, Italy, Japan, Mexico, Paraguay, Peru, South Korea, Spain, Sweden, Switzerland, the United Kingdom, United States, Uruguay	~ 63%
Cyprus	Germany, United Kingdom, Denmark, Austria, Greece, Sweden, Poland, Switzerland, United States of America, Israel	~73%
United States of America	Canada, Mexico, United Kingdom, Japan, Germany, France, South Korea, Australia, Brazil, Italy, India, Spain, Netherlands, Ireland	~80%

*Source: National data portals*

#### B.4.4.2 Key variables of the study

- ***Visitors from Source to Destinations (VfS)***: This cross-country study examines inbound tourism from a specific source nation to a particular destination country within a given year. The label for this measure of annual tourism demand between a given source-destination pair is denoted as "VfS,". This is our key dependent variable. VfS was transformed into the log of its value to account for the wide dispersion of tourist arrivals across multiple source-destination pairs.
- ***Cost of Living at Source (CLS) and Cost of Living at Destination (CLD)***: Multiple studies have examined the relationship between tourism demand and the relative cost of tourism at the destination. This has often been calculated as the ratio of destination CPI to source CPI (O'Hagan & Harrison, 1984; Phakdisoth & Kim, 2007; Dogru & Sirakaya-Turk, 2017). Unlike previous studies (Assadzadeh et al., 2014), we were interested not just in the differential of cost of living at source and destination, but in understanding the individual impact of a change in cost of living at either the source or the destination on tourist flows. Thus we have included these as two separate independent variables. Changes in the cost of living have been calculated as the annual percentage change in the CPI over the previous year for both source and destination countries. These are denoted by CLD (cost of living in a destination) and CLS (cost of living in a source nation) and are the primary independent variables.
- ***Economic conditions of destination nation and income of inbound tourists***: The economic condition of the destination is measured as the GDP per capita in terms of purchasing power parity (Song et al., 2003). Income is a key determinant of inbound tourism (Li et al., 2011), for which the GDP per capita in terms of

purchasing power parity of source countries has been used as a proxy for purchasing power of tourists from that country (Wang, 2014). GDP per capita (purchasing power parity) of the destination has been labelled as "GDPDest", while the same variable has been labelled "GDPSR" for the source nation. We took our data from the World Bank portal (Ha et al., 2023), choosing constant currency with the base year set as 2021. Like our dependent variable, GDPDest and GDPSR have been log-transformed to account for dispersion and spread across source and destination nations.

- ***Travel costs between source and destination:*** The geographical distance between a source and destination nation also impacts tourism demand (McKercher, 2008; McKercher & Mak, 2019), as it accounts for travel costs, with demand generally decreasing as distance increases. Accounting for travel costs, our analysis has included the geographical distance between the source nation and the destination as a critical, independent variable. This has been measured as the straight-line distance between the capital cities of the source and destination following Limao & Venables (2001) study on transportation costs. In our study, we denote the geographical straight-line distance between national capitals by "GD" in kilometres. GD, too, has been log-transformed in our study and calculated using a tool from Geobytes.com (Geobytes, 2024).

Annual data for each of the variables listed above have been collected for 14 years, spanning the period from 2010 to 2023. A factor variable was included in the model specification for each source-destination nation pair to account for entity fixed effects, which control for omitted variable bias arising from socio-cultural, political, or economic factors that may affect the level of tourism between a specific source and destination pair of countries. Each calendar year was also transformed into a factor variable to account

for omitted variable bias that might have affected global tourism in a particular year (for example, COVID-19). The variable labels and a description of each are tabulated below.

*Table 4.2: Description of variables in the study*

Serial No.	Variable Label	Description	Nature of variable
1	VfS	Visitors from a source nation to a given destination	Dependent variable
2	GDPDest	GDP PPP Per Capita of Destination nation	Independent variable
3	GD	Geographical straight-line distance between source and destination capitals measured in kilometres	Independent variable
4	CLS	Cost of living in source nation	Independent variable
5	CLD	Cost of living in destination nation	Independent variable
6	GDPSr	GDP PPP Per Capita of Source Nation	Independent variable
7	Year	Calendar Year	Factor Variable

*Source: Authors*

#### **B.4.4.3 Formulation and Methodology for Study**

As an analysis of tourist arrivals is an analysis of demand elasticity, we conducted an econometric panel regression like the panel econometric regression conducted by Algeri (2006). The generalised functional form for inbound tourism demand is as described in equation 1.

$$(\log (VfS)) \sim g(\log (GDPDest), \log (GD), CLS, CLD, \log (GDPSr), Year) - (1)$$

The functional regression equation is given by equation 2 on the next page.

$$\log(VfS)_{iyt} = \alpha_0 + \beta_1 \log(GDP_{yt}) + \beta_2 \log(GD_{iyt}) + \beta_3 (CLS_{it}) + \beta_4 (CLD_{it}) + \beta_5 (HCLS_{it}) + \beta_{6-18} (Year_t) + \varepsilon_0 \quad - (2)$$

Here,  $i$  – denotes the source nation,  $y$  – denotes the destination and  $t$  – denotes the year.

Data on tourist arrivals were taken from the national data portals of Bolivia, Cyprus, and the United States of America for source-destination pairs. Details on the data portals used can be found in the appendix of the thesis. Using the "plm" and "car" packages in R, we conducted panel regression on our unbalanced panel. The results are discussed in the next section.

## ***B.4.5 Results***

### ***B.4.5.1 Summary findings and regression results***

In this section, we present summary statistics for the data as shown in Table 4.3. Of the three destinations, the United States of America was the largest market for inbound tourists in 2023, with 66 million arrivals, followed by Cyprus, with 3.8 million, and Bolivia, with 1 million. For Bolivia in our sample, Peru is the largest source of inbound tourists to Bolivia<sup>1</sup>, accounting for nearly 21% of inbound foreign tourists to Bolivia. In the case of Cyprus, the United Kingdom is the most prominent source, accounting for 34% of inbound tourists. The largest source market for the United States was Canada, which accounted for nearly ~31% of inbound tourists.

---

<sup>1</sup> Argentina, the largest source of inbound tourists to Bolivia, was dropped from our sample due to being a significant outlier on account of hyperinflation, with annual inflation averaging over 40% from 2018 to 2023

Given the unbalanced nature of our sample, only a fixed entity and time effects panel model could estimate the elasticity of demand, whose results are tabulated on the next page.

*Table 4.3: Results of regression analysis from Study 1*

Variable	Variable	p-value	Significance level
CLD	0.101016	1.11E-05	***
CLS	0.001143	0.96	
log(GDPDest)	2.224883	< 2.2e-16	***
log(GDPSr)	0.794613	0.43	
log(GD)	-0.29846	0.35	
Year 2011	-0.36875	2.9E-04	***
Year 2012	-0.04249	0.29	
Year 2013	-0.05999	0.25	
Year 2014	-0.04453	0.49	
Year 2015	0.071852	0.39	
Year 2016	-0.00199	0.98	
Year 2017	-0.01793	0.86	
Year 2018	-0.03866	0.74	
Year 2019	-0.04159	0.76	
Year 2020	-1.32468	< 2.2e-16	***
Year 2021	-2.00284	< 2.2e-16	***
Year 2022	-0.98526	1.37E-04	***
Year 2023	-0.52577	0.011	*
Significance levels	‘***’ 0.001	‘**’ 0.01	‘*’ 0.05
R-Squared:	0.85526		
Adj. R-Squared:	0.84459		

*Source: Authors*

We find that inbound tourism demand is positively related to destination GDP per capita, which can be explained by the fact that the most popular destination in our sample also has the highest GDP per capita, i.e. the USA. A higher GDP per capita reflects better

tourism infrastructure in a destination and has been found to promote inbound tourism in prior studies (Athari et al., 2021). The cost of living in a destination positively and significantly impacts inbound tourism demand, but with a coefficient of less than 1, indicating that its impact has been less pronounced during our observation period. Compared to the base year of 2010, we find that 2011, 2020, 2021, 2022, and 2023 had a negative impact on inbound tourism. The drop in 2020-2023 compared to the base year 2010 can be explained by lower recovery levels between some source and nation pairs due to COVID-19-induced heterogeneity in recovery. The drop in 2011 was due to significant declines in some source nation pairs. For example, between 2010 and 2011, there were 57 thousand fewer tourists between Japan and the USA.

#### **B.4.6 Discussions, Conclusions and Contributions**

The study aimed to understand whether the present cost-of-living crisis has impacted inbound tourism to countries and tourists' accommodation choices. In this chapter, we built an entity and time-fixed effects panel model across three destination countries and thirty source nations with annual data of 14 years. We found that the cost of living had a slightly positive impact on inbound tourism at an aggregate level. We found some years to have negatively affected travel between a source-destination pair, explained mainly by the COVID-19 pandemic and the significant reduction in travel between a pair of nations in a given year, such as that between Japan and the US in 2011. The main result is the cost of living in a destination, positively impacting inbound travel for our sample of nations. Multiple factors can explain this apparent contradiction. The first is that across our destinations, barring Bolivia, most of the rapid rise in the cost of living as proxied by inflation happened in 2022 and 2023 in our chosen time frames (Ha et al., 2023). In the same years, a more substantial recovery in inbound tourists has occurred across all three destinations in our sample and globally post-COVID-19 (UN Tourism, 2025). This has

happened despite the annual average consumer price index of accommodation services in both the United States and Cyprus increasing by a CAGR of 6% and 4.5% between 2020 and 2024 (Ha et al, 2023).

One of the key concepts explaining this contradiction is the concept of compensatory travel. A multi-phase study conducted on post-COVID-19 travellers by Meenakshi et al. (2024) noted that travel in the years following 2021 onwards was characterised by catch-up or pent-up travel. Many travellers in the same study noted that the resumption of travel was fuelled by a desire to release from stresses encountered during the pandemic. Kim et al. (2022), in a survey conducted between June 4 and 7, 2020, in South Korea, found that COVID-19 fatigue increased participants' desire to travel post-COVID-19. Yao et al. (2023) noted similar results in China through two scenario experiments conducted in December 2021.

This work contributes to the understanding of post-COVID-19 trends in international tourism. By empirically finding that the cost of living in a destination did not deter tourism during COVID-19, we show the robustness of international tourism. The study findings also contribute to the literature by providing an example of a situation wherein the usual price elasticity may not apply in the case of tourism.

#### ***B.4.7 Limitations and future Work***

This study has its limitations. This study has been done at an aggregate national level, so it does not account for heterogeneity in travel choices. For example, one question the present research fails to answer is whether international travellers from a given nation are choosing cheaper or less expensive destinations, which we have tried to address in the next chapter. Future work can look at the opposite picture, i.e., outbound travel from a nation, and see whether people have chosen less expensive or more expensive destinations.

Another area for future work would be regarding long term vs short term effects of the cost-of-living crisis. Shocks in tourism be it economic, natural or political shocks in the past have been found to have varying impacts by time frame. For instance Saleh et al, 2011 found using data from 1988 to 2007, that tourism to Thailand was impact in the short run by multiple shocks, but in the long run did not have a serious impact. In a similar fashion we can examine whether the ongoing cost of living crisis has any long-term impact on tourism to a country.

## **Chapter 5: Impact of an increase in the cost of living on demand for overnight stays in different segments of the hospitality sector in a destination**

### ***B.5.1 Introduction***

The previous chapter focused on the changes in demand for international tourism at the country level in the wake of the ongoing cost-of-living crisis. Three destination countries were considered and we looked at inbound tourist flows from several source countries. The impact of changes in cost of living at both source and destination countries was not very high. In fact, the results of the estimated models indicate that changes in cost of living at the destination had a slight positive impact on inbound tourism.

As noted in previous research, the hospitality sector caters to different segments of tourists with varying price sensitivity levels (Rondan-Cataluña & Rose-Diaz, 2014). A budget traveller may choose to stay in less expensive hotels or hostels, while a wealthy traveller may choose to stay in more expensive resorts and high-end accommodations. Due to differences in tourism budgets, the demand for overnight stays in various categories of the hospitality sector, which cater to different tourist segments, may be elastic and change in response to a rise in the cost of living. Given the differences in individual preferences and budget constraints, Song and Lin (2023) propose a framework for estimating tourism demand at a disaggregated level. Following this recommendation, understanding the extent of such differences in demand elasticities within the hospitality sector motivates the current study.

This chapter looks at the impact of a rise in the cost of living on the demand for different hospitality industry segments. For this study, we selected Denmark as the destination. The data chosen is annual, spanning 17 years between 2007 and 2023. The key dependent variable is the aggregate number of overnight stays within a given segment of the hospitality sector (hotels, hostels, resorts, and camping sites) by tourists from 32 source

countries. Independent variables include the cost of living, measured by the yearly increase in inflation in the source and destination countries, as well as the GDP PPP per capita of both the source and destination nations during the calendar year. Additionally, geographical distance between the source and destination nations is also considered.

As in the previous chapter, we find that changes in the cost of living at the destination have a limited overall impact on the number of overnight stays. Overall, there is a lower demand for overnight stays in hostels than in hotels. An increase in the cost of living at the destination reduces demand for hostels compared to hotels. An increase in the GDP per capita of the source nation increases demand for higher-end accommodation choices such as resorts and camping compared to hotels. An increase in the GDP per capita of Denmark leads to more overnight stays and demand for hostels. We discuss the possible reasons and implications of our results.

The following section briefly reviews the literature on demand for different accommodation segments and the factors that may drive the demand. We then present the results, conclusions, and limitations of our study.

## **B.5.2 Key concepts and literature**

### ***B.5.2.1 Travel costs and role of accommodation costs***

International tourists incur various expenses, including costs related to travel, accommodation, food and miscellaneous activities such as cultural, sports and sightseeing costs (Brida & Scuderi, 2013). Dolcinar et al. (2008), in a survey of potential Australian tourists, found that different groups of tourists have different travel budgets. A key decision for tourists is how to allocate their travel budget among various components of travel expenses, such as food and accommodation (Eugenio-Martin & Inchausti-Sintes, 2016). Accommodation costs are a significant component of travel costs. For instance, Masiero et al. (2015) noted that accommodation costs accounted for approximately 30%

of the total trip cost for tourists visiting Ascona and Locarno in Switzerland. Similar figures were reported by Aguiló et al. (2017) for Mallorca, Spain. Thus, in the ongoing cost-of-living crisis, one way to cope with increased travel costs for prospective tourists is to opt for more affordable accommodation options for overnight stays.

#### ***B.5.2.2 Accommodation choice and tourist profile***

Several authors have segmented consumers based on their accommodation choices and further attempted to understand the profiles of consumers who chose a particular type of accommodation. Such segmentation has been carried out for multiple accommodation categories. In the following paragraphs, we briefly describe some studies examining tourists who chose to stay in hotels, hostels, resorts, and camping sites. These studies provide insight into the price sensitivity of international tourists across different segments, driving demand for various segments of the hospitality sector.

Costa (2013) conducted a study to understand the determinants of price formation within different accommodation segments in Ibiza, Spain. They included four tourist accommodation classes: hostels, hotels, apartments, and aparthotels, and five further subclasses within each accommodation category, based on the amenities provided by the establishment, such as room-only, bed and breakfast, half-board, full-board, and all-inclusive. Their models indicated that the key determinants of price and profitability were an establishment's location and the amenities it offered.

Other studies have identified multiple determinants of hotel prices, including location (Illescas-Manzano et al., 2023), hotel category (Fernandez & Bedia, 2004; Kim et al., 2020) and tourist income (Fung et al., 2016). The preference for different kinds of accommodations also varies based on the nature of the tourism activity (business vs. pleasure), the characteristics of the tourists (young solo travellers vs. families), and their

tourism budgets. Kim et al. (2020) surveyed 513 hotel consumers in the United States and found that they could be divided into two broad groups: business and leisure travellers. Within each of these segments, there could exist further subgroups based on demographics or willingness to pay. For example, leisure travellers were both budget and luxury hotel travellers. Hotels were also found to be used equally by both single and married customers within this study.

Backpackers and budget travellers generally prefer hostels over hotels (Thyne et al., 2005; Nok et al., 2017). Across Scotland, Thyne et al. (2005) found that most hostel backpackers were under 30 and interested in novel experiences and exploration. In Hong Kong, Nok et al. (2017) found a similar profile, with most hostel backpackers between 20 and 29 years old motivated by exploring Hong Kong's gastronomy and learning new things. Within the sharing economy, backpackers can rent single rooms or entire homes through platforms like Airbnb. The segments opting for either vary by the characteristics of the traveller. For example, in a study by Lutz & Newlands (2018), users in shared rooms were found to have lower incomes, be more likely to be single, and travel with friends. Meanwhile, entire homes were preferred by more educated, affluent tourists who were travelling with their families and sought relative seclusion.

Resorts cater to niche segments of the tourism industry, targeting tourists with specific preferences. Thus, they may offer experiences such as adventure, ecotourism, wildlife, and family bonding (Brey, 2011). As each resort typically caters to a particular niche segment in tourism, its tourist profiles vary greatly. For example, in their study on tourists to therapeutic spas in Poland, Dryglas and Różycki (2017) found that most customers were aged between 45 and 65. In contrast, in their study on tourists to diving resorts at L'Estartit in Spain, Mundet and Ribera (2001) were aged 31-45.

Camping resorts are mostly outdoor spaces where tourists can stay briefly in tents (Brooker & Joppe, 2013). In a literature review on trends in camping and outdoor hospitality, Brooker and Joppe (2013) noted that the average camper was over the age of adolescence. Studies by Mikulić et al. (2017) for Croatia and Gross et al. (2023) for Germany also noted this. Within the camping industry, multiple offerings are available at various price points, including glamping, which combines camping with modern amenities (Gross et al., 2023).

### ***B.5.2.3 Determinants of accommodation prices within different categories in the hospitality sector***

Several extant studies have identified the determinants of prices for overnight stays at different categories of accommodation. For hotels, studies conducted in the United States (Zhang et al., 2011; Jiang & Taylor, 2020) and Portugal (Soler et al., 2019) have found that hotel category (in terms of star rating), seasonality, and location are key determinants of pricing. Within hotels in New York City, Zhang et al. (2011) found that for luxury hotel customers, the quality of service was a significant factor, whereas it was not for economy hotels. In the case of resorts, studies conducted at hotel resorts in Spain (Vives & Jacob, 2023) and wildlife resorts in Kenya (Yobesia et al., 2024) found that key determinants of pricing were location (concerning scenic spots), extra facilities such as food and beverages and spas increased price of resorts. Similar to hotels, resorts are categorised based on the available facilities. The customer profile of each varies, as was found in the case of Belizean ecolodge resorts by Kwan et al. (2008). For hostels, in a global study done using data from the Hostelworld portal, de Oliveira Santos (2016) found that hostel rooms with better locations, cleanliness and overall level of facilities were key price determinants. Within camping sites, in a study done on glamping sites in South Korea, Lee et al. (2019) found that key determinants of demand were lower prices,

more cleanliness, the presence of security personnel and less congested camping areas.

#### ***B.5.2.4 Impact of income levels on choice of accommodation by tourists***

Multiple studies on multiple categories of tourists have found that income levels of tourists do impact final accommodation choices. For instance in a study conducted on nature tourists in Finland, Pouta et al., 2006 found that tourists who had a higher travel budget opted for more expensive accommodation options instead of vacation homes. In Spain Losada et al., 2017 found that senior tourists who had lower self-perceived economic status opted for cheaper accommodation in the form of cheaper hotels. A similar finding was noted by Mody et al., 2022 for the case of shared accommodation with tourists opting for higher quality accommodation, reporting high income as well.

#### **B.5.3 Research objectives and questions for the study**

A rise in the cost of living at a given destination would imply an increase in food, lodging and transport prices, affecting the anticipated expenditures of tourists travelling to that destination. Tourists may opt to substitute more expensive travel options, food, and accommodations for less expensive alternatives or shorten the total duration of their visit. This study concentrates only on the demand for overnight stays in different segments of the hospitality industry. Thus, we analyse whether a rise in the cost of living at the destination (price effect) or the source (income effect) would result in a shift in accommodation preferences. The key dependent variable is the total number of overnight stays in a particular accommodation type from a given source country aggregated over a year. The key research question we address in this study is as follows-

***RQ: Does the cost of living in a source nation and destination affect the accommodation segments of international tourists in a given destination?***

## **B.5.4 Methodology and Data**

### **B.5.4.1 Choice of Destination**

The chosen destination for this study is Denmark, which caters to a diverse range of tourists and was ranked 16th in Europe in 2019 in terms of international tourist arrivals (UN Tourism, 2021). Like other nations, Denmark experienced a sharp decline of 57.5% in international tourists in 2020 due to the COVID-19 pandemic and the subsequent restrictions on cross-border travel. International visitor arrivals to Denmark had recovered to 96% of their pre-pandemic 2019 levels by 2022 (UN Tourism, 2024). However, post-COVID-19, Denmark has faced another shock in the form of a cost-of-living crisis since 2021 (Firth, 2024), driven by an increase in gas prices resulting from the Russo-Ukrainian conflict (Statistics Denmark, 2024). Denmark provides data on overnight stays, aggregated by the source nation of the visitor, across six categories of accommodations: hotels, resorts, camping sites, hostels, marinas, and holiday cottages. This enables us to examine the impact of the cost-of-living crisis across various accommodation segments in Denmark. In the next section, we describe the critical variables for analysis, followed by our methodology and a discussion of the results.

#### B.5.4.2 Data collection and critical variables for the study

The key dependent variable is the number of overnight stays in accommodation types by visitor's nationality, which aligns with Falk (2010). For example, the dependent variable includes data for the number of overnight stays during a given year by tourists visiting from Australia who stayed in hotels, hostels, camping sites, and resorts. This study considers four types of accommodation: camping sites, hostels, hotels, and tourist resorts. We have compiled annual data from 2007 to 2023, enabling us to examine the impact of the 2008-09 global financial crisis, the COVID-19 pandemic, and the current cost-of-living crisis on overnight stays by nationality. We have chosen 32 nations as source countries for our analysis. The details on the source nations and their shares in overnight stays by accommodation type for 2023 are given below.

*Table 5.1: Details of nations, overnight stays by accommodation type for Denmark in 2023*

Nations	Accommodation Type	Share of sample in Overnight Stays by Accommodation Type in Denmark in 2023
Australia, Austria, Belgium, Canada China, Czech Republic, Estonia, Finland	Camping Sites	99%
France, Germany, Greece, Hungary Iceland, Ireland, Italy, Japan, Latvia Lithuania, Luxembourg, Netherlands	Hostels	83.50%
Norway, Poland, Portugal, Slovakia South Africa, Spain, Sweden, Switzerland	Hotels	90.68%
Türkiye, Ukraine, United Kingdom United States of America	Tourist Resorts	97.20%

*Source: StatBank, Statistics Denmark*

For modelling, we included dummy variables for each of the four types of accommodations. Within the four categories we obtained, we chose hotels as the base category as they account for the most overnight stays among our four accommodation types. Source nation and accommodation type pairs were also changed into factors. For example, USA – Hostel overnight stays were made a factor variable. We have taken into account the annual change in the consumer price index (CPI) in percentage terms at both source nations and the destination, Denmark, as a proxy for the cost of living in each. Similarly, the GDP per capita PPP of the destination (Denmark in this study) and the GDP per capita PPP of source nations have been used as indicators of economic development in Denmark and the average tourist income of inbound tourists, respectively.

Additionally, the geographical distance, measured as the straight-line distance between Copenhagen and the capital of the source nations, labelled “GDist”, has been taken as a proxy for ease of access and travel costs. Finally, we took some dummy variables and interaction variables. In light of the findings of the previous chapter, instead of taking each year as a dummy variable, we have taken two dummy variables. The first of these dummy variables is for the global financial crisis and the H1N1 pandemic, which is set to 1 for 2008 and 2009 and 0 for the rest of the year, labelled YAGH. The second dummy variable is for years affected by the COVID-19 pandemic, labelled YAC, which is 1 for the years 2020, 2021, and 2022, and 0 for the rest. We have examined the interaction between our accommodation categorical variables (“AC\_Type”) and the following variables: GDP per capita of Denmark (GDP\_Den), GDP per capita of the source (GDP\_Src), cost of living in Denmark (COL\_Den), and cost of living at the source (COL\_Src). The values of overnight stays, GDP per capita of source and Denmark, and the geographical distance between Denmark and source nations have been log-

transformed to reduce dispersion. The table on the next page gives variable labels along with their definitions.

Table 5.2: Variable labels

Serial No.	Variable Label	Explanation
1	OS_Src	Overnight Stays From a Source Nation (Dependent variable)
2	GDP_Src	GDP PPP Per Capita of Source Nation
3	GDP_Den	GDP PPP Per Capita of Denmark
4	COL_Src	Cost of living in source nation
5	COL_Den	Cost of living in Denmark
6	YAGH	Years affected by Global financial crisis and the H1N1 pandemic
7	YAC	Years affected by COVID-19
8	GDist	Geographical distance
9	AC_Type <sub>n</sub>	n = 1 – Hotels
		2- Hostels
		3 – Tourist Resorts
		4- Camping Sites

Source: Authors

### B.5.4.3 Methodology and Formulation

The functional formulation for our study is given below.

$$\begin{aligned}
 (\log OS\_Src) \sim f(COL\_Src, COL\_Den, \log(GDP\_Src), \log(GDP\_Den), YAGH, YAC, AC\_Type_n, \\
 GDist, AC\_Type_n * \log(GDP\_Den), AC\_Type_n * \log(GDP\_Src), AC\_Type_n * \\
 COL\_Den, AC\_Type_n * COL\_Src) \quad -(1)
 \end{aligned}$$

The panel regression equation based on the function given in equation 1 is given in equation 2 on the next page

$$\begin{aligned}
\log(OS\_Src)_{iynt} = & \alpha_0 + \beta_1 * COL\_Src_{it} + \beta_2 * COL\_Den_{yt} + \beta_3 * \\
& \log(GDP\_Src)_{it} + \beta_4 * \log(GDP\_Den)_{yt} + \beta_5 * YAGH_t + \beta_6 * YAC_t + \beta_7 * \\
& \log(GDist_{iy}) + \beta_8 * AC\_Type_n + \left( \sum_{m=9}^{n=2 \text{ to } 4} \beta_m * AC\_Type_n * \right. \\
& \left. \log(GDP\_Den)_{yt} \right) + \left( \sum_{m=12}^{n=2 \text{ to } 4} \beta_m * AC\_Type_n * \log(GDP\_Src)_{it} \right) + \\
& \left( \sum_{m=15}^{n=2 \text{ to } 4} \beta_m * AC\_Type_n * COL\_Den_{yt} \right) + \left( \sum_{m=18}^{n=2 \text{ to } 4} \beta_m * AC\_Type_n * \right. \\
& \left. COL\_Src_{it} \right) + \varepsilon_0 \quad -(2)
\end{aligned}$$

Here, “i” denotes the source nation, “y” denotes the destination, Denmark, “n” denotes the category of accommodation and “t” denotes the year.

Based on Equation 2, we constructed both random- and fixed-effects panel models. The panel regression was carried out in R using the “plm” and “car” packages. Both panel models were then subjected to the Panel Hausman test, which showed that a random-effects model provided a better fit for the chosen data. The random effects panel model results and summary statistics are given next.

## **B.5.5 RESULTS**

### **B.5.5.1 Summary findings and results of panel regression**

Within our chosen sample of nations and accommodations for Denmark, hotels accounted for the largest percentage of total overnight stays in 2023, at 50.3%. This was followed by camping sites at 30.1%, resorts at 10% and hostels at 9.6%. An examination of source nation concentration across the four accommodation types reveals that hotels and hostels are lightly concentrated markets, with 2023 Herfindahl-Hirschman Index (HHI) values of 840 and 874.7, respectively. Tourist resorts exhibit a moderate concentration of source nations, with an HHI value of 1938.6 for 2023. Camping sites had an HHI of 4902.7 and were mainly utilised by tourists from Germany, the Netherlands, Norway and Sweden, who accounted for 90% of all overnight stays in camping sites in 2023.

Overall, the three largest source nations in 2023 by total share of overnight stays were Germany, Norway, and the Netherlands. These three largest nations accounted for 51% of overnight stays in 2023. The high shares of Germany, Norway, and the Netherlands can be explained by their proximity to Denmark. Source market share is tabulated below.

*Table 5.3: Shares by source market in total overnight stays in our sample*

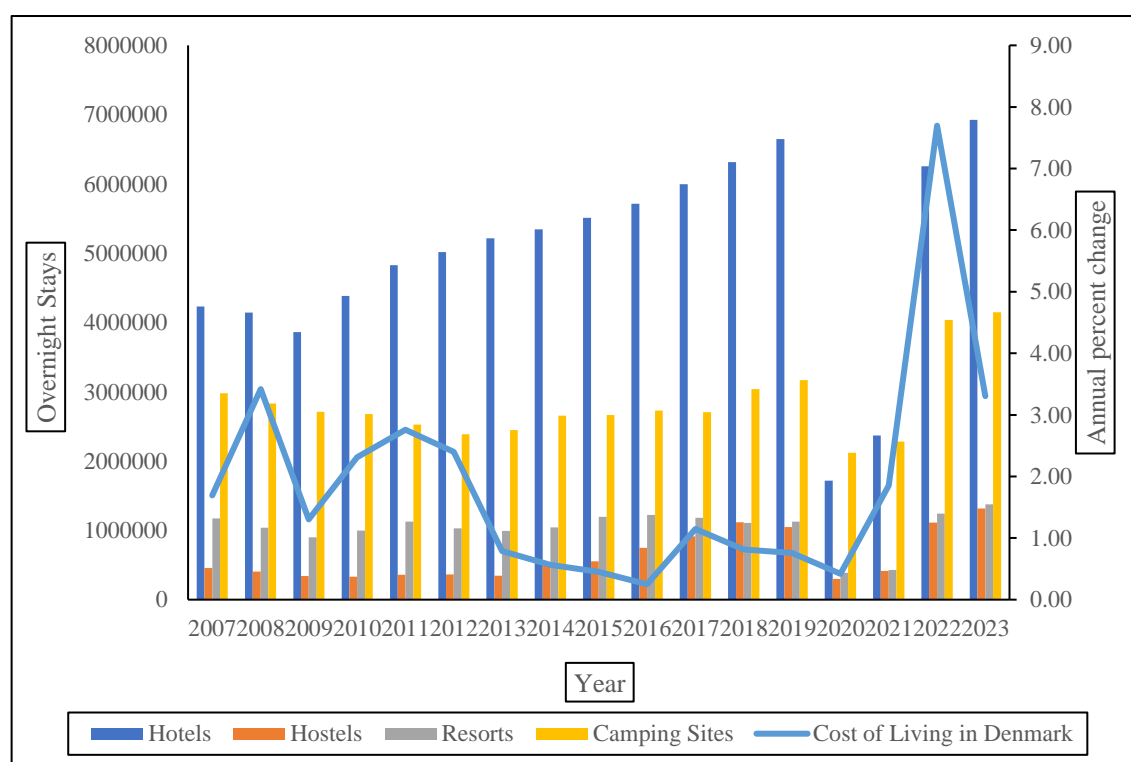
Country	2007	2011	2015	2019	2020	2021	2022	2023
Germany	29.6%	26.2%	24.4%	26.3%	51.4%	46.3%	32.1%	33.1%
Norway	18.3%	19.1%	17.4%	13.3%	10.9%	6.3%	12.9%	9.0%
Netherlands	8.2%	7.2%	6.7%	7.5%	6.4%	9.4%	9.3%	8.9%
Sweden	17.1%	16.9%	15.2%	11.9%	7.0%	9.2%	11.4%	8.9%
United Kingdom	6.6%	6.6%	8.1%	7.5%	5.5%	3.8%	6.2%	7.2%
United States of America	4.0%	4.6%	5.8%	7.0%	3.1%	3.6%	5.7%	7.0%
France	1.5%	2.2%	2.1%	3.0%	1.9%	3.0%	2.9%	3.4%
Italy	2.2%	2.5%	2.8%	3.2%	1.8%	2.9%	2.7%	3.0%
Switzerland	1.3%	2.0%	2.2%	2.4%	1.6%	2.4%	2.4%	2.6%
Spain	1.5%	1.8%	1.8%	2.5%	1.3%	1.9%	2.2%	2.4%
Poland	1.5%	1.2%	1.5%	1.8%	1.8%	2.3%	2.2%	2.1%
Belgium	0.7%	1.1%	1.2%	1.6%	1.0%	2.0%	1.9%	2.0%
Finland	1.7%	2.0%	1.9%	1.7%	0.7%	0.8%	1.4%	1.4%
Austria	0.4%	0.6%	0.6%	0.8%	0.6%	0.9%	0.8%	1.1%
Ireland	0.3%	0.3%	0.4%	0.6%	0.4%	0.6%	0.7%	0.9%
Australia	0.4%	0.7%	0.8%	0.9%	0.4%	0.1%	0.5%	0.8%
Iceland	1.2%	0.4%	0.5%	0.6%	0.4%	0.6%	0.8%	0.7%
Canada	0.4%	0.6%	0.7%	0.8%	0.3%	0.2%	0.5%	0.7%
China	0.6%	1.0%	2.0%	2.3%	0.6%	0.3%	0.3%	0.7%
Czechia	0.3%	0.3%	0.3%	0.5%	0.3%	0.5%	0.5%	0.6%
Portugal	0.2%	0.2%	0.8%	0.4%	0.3%	0.5%	0.4%	0.5%
Ukraine	0.1%	0.1%	0.1%	0.5%	0.3%	0.3%	0.2%	0.4%
Turkey	0.2%	0.2%	0.4%	0.4%	0.2%	0.2%	0.3%	0.4%
Greece	0.3%	0.2%	0.3%	0.4%	0.3%	0.3%	0.3%	0.4%
Lithuania	0.2%	0.1%	0.3%	0.3%	0.4%	0.4%	0.4%	0.3%
Japan	1.0%	1.0%	0.7%	0.8%	0.2%	0.1%	0.2%	0.3%
Hungary	0.2%	0.3%	0.4%	0.3%	0.3%	0.2%	0.2%	0.3%
Estonia	0.1%	0.1%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%
Slovakia	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
Latvia	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%
Luxembourg	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%
South Africa	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

*Source: Statistics Denmark, Authors*

It is interesting to note from the above table that 80% of the demand for overnight stays in Denmark is contributed by tourists from approximately 5 to 8 countries, including Germany, Norway, the Netherlands, Sweden, the UK, the USA, France, and Italy. All of these countries are developed nations with a high GDP per capita, comparable to Denmark. International tourists from these source countries may have larger tourism budgets, which could explain why their demand for overnight stays is relatively less price elastic.

Visual trends in overall overnight stays by accommodation type, compared to the cost of living, are provided in Figure 1

*Figure 5.1: Trends in aggregate overnight stays by accommodation type and cost of living in Denmark*



*Source: Statistics Denmark, Ha et al., 2023, Authors*

Overnight stays dipped most between 2019 and 2020, owing to the COVID-19 pandemic and travel restrictions. However, recovery has been relatively swift, with all accommodation types exceeding 2019 levels by the end of 2022. We also observe that, despite an increase in the cost of living between 2021 and 2023, overnight stays have increased across all four of our accommodation segments. This suggests that the impact of the cost-of-living increase on inbound tourism to Denmark has been relatively limited during our study period. We next discuss the results of our panel regression model.

One of the interesting insights from Figure 1 above is that, after the COVID-19 pandemic, the demand for overnight stays in hotels (in terms of the total number of overnight stays) has returned to pre-COVID-19 levels by 2022. Demand for camping sites has also increased significantly. However, the demand for hostels and resorts has lagged the other two segments.

The results of our panel regression, conducted in R using Equation 2, are presented on the following page.

Table 5.4: Results of panel regression analysis

Variable	Estimate	P Value	Significance
(Intercept)	-32.588	3.05E-10	***
COL_Src	-0.00468	0.571759	
COL_Den	0.082189	1.63E-08	***
log(GDP_Src)	0.486514	0.218368	
log(GDP_Den)	3.879355	9.59E-10	***
YAGH	-0.30444	2.96E-09	***
YAC	-1.08259	< 2.2e-16	***
log(GDist)	-0.63124	0.007775	**
AC_Type2-Hostels	-81.032	< 2.2e-16	***
AC_Type3-Resorts	-15.4393	0.11381	
AC_Type4- Camping	19.95029	0.013779	*
log(GDP_Den):AC_Type2-Hostels	7.144801	< 2.2e-16	***
log(GDP_Den):AC_Type3-Resorts	-0.24357	0.797474	
log(GDP_Den):AC_Type4-Camping	-3.43909	6.76E-05	***
log(GDP_Src):AC_Type2-Hostels	-0.00433	0.981112	
log(GDP_Src):AC_Type3-Resorts	1.384131	2.89E-06	***
log(GDP_Src):AC_Type4-Camping	1.450289	0.0004	***
COL_Den: AC_Type2-Hostels	-0.06003	4.79E-05	***
COL_Den: AC_Type3-Resorts	-0.04701	0.058017	.
COL_Den:AC_Type4- Camping	0.039269	0.244564	
COL_Src: AC_Type2-Hostels	-0.00356	0.672839	
COL_Src: AC_Type3-Resorts	0.024148	0.073806	.
COL_Src:AC_Type4- Camping	0.001794	0.937305	
Significance levels	**** 0.001	*** 0.01	* 0.05
R-Squared:	0.704		
Adj. R-Squared:	0.701		

Source: Authors

From Table 5.4, we can see that two results are similar to those in Chapter 4, with both the cost of living in Denmark and the GDP PPP per capita of Denmark having a positive influence on overnight stays. An examination of the coefficients reveals that the impact of the cost of living remains limited in nature. Geographical distance, as well as the years affected by the global financial crisis and COVID-19, have negatively impacted overnight stays. At an aggregate level, hostels are less preferred than hotels and camping sites for overnight stays, as can be seen in Figure 1. An examination of the interaction variables reveals some interesting findings.

An increase in Denmark's GDP per capita leads to an increase in the number of overnight stays in hostels and a decrease in the similar metric for camping sites compared to hotels. Similarly, an increase in the source nation's GDP per capita is seen to have a positive impact on overnight stays across resorts and camping sites. While the cost of living at the source has no significant impact on any accommodation type, the cost of living in Denmark has a marginally negative effect on overnight stays in hostels. The following section provides a more detailed explanation of these results.

### ***B.5.6 Discussions of Results***

In this study we were interested in understanding the determinants of changes in demand for overnight stays within different segments of the hospitality sector in Denmark. Specifically, we study the impact of changes in cost of living at the destination as well as within source countries on demand for overnight stays disaggregated for different hospitality segments. The dependent variable chosen for this study was the total number of overnight stays booked in a specific year, aggregated over different segments of tourist accommodation (hostels, hotels, camping sites and resorts). The number of overnight stays is further disaggregated based on the source nation of the tourists.

We estimated panel regression models with entity fixed effects, where the entity is a specific source-accommodation type pair. The results obtained from this study are similar to some of the empirical results obtained in the previous chapter, which looked at the total number of tourist arrivals. In particular, we find that the cost of living in Denmark and Denmark's GDP per capita both have a positive effect on overnight stays across all classes of accommodation. The positive coefficient for GDP per capita may be related to an increase in the attractiveness of Denmark as a tourism destination as its economy improved over time. The cost of living in Denmark has a smaller but positive impact on overall demand for overnight stays. This can be due to several factors, including both demand and supply side factors. Demand-side factors include the lagged pent-up demand catching up during the years of high inflation in Denmark following the COVID-19 pandemic, as well as the low impact of cost-of-living increases in Denmark on the choices of tourists arriving from more affluent countries. Supply-side factors may include the stickiness of accommodation prices, where the hospitality sector may choose to absorb some of the costs to attract a larger volume of tourist flows.

We included several control variables in the panel models to address possible issues with omitted variable bias. Dummy variables were included to account for each year during which the tourism sector was impacted by a global crisis such as the global financial crisis, the H1N1 pandemic and COVID-19. As expected, these dummy variables had negative coefficients, and this effect can be visually inferred from Figure 1. Geographical distance has a negative impact on overnight stays, which aligns with the findings of McKercher et al. (2008). A longer distance means higher travel costs, which may inhibit travel between pairs of nations. The low preference for hostels compared to hotels is evident in Figure 1. The preference for camping sites over hotels is due to camping being the primary preferred overnight accommodation mode in key source markets, such as

Germany and the Netherlands. This is despite Germany and the Netherlands also being among the top three source markets in terms of overnight hotel stays.

The results of the interaction between variables indicate differential growth rates for various accommodation segment classes by source nation. For example, when examining the results of the interaction between GDP and accommodation type, an increase in Denmark's GDP per capita is associated with a corresponding increase in relative overnight stays in Denmark in hostels compared to hotels and a decrease in the same case for camping sites. This reflects the aggregate level trend of an increase in overnight stays in hostels, which is numerically higher for more source countries compared to camping sites and hotels.

A country-level dissection of shares in overnight stays by type of accommodation between 2007 to 2023 shows that the shares of hostels in total overnight stays have increased for 27 source markets, compared to 10 for camping sites and 19 in the case of resorts. At the source nation level, an increase in GDP per capita is associated with a positive interaction with overnight stays in resorts and camping sites, indicating that as incomes in source nations improve, more affluent tourists flock more to Danish premium options in resorts and camping sites compared to hotels. In terms of cost of living, we found that an increase in cost of living in Denmark has a muted negative impact on overnight stays in hostels. This can be attributed to a decline in overnight stays in hostels for some key markets, as the cost of living in Denmark has increased. For example, between 2020 and 2021, despite total hostel overnight stays in our sample increasing by 114,620, overnight stays by tourists from the United Kingdom and Norway decreased by 10,469 and 10,197, respectively, in hostels. The UK and Norway accounted for a cumulative of 17.1% overnight stays in hostels for the year of 2020, which decreased to 7.4% in 2021.

### **B.5.7 Conclusions and Contributions**

The primary objective of this study was to examine whether changes in accommodation market segments at a destination were influenced by increased travel costs resulting from the cost-of-living crisis. We chose Denmark as our destination for this study, along with thirty source nations and four accommodation choices. We examined the relationship between overnight stays by accommodation and source nation, considering distance, cost of living, the effects of major crises, and distance. Like the previous chapter, both the cost of living and GDP per capita of the destination are found to promote overnight stays. COVID-19 and the global financial crisis had a negative effect on overnight stays, as did the geographical distance from Denmark. An increase in the cost of living in Denmark resulted in fewer overnight stays in hostels compared to hotels. Similarly, the interaction of GDP suggests that hostels are gaining faster acceptance as Denmark's GDP increases. Additionally, an increase in the source nation's GDP leads to an increase in overnight stays at resorts and camping sites as people from more nations opt for premium accommodation options.

To the best of our knowledge, our study is among the first to examine the impact of the cost-of-living crisis on accommodation segments.

### **B.5.8 Limitations and Future Work**

This work is not without its limitations. Due to the unavailability of data, we were unable to verify whether the decline in hostel nights coincided with an increase in day trips to Denmark. Future work could focus on a particular accommodation type and examine changes annually as a function of the average yearly night price to gain better insights into demand elasticity and substitutability.

## **B\* - Key Conclusions From Part B**

Part B of this thesis looked into the impact of the cost-of-living crisis on inbound tourism demand right after COVID-19. For this, we conducted two studies. The first study, presented in Chapter 4 of this thesis, examines the impact of changes in the cost of living in both the destination and source countries on the demand for international tourism, measured by the total number of *tourist arrivals* at a given destination from a given source country. Chapter 5 examines the impact of changes in the cost of living at the source and destination on the demand for *overnight stays* within different segments of the hospitality industry, namely hotels, hostels, resorts, and camping sites. We examine only one destination country, namely Denmark, for this study.

The results from Chapters 4 and 5 provide some interesting insights that are common to both studies. Specifically, we note that

- i. During the time period chosen for this study, a change in the cost of living at the destination is associated with a small and positive change in inbound tourism demand.
- ii. The standard of living in the destination country, as proxied by GDP per capita (PPP), is found to be positively related to demand for international tourism.

In addition to the two primary results that are common across Chapters 4 and 5, some more interesting results emerge from Chapter 5 as follows:

- i. When the cost of living increased at the destination, the demand for overnight stays within the low-cost segment (hostels) decreased compared to the demand for overnight stays at hotels. This indicates a higher level of price sensitivity within this segment of tourists compared to hotel customers. However, increases in the cost of living did not result in a change in the demand for the high-end segments (resorts

and camping) compared to hotels, indicating that demand for these segments of tourists was relatively nonelastic.

- ii. The geographical distance between the source and destination countries, which did not have a statistically significant effect on international tourist arrivals at the destination, had a negative impact on demand for overnight stays.

The results from our study appear somewhat counterintuitive in that increases in the cost of living at the destination, which could potentially translate to higher tourism costs, have a slight positive impact on demand for international tourism. In the following paragraphs, we provide a plausible explanation for this anomaly.

Song and Lin (2023) introduce some ideas from the domain of behavioural economics, that explain departures from rational behaviour among tourists. They propose that tourism demand may be affected by three significant psychosocial factors as follows.

- The first are hidden costs. In addition to tangible costs such as the price of travel and price of boarding and lodging, several intangible costs such as time cost, psychological and opportunity costs might affect travelling decisions. These costs are part of the push factors (or demand side factors) that affect tourism choices (Kim and Lee, 2002).
- The second category of factors on the demand side are individual differences, such as differences in preferences, personality and other demographics.
- There could also be several destination or supply side factors that affect tourism choices. General factors that reinforce travel demand include marketing campaigns and the availability of desired experiences at the destination. Detracting factors include anticipated risks and negative word of mouth about

undesired experiences. These would fall under the pull factors (or supply side factors).

We have already seen from part A, that in the initial phase of the pandemic, risk was a noticeable detractor to travel demand. As the pandemic progressed, we found that only government restrictions on travel negatively impacted international tourism demand. Restrictions on leisure travel would have deterred individual tourists, and the need for mandatory testing may have been perceived as being an undesirable experience for some segments of travellers.

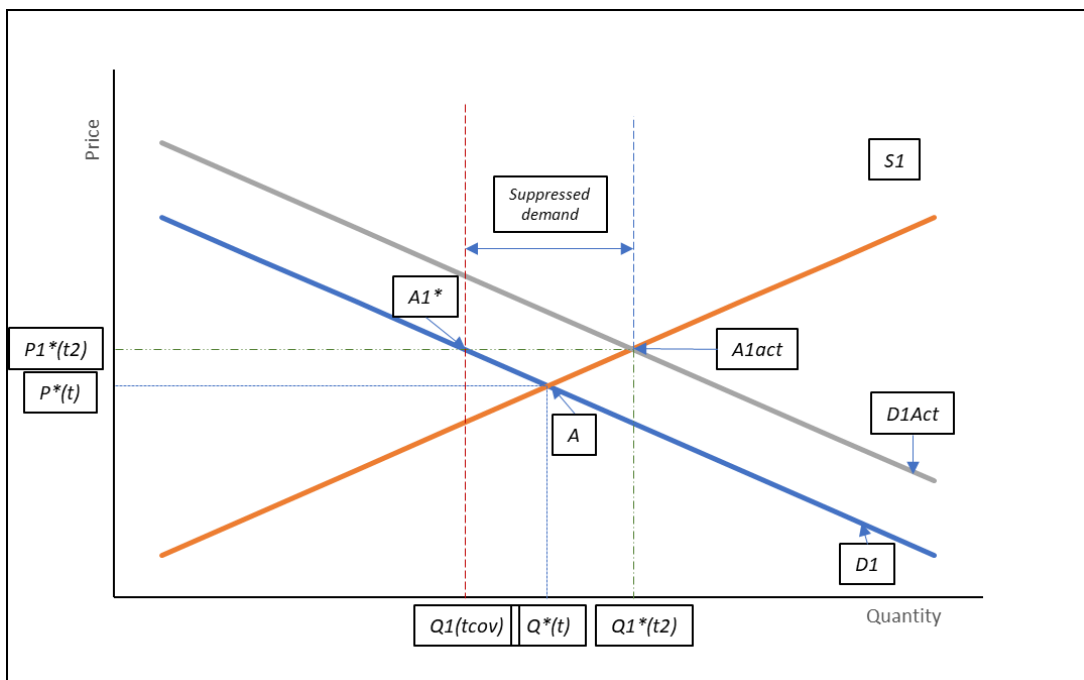
When we examine the decisions made by tourists to travel during the cost-of-living crisis, it appears irrational. This is because, as Song and Lin (2023) highlighted above, tangible costs, such as accommodation and catering costs, would have increased for international travellers. However, given that the cost-of-living crisis occurred right after the COVID-19 pandemic, it cannot be viewed in isolation from the downstream effects of travel restrictions imposed during the COVID-19 pandemic. We discuss the possible implications of this below. .

COVID-19 saw multiple waves of infection and associated international travel restrictions from 2020 to approximately late 2022 across various nations at different times. The inability to travel due to these restrictions led to a situation where there may be surge in post COVID-19 travel due to the phenomenon of compensatory or revenge travel (Yao et al., 2023; Liu and Wang, 2024). This is further explained by the concept of temporal landmarks (Peetz & Wilson, 2013). . Temporal landmarks demarcate time based on significant events in life or related to common cultural phenomena . This is an example of mental accounting with respect to time. Such mental accounting may lead to aspirational behaviours such as adopting New Year's resolutions (Dai et al., 2014) and

even travel (Yan et al., 2023). As time passed, the creation of temporal landmarks due to relaxation of COVID lockdowns (Ekinci & Brown, 2024) led to higher aspirations for international travel among potential tourists.

An increase in overall demand due to the combined effect of compensatory and aspirational travel post COVID-19 would lead to the demand curve shifting outwards as shown in Figure B1 below. Further, after suffering severe losses due to the closure of travel during COVID-19, the hospitality sector may be unwilling to charge higher prices and may maintain prices near the pre-COVID level in order to attract more tourists. This price stickiness is reflected by the outward shift of the supply curve as shown in Fig B1 below.

*Figure B\*.1: Demand Supply Curves during the early years of the cost-of-living crisis*



*Source: Authors*

The unmet demand, as visualised in the conclusion to Part A, accumulates over time to produce a new demand curve, D1act. The supply remains unaffected. From the earlier

demand equilibrium point of  $A1^*$ , instead of shifting to  $A$  as would have been under normal non-COVID-19 circumstances, the equilibrium shifts to  $A1act$ . At  $A1act$ , the quantity of tourists is  $Q1^*(t2)$ , which exceeds  $Q^*(t)$  at point  $A$ . Thus, there is a net gain of tourists of the order of

$$Q1^*(t2) - Q^*(t) \quad - (1)$$

This gain happens despite prices at the equilibrium level also shifting upward from  $P^*(t)$  to  $P1^*(t2)$ . This can explain why a rise in the cost of living at the destination is weakly but positively associated with inbound tourism in our panel regression models. Moreover, as the tourism and hospitality industry had to recover losses due to COVID-19, they could have absorbed some of these losses to ensure that the actual price was perhaps even below  $P1^*(t2)$ .

The overall findings from the two studies comprising Part B are can be summarized as follows:

The “cost-of-living crisis” coincided with a recovery in international tourism demand following two years of restrictions on international travel imposed by Governments and self-imposed restrictions adopted by tourists as precautionary measures against COVID-19. Prior research has shown that tourists tend to hesitate when traveling in the presence of risk (Wong & Yeh, 2008). Following the COVID-19 pandemic, when governmental restrictions were relaxed and fears about infection subsided, tourists engaged in higher levels of *compensatory travel* (Kim et al., 2024). Increases in tourism demand due to compensatory travel trends may have offset any decrease in demand resulting from the increased cost of living.

Boarding and lodging costs may constitute only a small part of the tourist’s budget (Martin & Witt, 1988) compared to the cost of international travel. International tourism

may be considered either a “once-in-a-lifetime” purchase that the middle-class tourist saves up for or a “status” good that the rich indulge in frequently (Dolcinar et al., 2008). In either case, the aspirational nature of international tourism makes it less elastic to price increases due to inflationary surges at the destination.

The above factors combined explain why we have observed the cost-of-living crisis to have a limited impact on post-COVID-19 international tourism recovery.

## References

- Accommodation and food service activities, tourism. *Federal Statistical Office*.  
[https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Accommodation-Food-Services-Activities-Tourism/\\_node.html#sprg482408](https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Accommodation-Food-Services-Activities-Tourism/_node.html#sprg482408) ( accessed February 24, 2024)
- Aguiló, E., Rosselló, J. and Vila, M., 2017. Length of stay and daily tourist expenditure: A joint analysis. *Tourism Management Perspectives*, 21, pp.10-17. doi:  
<https://doi.org/10.1016/j.tmp.2016.10.008>
- Alfarhan, U.F., Olya, H. and Nusair, K., 2023. How do prosperity and aspiration underlie leisure tourism expenditure patterns?. *Tourism Economics*, 29(3), pp.842-849.  
<https://doi.org/10.1177/13548166211064215>
- Algieri, B., 2006. An econometric estimation of the demand for tourism: the case of Russia. *Tourism Economics*, 12(1), pp.5-20. doi:  
<https://doi.org/10.5367/000000006776387114>
- Alizadeh, H., Sharifi, A. and Damanbagh, S., 2024. Assessing urban resilience to pandemics with a hybrid framework of planning, absorption, recovery, and adaptation abilities: A case study of Ahvaz, Iran. *International Journal of Disaster Risk Reduction*, 108, p.104573. doi: <https://doi.org/10.1016/j.ijdr.2024.104573>
- Aranda-Cuéllar, P., Lopez-Morales, J.M. and Such-Devesa, M.J., 2021. Winter tourism dependence: A cyclical and cointegration analysis. Case study for the Alps. *Tourism Economics*, 27(7), pp.1540-1560. doi: <https://doi.org/10.1177/1354816620932007>
- Archive monthly tourist arrivals. *Statistics Mauritius*.  
<https://statsmauritius.govmu.org/Pages/Statistics/Monthly/Arch-Mthly-Tourists.aspx> ( accessed February 24, 2024)
- Aronica, M., Pizzuto, P. and Sciortino, C., 2022. COVID-19 and tourism: What can we learn from the past?. *The World Economy*, 45(2), pp.430-444. doi:  
<https://doi.org/10.1111/twec.13157>
- Assad, A., Moselhi, O. and Zayed, T., 2019. A new metric for assessing resilience of water distribution networks. *Water*, 11(8), p.1701. doi:  
<https://doi.org/10.3390/w11081701>
- Assadzadeh, A., Mamipour, S. and Najafi, M.H., 2014. Estimation of tourism demand function for Australian destinations: a time-varying parameter approach. *Anatolia*, 25(1), pp.108-116. doi:  
<https://doi.org/10.1080/13032917.2013.837397>
- Athari, S.A., Alola, U.V., Ghasemi, M. and Alola, A.A., 2021. The (Un) sticky role of exchange and inflation rate in tourism development: insight from the low and high political risk destinations. *Current Issues in Tourism*, 24(12), pp.1670-1685. doi:  
<https://doi.org/10.1080/13683500.2020.1798893>
- Aven, T. and Renn, O., 2018. Improving government policy on risk: Eight key principles. *Reliability engineering & system safety*, 176, pp.230-241. doi:  
<https://doi.org/10.1016/j.res.2018.04.018>

- Azeem, N., Ullah, M. and Ullah, F., 2023. Board gender diversity and firms' financial resilience during the Covid-19 pandemic. *Finance Research Letters*, 58, p.104332. doi: <https://doi.org/10.1016/j.frl.2023.104332>
- Barakat, S., Cochrane, L. and Vasekha, I., 2023. The humanitarian-development-peace nexus for global food security: Responding to the climate crisis, conflict, and supply chain disruptions. *International Journal of Disaster Risk Reduction*, 98, p.104106. doi: <https://doi.org/10.1016/j.ijdr.2023.104106>
- Barbhuiya, M.R. and Chatterjee, D., 2020. Vulnerability and resilience of the tourism sector in India: Effects of natural disasters and internal conflict. *Tourism Management Perspectives*, 33, p.100616. doi: <https://doi.org/10.1016/j.tmp.2019.100616>
- Bergmeir, C., Hyndman, R.J. and Benítez, J.M., 2016. Bagging exponential smoothing methods using STL decomposition and Box–Cox transformation. *International Journal of Forecasting*, 32(2), pp.303-312. doi: <https://doi.org/10.1016/j.ijforecast.2015.07.002>
- Bhamidipati, S.. Tourism operators want Covid-19 pre-departure testing removed as border partially reopens. (2022), *NZ Herald*. <https://www.nzherald.co.nz/nz/tourism-operators-want-covid-19-predeparture-testing-removed-as-border-partially-reopens/TBDRHWYV2UBTXMYVD2UQNSFXPY/> (accessed 28<sup>th</sup> October 2022)
- Bick, A., Blandin, A. and Mertens, K., 2023. Work from home before and after the COVID-19 outbreak. *American Economic Journal: Macroeconomics*, 15(4), pp.1-39. doi: [10.1257/mac.20210061](https://doi.org/10.1257/mac.20210061)
- Bonham, C., Edmonds, C. and Mak, J., 2006. The impact of 9/11 and other terrible global events on tourism in the United States and Hawaii. *Journal of Travel Research*, 45(1), pp.99-110. doi: <https://doi.org/10.1177/0047287506288812>
- Boto-García, D. and Francisco Baños Pino, J., 2022. Propelled: Evidence on the impact of vaccination against COVID-19 on travel propensity. *Current Issues in Tourism*, 25(24), pp.3953-3972.. doi: <https://doi.org/10.1080/13683500.2022.2039099>
- Brey, E.T., 2011. A taxonomy for resorts. *Cornell Hospitality Quarterly*, 52(3), pp.283-290. doi: <https://doi.org/10.1177/1938965510397537>
- Brida, J.G. and Scuderi, R., 2013. Determinants of tourist expenditure: A review of microeconomic models. *Tourism management perspectives*, 6, pp.28-40. doi: <https://doi.org/10.1016/j.tmp.2012.10.006>
- Brooker, E. and Joppe, M., 2013. Trends in camping and outdoor hospitality—An international review. *Journal of Outdoor Recreation and Tourism*, 3, pp.1-6. doi: <https://doi.org/10.1016/j.jort.2013.04.005>
- Bufalo, M. and Orlando, G., 2024. Improved tourism demand forecasting with CIR model: a case study of disrupted data patterns in Italy. *Tourism Review*, 79(2), pp.445-464. doi: <https://doi.org/10.1108/TR-04-2023-0230>
- Buultjens, J.W., Ratnayake, I. and Gnanapala, W.A.C., 2016. Post-Conflict tourism development in Sri Lanka: implications for building resilience. *Current Issues in Tourism*, 19(4), pp.355-372. doi: <https://doi.org/10.1080/13683500.2014.1002760>
- Çakar, K., Kalbaska, N., Inanir, A. and Şahin Ören, T., 2018. eVisa's impacts on travel and tourism: the case of Turkey. *Journal of Hospitality and Tourism Technology*, 9(1), pp.14-32. doi: <https://doi.org/10.1108/JHTT-02-2017-0019>

- Cambodia Tourism Statistics 2022. *Tourism Cambodia*.  
[https://www.tourismcambodia.com/img/resources/cambodia\\_tourism\\_statistics\\_2022.pdf](https://www.tourismcambodia.com/img/resources/cambodia_tourism_statistics_2022.pdf)  
 f (accessed February 24, 2024)
- Camilleri, M.A. and Camilleri, M.A., 2018. *Tourism Supply and Demand* (pp. 139-154). Springer International Publishing. doi: [https://doi.org/10.1007/978-3-319-49849-2\\_8](https://doi.org/10.1007/978-3-319-49849-2_8)
- Carreira, C. and Teixeira, P., 2011. The shadow of death: analysing the pre-exit productivity of Portuguese manufacturing firms. *Small Business Economics*, 36, pp.337-351. doi: <https://doi.org/10.1007/s11187-009-9221-7>
- Cassottana, B., Shen, L. and Tang, L.C., 2019. Modeling the recovery process: A key dimension of resilience. *Reliability Engineering & System Safety*, 190, p.106528. doi: <https://doi.org/10.1016/j.ress.2019.106528>
- Cellini, R. and Cuccia, T., 2015. The economic resilience of tourism industry in Italy: What the 'great recession' data show. *Tourism Management Perspectives*, 16, pp.346-356. doi: <https://doi.org/10.1016/j.tmp.2015.09.007>
- Chatterjee, R. and Okazaki, K., 2018. Household livelihood recovery after 2015 Nepal earthquake in informal economy: case study of shop owners in Bungamati. *Procedia Engineering*, 212, pp.543-550. doi: <https://doi.org/10.1016/j.proeng.2018.01.070>
- Chen, S., Bi, K., Sun, P., & Bonanno, G. A. (2022). Psychopathology and resilience following strict COVID-19 lockdowns in Hubei, China: Examining person-and context-level predictors for longitudinal trajectories. *American Psychologist*, 77(2), pp 262-272. doi: <https://doi.org/10.1037/amp0000958>
- Chowdhury, M., Prayag, G., Orchiston, C. and Spector, S., 2019. Postdisaster social capital, adaptive resilience and business performance of tourism organizations in Christchurch, New Zealand. *Journal of Travel Research*, 58(7), pp.1209-1226. doi: <https://doi.org/10.1177/0047287518794319>
- Chu, C., Zhang, H., Zhang, J., Cong, L. and Lu, F., 2024. Assessing impacts of the Russia-Ukraine conflict on global air transportation: From the view of mass flight trajectories. *Journal of Air Transport Management*, 115, p.102522. doi: <https://doi.org/10.1016/j.jairtraman.2023.102522>
- Ciesielski, M., Tkaczyk, M., Hycza, T. and Taczanowska, K., 2023. Was it really different? COVID-19-pandemic period in long-term recreation monitoring—A case study from Polish forests. *Journal of Outdoor Recreation and Tourism*, 41, p.100495. doi: <https://doi.org/10.1016/j.jort.2022.100495>
- City Distance Calculator | *GeoBytes*. link: <https://geobytes.com/CityDistanceTool>, (accessed: August 10<sup>th</sup> 2024)
- Clark, T.G., Bradburn, M.J., Love, S.B. and Altman, D.G., 2003. Survival analysis part I: basic concepts and first analyses. *British journal of cancer*, 89(2), pp.232-238. doi: <https://doi.org/10.1038/sj.bjc.6601118>
- CNN (2020), Z. R. Why was the UK first to authorize a coronavirus vaccine? *CNN*. <https://edition.cnn.com/2020/12/02/uk/uk-pfizer-vaccine-approval-gbr-intl/index.html>
- Conde Nast Traveller India. (2022). Vietnam to reopen its borders to all travellers from 15 March. *Condé Nast Traveller India*. <https://www.cntraveller.in /story/vietnam-to->

reopen-its-borders-to-all-travellers-from-15-march-covid-19/ (accessed March 12<sup>th</sup> 2024)

Costa, J.C.C., 2013. Price formation and market segmentation in seaside accommodations. *International Journal of Hospitality Management*, 33, pp.446-455. doi: <https://doi.org/10.1016/j.ijhm.2012.11.004>

COVID-19 Data Explorer. *Our World in Data*. (2024), <https://ourworldindata.org/thecoronavirus-pandemic-data-explorer> (accessed March 20<sup>th</sup> 2024)

Crawford, D.W., Jackson, E.L. and Godbey, G., 1991. A hierarchical model of leisure constraints. *Leisure Sciences*, 13(4), pp.309-320. doi: <https://doi.org/10.1080/01490409109513147>

Cucinotta, D. and Vanelli, M., 2020. WHO declares COVID-19 a pandemic. *Acta bio medica: Atenei parmensis*, 91(1), p.157. doi: <https://doi.org/10.23750/abm.v91i1.9397>

Da Costa, V.G., Saivish, M.V., Santos, D.E.R., de Lima Silva, R.F. and Moreli, M.L., 2020. Comparative epidemiology between the 2009 H1N1 influenza and COVID-19 pandemics. *Journal of Infection and Public Health*, 13(12), pp.1797-1804. doi: <https://doi.org/10.1016/j.jiph.2020.09.023>

Dai, H., Milkman, K.L. and Riis, J., 2014. The fresh start effect: Temporal landmarks motivate aspirational behavior. *Management Science*, 60(10), pp.2563-2582. doi: <https://doi.org/10.1287/mnsc.2014.1901>

Dai, S., Xu, H. and Chen, F., 2019. A hierarchical measurement model of perceived resilience of urban tourism destination. *Social Indicators Research*, 145(2), pp.777-804. doi: <https://doi.org/10.1007/s11205-019-02117-9>

Danbatta, S.J. and Varol, A., 2021. Monte Carlo forecasting of time series data using Polynomial-Fourier series model. *International Journal of Modeling, Simulation, and Scientific Computing*, 12(03), p.2141004. doi: <https://doi.org/10.1142/S179396232141004X>

Daniel, A.C. and Rodrigues, P.M., 2012. Assessing the impact of shocks on international tourism demand for Portugal. *Tourism Economics*, 18(3), pp.617-634. doi: <https://doi.org/10.5367/te.2012.0128>

Dasgupta, N., 2022. Using satellite images of nighttime lights to predict the economic impact of COVID-19 in India. *Advances in Space Research*, 70(4), pp.863-879. doi: <https://doi.org/10.1016/j.asr.2022.05.039>

De Oliveira Dias, M., Lopes, R.D.O.A. and Teles, A.C., 2020. Will virtual replace classroom teaching? Lessons from virtual classes via zoom in the times of COVID-19. *Journal of Advances in Education and Philosophy*, 4(05), pp.208-213. doi: [10.36348/jaep.2020.v04i05.004](https://doi.org/10.36348/jaep.2020.v04i05.004)

De Oliveira Santos, G.E., 2016. Worldwide hedonic prices of subjective characteristics of hostels. *Tourism Management*, 52, pp.451-454. doi: <https://doi.org/10.1016/j.tourman.2015.07.001>

Debecker, A. and Modis, T., 2021. Poorly known aspects of flattening the curve of COVID-19. *Technological Forecasting and Social Change*, 163, p.120432. doi: <https://doi.org/10.1016/j.techfore.2020.120432>

- Department of Tourism-Philippines*. Tourism Demand Statistics. [http://tourism.gov.ph/tourism\\_dem\\_sup\\_pub.aspx](http://tourism.gov.ph/tourism_dem_sup_pub.aspx) ( accessed February 24, 2024)
- DesJardine, M., Bansal, P. and Yang, Y., 2019. Bouncing back: Building resilience through social and environmental practices in the context of the 2008 global financial crisis. *Journal of Management*, 45(4), pp.1434-1460. doi: <https://doi.org/10.1177/0149206317708854>
- Detotto, C., Giannoni, S. and Goavec, C., 2021. Does good governance attract tourists?. *Tourism Management*, 82, p.104155. <https://doi.org/10.1016/j.tourman.2020.104155>
- Ding, D. and Timmer, Y., 2023. Exchange rate elasticities of international tourism and the role of dominant currency pricing. *Journal of International Money and Finance*, 137, p.102908. doi: <https://doi.org/10.1016/j.jimonfin.2023.102908>
- Dioko, L.D.A., 2022. Did tourism dependence exacerbate economic contractions over and above COVID? Preliminary evidence and clues for identifying optimal tourism levels. *Asia Pacific Journal of Tourism Research*, 27(5), pp.489-505. doi: <https://doi.org/10.1080/10941665.2022.2092414>
- Divisekera, S., 2003. A model of demand for international tourism. *Annals of tourism research*, 30(1), pp.31-49. doi: [https://doi.org/10.1016/S0160-7383\(02\)00029-4](https://doi.org/10.1016/S0160-7383(02)00029-4)
- Dogru, T., Bulut, U. and Sirakaya-Turk, E., 2016. Theory of vulnerability and remarkable resilience of tourism demand to climate change: evidence from the Mediterranean Basin. *Tourism Analysis*, 21(6), pp.645-660. doi: <https://doi.org/10.3727/108354216X14713487283246>
- Dogru, T., Sirakaya-Turk, E. and Crouch, G.I., 2017. Remodeling international tourism demand: Old theory and new evidence. *Tourism management*, 60, pp.47-55. doi: <https://doi.org/10.1016/j.tourman.2016.11.010>
- Dolnicar, S., Crouch, G.I., Deviney, T., Huybers, T., Louviere, J.J. and Oppewal, H., 2008. Tourism and discretionary income allocation. Heterogeneity among households. *Tourism Management*, 29(1), pp.44-52. doi: <https://doi.org/10.1016/j.tourman.2007.04.008>
- Dryglas, D. and Różycki, P., 2017. Profile of tourists visiting European spa resorts: a case study of Poland. *Journal of Policy Research in Tourism, Leisure and Events*, 9(3), pp.298-317.. doi: <https://doi.org/10.1080/19407963.2017.1297311>
- Economic Impact | *World Travel & Tourism Council (WTTC)*. <http://web.archive.org/web/20200830140602/https://wttc.org/research/economic-impact> (accessed: March 18 2024)
- Ekinci, Ö. and Brown, N.R., 2024. The COVID-19 pandemic as autobiographical period: evidence from an event dating study. *Memory*, 32(2), pp.283-291. doi: <https://doi.org/10.1080/09658211.2024.2310562>
- Erik Johansson, B.J. and Lundberg, J., 2017. Resilience and the temporal dimension—the chimera of timely response. *Theoretical Issues in Ergonomics Science*, 18(2), pp.110-127. doi: <https://doi.org/10.1080/1463922X.2016.1154231>
- Estiri, M., Dahooie, J.H. and Skare, M., 2022. COVID-19 crisis and resilience of tourism SME's: A focus on policy responses. *Economic research-Ekonomska*

- istraživanja*, 35(1), pp.5556-5580. doi:  
<https://doi.org/10.1080/1331677X.2022.2032245>
- Eugenio-Martin, J.L. and Inchausti-Sintes, F., 2016. Low-cost travel and tourism expenditures. *Annals of Tourism Research*, 57, pp.140-159. doi:  
<https://doi.org/10.1016/j.annals.2015.11.019>
- Exchange-Rates.Org*. link: <https://www.exchange-rates.org/> (accessed February 10th 2024)
- Eyre, D.W., Taylor, D., Purver, M., Chapman, D., Fowler, T., Pouwels, K.B., Walker, A.S. and Peto, T.E., 2022. Effect of Covid-19 vaccination on transmission of alpha and delta variants. *New England Journal of Medicine*, 386(8), pp.744-756.doi:  
 10.1056/NEJMoa2116597
- Falk, M., 2010. A dynamic panel data analysis of snow depth and winter tourism. *Tourism Management*, 31(6), pp.912-924. doi:  
<https://doi.org/10.1016/j.tourman.2009.11.010>
- Falk, M., 2013. A survival analysis of ski lift companies. *Tourism management*, 36, pp.377-390.doi: <https://doi.org/10.1016/j.tourman.2012.10.005>
- Fedeli, G., Nguyen, T.H.H., Williams, N.L., Del Chiappa, G. and Wassler, P., 2022. Travel desire over intention in pandemic times. *Annals of Tourism Research Empirical Insights*, 3(2), p.100051. doi: <https://doi.org/10.1016/j.annale.2022.100051>
- Fernández, M.C.L. and Bedia, A.M.S., 2004. Is the hotel classification system a good indicator of hotel quality?: An application in Spain. *Tourism Management*, 25(6), pp.771-775. doi: <https://doi.org/10.1016/j.tourman.2004.06.007>
- Firth, E. (2024, July 18). INTERVIEW: Is Denmark's cost of living crisis over? *The Local DK*. <https://www.thelocal.dk/20240718/interview-is-denmarks-cost-of-living-crisis-over>
- Foreign Arrivals (Air & Sea) data | Tourism Today.  
<https://www.tourismtoday.com/statistics/foreign-arrivals-air-sea-data> ( accessed February 24, 2024)
- Fotiadis, A., Polyzos, S. and Huan, T.C.T., 2021. The good, the bad and the ugly on COVID-19 tourism recovery. *Annals of tourism research*, 87, p.103117. doi:  
<https://doi.org/10.1016/j.annals.2020.103117>
- Fountain, J. and Cradock-Henry, N.A., 2020. Recovery, risk and resilience: Post-disaster tourism experiences in Kaikōura, New Zealand. *Tourism management perspectives*, 35, p.100695.. doi: <https://doi.org/10.1016/j.tmp.2020.100695>
- Fung, M.C., Fung, M.T., Kulendran, N., King, B. and Yap, M.H., 2016. Research note: using demand determinants to anticipate fluctuations in hotel occupancy. *Tourism Economics*, 22(1), pp.179-187.. doi: <https://doi.org/10.5367/te.2014.0421>
- Gallego, I., González-Rodríguez, M.R. and Font, X., 2022. International air travel attitude and travel planning lead times across 45 countries in response to the COVID-19 pandemic. *Tourism management perspectives*, 44, p.101037.  
<https://doi.org/10.1016/j.tmp.2022.101037>

- Gan, J.E., Lim, J.P., Trupp, A. and Poon, W.C., 2024. State intervention and tourism business resilience: Exploring firm-level crisis responses. *Annals of Tourism Research Empirical Insights*, 5(2), p.100142. doi: <https://doi.org/10.1016/j.annale.2024.100142>
- Gémar, G., Moniche, L. and Morales, A.J., 2016. Survival analysis of the Spanish hotel industry. *Tourism Management*, 54, pp.428-438. doi: <https://doi.org/10.1016/j.tourman.2015.12.012>
- Ghaderi, Z., Mat Som, A.P. and Henderson, J.C., 2015. When disaster strikes: The Thai floods of 2011 and tourism industry response and resilience. *Asia Pacific Journal of Tourism Research*, 20(4), pp.399-415. doi: <https://doi.org/10.1080/10941665.2014.889726>
- Gokovali, U., Bahar, O. and Kozak, M., 2007. Determinants of length of stay: A practical use of survival analysis. *Tourism Management*, 28(3), pp.736-746. doi: <https://doi.org/10.1016/j.tourman.2006.05.004>
- Gounopoulos, D., Petmezas, D. and Santamaria, D., 2012. Forecasting tourist arrivals in Greece and the impact of macroeconomic shocks from the countries of tourists' origin. *Annals of Tourism Research*, 39(2), pp.641-666. doi: <https://doi.org/10.1016/j.annals.2011.09.001>
- Grailey, K., Fernandez-Crespo, R., Howitt, P., Leis, M., Darzi, A. and Neves, A.L., 2024. The cost of living crisis—how does it impact the health and life of individuals? A survey exploring perceptions in Italy, Germany, Sweden and the United Kingdom. *BMC Public Health*, 24(1), p.1831. doi: <https://doi.org/10.1186/s12889-024-19330-y>
- Gross, S., Culemann, J., Rebbe, J. and Berger, T., 2023. Deep nature glamping in Germany—Potentials and configuration of a nature tourism offer. *Journal of Outdoor Recreation and Tourism*, 43, p.100663. doi: <https://doi.org/10.1016/j.jort.2023.100663>
- Guild, J. (2024). Southeast Asian tourism slowly, but steadily, recovered in 2023. *The Diplomat*. <https://thediplomat.com/2024/04/southeast-asian-tourism-slowly-but-steadily-recovered-in-2023/> (accessed April 30<sup>th</sup> 2024)
- Gurtner, Y., 2016. Returning to paradise: Investigating issues of tourism crisis and disaster recovery on the island of Bali. *Journal of Hospitality and Tourism Management*, 28, pp.11-19. doi: <https://doi.org/10.1016/j.jhtm.2016.04.007>
- Ha, J., Kose, M.A. and Ohnsorge, F., 2023. One-stop source: A global database of inflation. *Journal of International Money and Finance*, 137, p.102896. doi:<https://doi.org/10.1016/j.jimonfin.2023.102896>
- Hale, T., Angrist, N., Hale, A.J., Kira, B., Majumdar, S., Petherick, A., Phillips, T., Sridhar, D., Thompson, R.N., Webster, S. and Zhang, Y., 2021. Government responses and COVID-19 deaths: Global evidence across multiple pandemic waves. *PloS one*, 16(7), p.e0253116. doi: <https://doi.org/10.1371/journal.pone.0253116>
- Harrill, R., & Potts, T. D. (2003). Tourism planning in historic districts: Attitudes toward tourism development in Charleston. *Journal of the American Planning Association*, 69(3), 233-244. doi: <https://doi.org/10.1080/01944360308978017>
- Harvie, C. and Saleh, A.S., 2008. Lebanon's economic reconstruction after the war: A bridge too far?. *Journal of Policy Modeling*, 30(5), pp.857-872. doi: <https://doi.org/10.1016/j.jpolmod.2007.04.004>

- Hemmington, N. and Neill, L., 2022. Hospitality business longevity under COVID-19: The impact of COVID-19 on New Zealand's hospitality industry. *Tourism and Hospitality Research*, 22(1), pp.102-114. doi: <https://doi.org/10.1177/1467358421993875>
- Henry, D. and Ramirez-Marquez, J.E., 2012. Generic metrics and quantitative approaches for system resilience as a function of time. *Reliability Engineering & System Safety*, 99, pp.114-122. doi: <https://doi.org/10.1016/j.ress.2011.09.002>
- Hossain, M.E., Islam, M.S., Rana, M.J., Amin, M.R., Rokonuzzaman, M., Chakroborty, S. and Saha, S.M., 2022. Scaling the changes in lifestyle, attitude, and behavioral patterns among COVID-19 vaccinated people: insights from Bangladesh. *Human vaccines & immunotherapeutics*, 18(1), p.2022920. doi: <https://doi.org/10.1080/21645515.2021.2022920>
- Hosseini, S., Barker, K. and Ramirez-Marquez, J.E., 2016. A review of definitions and measures of system resilience. *Reliability Engineering & System Safety*, 145, pp.47-61. doi: <https://doi.org/10.1016/j.ress.2015.08.006>
- Hotels & Tourist Accommodation - Fiji Bureau of Statistics. <https://www.statsfiji.gov.fj/statistics/tourism-and-migration-statistics/hotels-and-tourist-accommodation.html> ( accessed February 24, 2024)
- Hourston, P. (2022), published February 7th 2022. Cost of living crisis. *Institute for Government*. <https://www.instituteforgovernment.org.uk/explainer/cost-living-crisis> (accessed August 8th 2024)
- Huang, J.H. and Min, J.C., 2002. Earthquake devastation and recovery in tourism: The Taiwan case. *Tourism Management*, 23(2), pp.145-154. [https://doi.org/10.1016/S0261-5177\(01\)00051-6](https://doi.org/10.1016/S0261-5177(01)00051-6)
- I-94 Arrivals program. *International Trade Administration | Trade.gov*. <https://www.trade.gov/i-94-arrivals-program> ( accessed August 10, 2024)
- Ianioglo, A. and Rissanen, M., 2020. Global trends and tourism development in peripheral areas. *Scandinavian Journal of Hospitality and Tourism*, 20(5), pp.520-539. doi: <https://doi.org/10.1080/15022250.2020.1848620>
- Illescas-Manzano, M.D., Martínez-Puertas, S., Sánchez-Pérez, M. and Torres, A.M., 2023. Look before you leap: Comparison and profiles of hotel price determinants in four European markets. *International Journal of Hospitality Management*, 109, p.103401. doi: <https://doi.org/10.1016/j.ijhm.2022.103401>
- Ilseven, E. and Puranam, P., 2021. Measuring organizational resilience as a performance outcome. *Journal of Organization Design*, 10(3), pp.127-137. doi: <https://doi.org/10.1007/s41469-021-00107-1>
- Im, K.S., Pesaran, M.H. and Shin, Y., 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), pp.53-74. doi: [https://doi.org/10.1016/S0304-4076\(03\)00092-7](https://doi.org/10.1016/S0304-4076(03)00092-7)
- INE - Spanish Statistical Office. Tourist Movement on Borders Survey FRONTUR / Latest data. INE. [https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica\\_C&cid=1254736176996&menu=ultiDatos&idp=1254735576863](https://www.ine.es/dyngs/INEbase/en/operacion.htm?c=Estadistica_C&cid=1254736176996&menu=ultiDatos&idp=1254735576863) ( accessed February 24, 2024)

- Instituto Nacional de Estadística. Estadísticas de Flujo de Visitantes – *INE Bolivia*. <https://www.ine.gob.bo/index.php/estadisticas-economicas/turismo/estadisticas-de-flujo-de-visitantes-cuadros-estadisticos/> ( accessed August 10, 2024)
- International visitors to Vietnam. *Vietnam National Authority of Tourism*. <https://vietnamtourism.gov.vn/en/statistic/international?year=2017&period=t6> (accessed February 24, 2024).
- Isaac, R.K. and Abuaita, W., 2021. Can you imagine Bethlehem without tourism: The impacts of Covid-19 on Bethlehem, Palestine. *Current Issues in Tourism*, 24(24), pp.3535-3551. doi: <https://doi.org/10.1080/13683500.2021.1883559>
- Japan-Bound Statistics - Tourism statistics. *JTB Tourism Research & Consulting Co.* <https://www.tourism.jp/en/tourism-database/stats/inbound/> ( accessed February 24, 2024).
- Jiang, L. and Taylor, M.H., 2020. What hotel attributes matter? Understanding the price determinants in the lodging industry. *Journal of Hospitality Financial Management*, 28(1), p.6. doi: <https://doi.org/https://doi.org/10.7275/3m88-qe37>
- Jiménez-Guerrero, J.F., Piedra-Muñoz, L., Galdeano-Gómez, E. and Pérez-Mesa, J.C., 2021. The global economic crisis and international tourism: A Sub-Continental analysis. *Tourism Planning & Development*, 18(1), pp.1-24. doi: <https://doi.org/10.1080/21568316.2019.1683887>
- Katunga, F. (2024,). This is why Colombia's tourist industry is booming - *Travel Noire*. <https://travelnoire.com/colombia-tourist-industry/> accessed (April 28<sup>th</sup> 2024)
- Khalid, U., Okafor, L.E. and Shafiullah, M., 2020. The effects of economic and financial crises on international tourist flows: A cross-country analysis. *Journal of Travel Research*, 59(2), pp.315-334. doi: <https://doi.org/10.1177/0047287519834360>
- Khoirunurrofik, K., Abdurrachman, F. and Putri, L.A.M., 2022. Half-hearted policies on mobility restrictions during COVID-19 in Indonesia: A portrait of large informal economy country. *Transportation Research Interdisciplinary Perspectives*, 13, p.100517. doi: <https://doi.org/10.1016/j.trip.2021.100517>
- Khurana, S., Haleem, A., Luthra, S., Huisingh, D. and Mannan, B., 2021. Now is the time to press the reset button: Helping India's companies to become more resilient and effective in overcoming the impacts of COVID-19, climate changes and other crises. *Journal of cleaner production*, 280, p.124466. doi: <https://doi.org/10.1016/j.jclepro.2020.124466>
- Kim, D., Hong, S., Park, B.J. and Kim, I., 2020. Understanding heterogeneous preferences of hotel choice attributes: Do customer segments matter?. *Journal of Hospitality and Tourism Management*, 45, pp.330-337. doi:<https://doi.org/10.1016/j.jhtm.2020.08.014>
- Kim, E.E.K., Seo, K. and Choi, Y., 2022. Compensatory travel post COVID-19: Cognitive and emotional effects of risk perception. *Journal of Travel Research*, 61(8), pp.1895-1909. doi: <https://doi.org/10.1177/00472875211048930>
- Kim, J.Y., Kim, J. and Koo, C., 2024. Understanding compensatory travel. *Annals of Tourism Research*, 105, p.103712. doi: <https://doi.org/10.1016/j.annals.2023.103712>

- Kim, S.S. and Lee, C.K., 2002. Push and pull relationships. *Annals of Tourism Research*, 29(1), pp.257-260. doi: [https://doi.org/10.1016/S0160-7383\(01\)00043-3](https://doi.org/10.1016/S0160-7383(01)00043-3)
- Kim, J. and Lee, C.K., 2017. Role of tourism price in attracting international tourists: The case of Japanese inbound tourism from South Korea. *Journal of Destination Marketing & Management*, 6(1), pp.76-83. doi: <https://doi.org/10.1016/j.jdmm.2016.03.002>
- Koçak, E., Dogru, T., Shehzad, K. and Bulut, U., 2023. The economic implications of the COVID-19 outbreak on tourism industry: Empirical evidence from Turkey. *Tourism Economics*, 29(3), pp.742-758. doi: <https://doi.org/10.1177/13548166211067188>
- Kock, F., Nørfelt, A., Josiassen, A., Assaf, A.G. and Tsionas, M.G., 2020. Understanding the COVID-19 tourist psyche: The evolutionary tourism paradigm. *Annals of Tourism research*, 85, p.103053. doi: <https://doi.org/10.1016/j.annals.2020.103053>
- Kumar, N., Kumar, R.R., Patel, A., Hussain Shahzad, S.J. and Stauvermann, P.J., 2020. Modelling inbound international tourism demand in small Pacific Island countries. *Applied Economics*, 52(10), pp.1031-1047. doi:<https://doi.org/10.1080/00036846.2019.1646887>
- Kuo, H.I., Chang, C.L., Huang, B.W., Chen, C.C. and McAleer, M., 2009. Estimating the impact of avian flu on international tourism demand using panel data. *Tourism Economics*, 15(3), pp.501-511. doi: <https://doi.org/10.5367/000000009789036611>
- Kwan, P., Eagles, P.F. and Gebhardt, A., 2008. A comparison of ecolodge patrons' characteristics and motivations based on price levels: A case study of Belize. *Journal of Sustainable Tourism*, 16(6), pp.698-718. doi: <https://doi.org/10.1080/09669580802397129>
- Lado-Sestayo, R., Vivel-Búa, M. and Otero-González, L., 2016. Survival in the lodging sector: An analysis at the firm and location levels. *International Journal of Hospitality Management*, 59, pp.19-30. doi: <https://doi.org/10.1016/j.ijhm.2016.08.005>
- Lamanna, Z., Williams, K.H. and Childers, C., 2012. An assessment of resilience: Disaster management and recovery for greater New Orleans' hotels. *Journal of Human Resources in Hospitality & Tourism*, 11(3), pp.210-224. doi: <https://doi.org/10.1080/15332845.2012.668653>
- Lee, H.Y. and Leung, K.Y.K., 2022. Island ferry travel during COVID-19: Charting the recovery of local tourism in Hong Kong. *Current Issues in Tourism*, 25(1), pp.76-93. doi: <https://doi.org/10.1080/13683500.2021.1911964>
- Lee, W.S., Lee, J.K. and Moon, J., 2019. Influential attributes for the selection of luxury camping: A mixed-logit method. *Journal of Hospitality and Tourism Management*, 40, pp.88-93.. doi: <https://doi.org/10.1016/j.jhtm.2019.05.004>
- Leisure and tourism. *Office for National Statistics*. <https://www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism> ( accessed February 24, 2024).
- Leurcharusmee, S., Maneejuk, P., Yamaka, W., Thaiprasert, N. and Tuntichiranon, N., 2022. Survival analysis of Thai micro and small enterprises during the COVID-19

pandemic. *Journal of Business Economics and Management*, 23(5), pp.1211-1233. doi: <https://doi.org/10.3846/jbem.2022.17875>

Li, F., Rubinato, M. and Zhou, T., 2024. Identifying effective measures to enhance the recovery of small and micro enterprises after multiple waves of COVID-19—A case study from Dongguan, China. *International Journal of Disaster Risk Reduction*, 106, p.104427. doi: <https://doi.org/10.1016/j.ijdr.2024.104427>

Li, H., Park, S.Y. and Seo, J.H., 2011. Quantile elasticity of international tourism demand for South Korea using the quantile autoregressive distributed lag model. *Tourism Economics*, 17(5), pp.997-1015. doi: <https://doi.org/10.5367/te.2011.0083>

Li, W.M. and Dewar, K., 2003. Assessing tourism supply in Beihai, China. *Tourism Geographies*, 5(2), pp.151-167. doi: <https://doi.org/10.1080/1461668032000068315>

Liadze, I., Macchiarelli, C., Mortimer-Lee, P. and Sanchez Juanino, P., 2023. Economic costs of the Russia-Ukraine war. *The World Economy*, 46(4), pp.874-886. doi: <https://doi.org/10.1111/twec.13336>

Lim, C., 1997. Review of international tourism demand models. *Annals of tourism research*, 24(4), pp.835-849. doi: [https://doi.org/10.1016/S0160-7383\(97\)00049-2](https://doi.org/10.1016/S0160-7383(97)00049-2)

Limao, N. and Venables, A.J., 2001. Infrastructure, geographical disadvantage, transport costs, and trade. *The World Bank Economic Review*, 15(3), pp.451-479. doi: <https://doi.org/10.1093/wber/15.3.451>

Lin, D.Y. and Wei, L.J., 1991. Goodness-of-fit tests for the general Cox regression model. *Statistica Sinica*, pp.1-17.. Link: <https://www.jstor.org/stable/24303990>

Liu, A. and Pratt, S., 2017. Tourism's vulnerability and resilience to terrorism. *Tourism Management*, 60, pp.404-417. doi: <https://doi.org/10.1016/j.tourman.2017.01.001>

Liu, X. and Wang, W., 2024. REVENGE travel: fact or myth?. *Current Issues in Tourism*, 27(4), pp.517-523. doi: <https://doi.org/10.1080/13683500.2023.2220956>

Liu, J., Yang, L., Zhou, H. and Wang, S., 2021. Impact of climate change on hiking: quantitative evidence through big data mining. *Current issues in tourism*, 24(21), pp.3040-3056. doi: <https://doi.org/10.1080/13683500.2020.1858037>

Liu, L., Zhang, Y., Ma, Z. and Wang, H., 2023. An analysis on the spatiotemporal behavior of inbound tourists in Jiaodong Peninsula based on Flickr geotagged photos. *International Journal of Applied Earth Observation and Geoinformation*, 120, p.103349. doi: <https://doi.org/10.1016/j.jag.2023.103349>

Liu, X., Yao, Y., Ren, L. and Zhao, X., 2024. Quantifying the Asymmetric Effects of Policy Stringency on Tourism: The Case of COVID-19 Pandemic. *Journal of Quality Assurance in Hospitality & Tourism*, pp.1-23. doi: <https://doi.org/10.1080/1528008X.2024.2330360>

Logubayom, I.A. and Luguterah, A., 2013. Survival analysis of time to first birth after marriage. *Research on Humanities and Social Sciences. Survival*, 3(12).Link: <https://www.iiste.org/Journals/index.php/RHSS/article/view/7121>

- Losada, N., Alen, E., Nicolau, J. L., & Dominguez, T. (2017). Senior tourists' accommodation choices. *International Journal of Hospitality Management*, 66, 24-34. doi: <https://doi.org/10.1016/j.ijhm.2017.06.014>
- Lu, J., Xiao, X., Xu, Z., Wang, C., Zhang, M. and Zhou, Y., 2022. The potential of virtual tourism in the recovery of tourism industry during the COVID-19 pandemic. *Current Issues in Tourism*, 25(3), pp.441-457. doi: <https://doi.org/10.1080/13683500.2021.1959526>
- Lu, Q. and Atadil, H.A., 2021. Do you dare to travel to China? An examination of China's destination image amid the COVID-19. *Tourism Management Perspectives*, 40, p.100881. doi: <https://doi.org/10.1016/j.tmp.2021.100881>
- Lu, S. and Wei, J., 2019. Public's perceived overcrowding risk and their adoption of precautionary actions: A study of holiday travel in China. *Journal of Risk Research*, 22(7), pp.844-864. doi: <https://doi.org/10.1080/13669877.2017.1422784>
- Lutz, C. and Newlands, G., 2018. Consumer segmentation within the sharing economy: The case of Airbnb. *Journal of Business Research*, 88, pp.187-196. doi: <https://doi.org/10.1016/j.jbusres.2018.03.019>
- Maciejewski, M.L., 2020. Quasi-experimental design. *Biostatistics & Epidemiology*, 4(1), pp.38-47. doi: <https://doi.org/10.1080/24709360.2018.1477468>
- Martin, C.A. and Witt, S.F., 1988. Substitute prices in models of tourism demand. *Annals of Tourism Research*, 15(2), pp.255-268. doi: [https://doi.org/10.1016/0160-7383\(88\)90086-2](https://doi.org/10.1016/0160-7383(88)90086-2)
- Martins, A.M. and Cró, S., 2024. Mayday! Mayday! The airlines stock returns are failing. Analysis of the impact of Russia-Ukraine war. *Journal of Economic Studies*, 51(6), pp.1182-1198. doi: <https://doi.org/10.1108/JES-08-2023-0390>
- Masiero, L., Nicolau, J.L. and Law, R., 2015. A demand-driven analysis of tourist accommodation price: A quantile regression of room bookings. *International Journal of Hospitality Management*, 50, pp.1-8. doi: <https://doi.org/10.1016/j.ijhm.2015.06.009>
- McKercher, B., 2008. The implicit effect of distance on tourist behavior: A comparison of short and long haul pleasure tourists to Hong Kong. *Journal of Travel & Tourism Marketing*, 25(3-4), pp.367-381. doi: <https://doi.org/10.1080/10548400802508473>
- McKercher, B. and Mak, B., 2019. The impact of distance on international tourism demand. *Tourism Management Perspectives*, 31, pp.340-347. doi: <https://doi.org/10.1016/j.tmp.2019.07.004>
- Meenakshi, N., Dhir, A., Kaur, P., Mahto, R.V. and Nicolau, J.L., 2024. Is travel resurgence in the post-global health emergency a form of revenge travel? A multi-phase qualitative study. *Journal of Travel Research*, p.00472875241234388. doi: <https://doi.org/10.1177/00472875241234388>
- Meng, X. and Yu, Y., 2023. Does the Russia-Ukraine conflict affect gasoline prices?. *Energy Economics*, 128, p.107113. doi: <https://doi.org/10.1016/j.eneco.2023.107113>
- Mikulić, J., Prebežac, D., Šerić, M. and Krešić, D., 2017. Campsite choice and the camping tourism experience: Investigating decisive campsite attributes using relevance-

determinance analysis. *Tourism Management*, 59, pp.226-233. doi: <https://doi.org/10.1016/j.tourman.2016.07.020>

Milone, F.L., Gunter, U. and Zekan, B., 2023. The pricing of European airbnb listings during the pandemic: A difference-in-differences approach employing COVID-19 response strategies as a continuous treatment. *Tourism Management*, 97, p.104738. doi: <https://doi.org/10.1016/j.tourman.2023.104738>

Mody, M. A., Jung, S., Dogru, T., & Suess, C. (2023). How do consumers select between hotels and Airbnb? A hierarchy of importance in accommodation choice. *International Journal of Contemporary Hospitality Management*, 35(4), 1191-1218. doi: <https://doi.org/10.1108/IJCHM-12-2021-1551>

Molina, G.G., Montoya-Aguirre, M. and Ortiz-Juarez, E., 2022. *Addressing the cost-of-living crisis in developing countries: Poverty and vulnerability projections and policy responses*. United Nations Development Programme. Link: <https://www.undp.org/publications/addressing-cost-living-crisis-developing-countries-poverty-and-vulnerability-projections-and-policy-responses>

Monthly tourist arrivals reports. *Sri Lanka Tourism Development Authority*. <https://sltta.gov.lk/en/monthly-tourist-arrivals-reports> ( accessed February 24, 2024)

Monthly visitors arrivals. *National Bureau of Statistics Seychelles*. <https://www.nbs.gov.sc/downloads/38-economic-statistics/14-monthly-visitors-arrivals> ( accessed February 24, 2024)

Moosavi, J., Fathollahi-Fard, A.M. and Dulebenets, M.A., 2022. Supply chain disruption during the COVID-19 pandemic: Recognizing potential disruption management strategies. *International Journal of Disaster Risk Reduction*, 75, p.102983. doi: <https://doi.org/10.1016/j.ijdr.2022.102983>

Morley, C.L., 1992. A microeconomic theory of international tourism demand. *Annals of tourism research*, 19(2), pp.250-267. doi: [https://doi.org/10.1016/0160-7383\(92\)90080-9](https://doi.org/10.1016/0160-7383(92)90080-9)

Morley, C.L., 1995. Tourism demand: characteristics, segmentation and aggregation. *Tourism Economics*, 1(4), pp.315-328. doi: <https://doi.org/10.1177/135481669500100401>

Muggeo, V.M., 2008. Segmented: an R package to fit regression models with broken-line relationships. *R news*, 8(1), pp.20-25. Link: <https://journal.r-project.org/articles/RN-2008-004/RN-2008-004.pdf>

Mundet, L. and Ribera, L., 2001. Characteristics of divers at a Spanish resort. *Tourism Management*, 22(5), pp.501-510. doi: [https://doi.org/10.1016/S0261-5177\(01\)00016-4](https://doi.org/10.1016/S0261-5177(01)00016-4)

Nok, L.C., Suntikul, W., Agyeiwaah, E. and Tolkach, D., 2017. Backpackers in Hong Kong—motivations, preferences and contribution to sustainable tourism. *Journal of Travel & Tourism Marketing*, 34(8), pp.1058-1070. doi: <https://doi.org/10.1080/10548408.2016.1276008>

Ntounis, N., Parker, C., Skinner, H., Steadman, C. and Warnaby, G., 2022. Tourism and Hospitality industry resilience during the Covid-19 pandemic: Evidence from England. *Current Issues in Tourism*, 25(1), pp.46-59. doi: <https://doi.org/10.1080/13683500.2021.1883556>

Number of arrivals at hotels - non resident tourists - Metropolitan France and Residents overseas departments | *INSEE France*.

<https://www.insee.fr/en/statistiques/serie/010598612> ( accessed February 24, 2024)

O'Hagan, J.W. and Harrison, M.J., 1984. Market shares of US tourist expenditure in Europe: an econometric analysis. *Applied Economics*, 16(6), pp.919-931. doi:

<https://doi.org/10.1080/00036848400000060>

Okafor, L. and Yan, E., 2022. COVID-19 vaccines, rules, deaths, and tourism recovery. *Annals of Tourism Research*, 95, p.103424.

<https://doi.org/10.1016/j.annals.2022.103424>

Overnight stay by region, period, type of overnight accommodations, nationality of the guest and time. *StatBank.dk*.

<https://www.statbank.dk/statbank5a/selectvarval/saveselections.asp> (accessed August 10, 2024)

Overseas Arrivals and Departures, Australia, April 2024. *Australian Bureau of Statistics*. <https://www.abs.gov.au/statistics/industry/tourism-and-transport/overseas-arrivals-and-departures-australia/latest-release#visitor-arrivals-short-term> ( accessed February 24, 2024)

Oyadeyi, O., Ukoli, K., Chandiramani, A., Rosas, J., Luo, J. and Oyadeyi, O.A., 2024. The Cost of Living Crisis in Nigeria: The Impact of Food and Commodity Prices on Household Purchasing Power and their Implications for Economic Wellbeing. Available at SSRN 4866006. Link: <https://dx.doi.org/10.2139/ssrn.4866006>

Page, S., Song, H. and Wu, D.C., 2012. Assessing the impacts of the global economic crisis and swine flu on inbound tourism demand in the United Kingdom. *Journal of travel research*, 51(2), pp.142-153. doi: 10.1177/0047287511400754

Park, E., Kim, W.H. and Kim, S.B., 2022. How does COVID-19 differ from previous crises? A comparative study of health-related crisis research in the tourism and hospitality context. *International Journal of Hospitality Management*, 103, p.103199. doi: <https://doi.org/10.1016/j.ijhm.2022.103199>

Peetz, J. and Wilson, A.E., 2013. The post-birthday world: Consequences of temporal landmarks for temporal self-appraisal and motivation. *Journal of personality and social psychology*, 104(2), p.249. doi: <https://psycnet.apa.org/doi/10.1037/a0030477>

Phakdisoth, L. and Kim, D., 2007. The determinants of inbound tourism in Laos. *ASEAN Economic Bulletin*, 24(2), pp.225-237. link: <https://www.jstor.org/stable/41316966>

Platt, S., Brown, D., & Hughes, M. (2016). Measuring resilience and recovery. *International Journal of Disaster Risk Reduction*, 19, pp 447-460. doi: <https://doi.org/10.1016/j.ijdrr.2016.05.006>

Portella-Carbó, F., Pérez-Montiel, J. and Ozcelebi, O., 2023. Tourism-led economic growth across the business cycle: Evidence from Europe (1995–2021). *Economic Analysis and Policy*, 78, pp.1241-1253. doi: <https://doi.org/10.1016/j.eap.2023.05.011>

Pouta, E., Neuvonen, M., & Sievänen, T. (2006). Determinants of nature trip expenditures in Southern Finland—implications for nature tourism development.

Scandinavian Journal of Hospitality and Tourism, 6(2), 118-135. doi:  
<https://doi.org/10.1080/15022250600658937>

Priya, S.S., Cuce, E. and Sudhakar, K., 2021. A perspective of COVID 19 impact on global economy, energy and environment. *International Journal of Sustainable Engineering*, 14(6), pp.1290-1305. <https://doi.org/10.1080/19397038.2021.1964634>

*Statistics Finland.*

[https://pxweb2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin\\_\\_matk/?tablelist=true](https://pxweb2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__matk/?tablelist=true).  
 (accessed February 24<sup>th</sup> 2024)

Qiao, G., Ruan, W.J. and Pabel, A., 2022. Understanding tourists' protection motivations when faced with overseas travel after COVID-19: the case of South Koreans travelling to China. *Current Issues in Tourism*, 25(10), pp.1588-1606. <https://doi.org/10.1080/13683500.2021.1928011>

Qin, Q., Wall, G. and Liu, X., 2011. Government roles in stimulating tourism development: A case from Guangxi, China. *Asia Pacific Journal of Tourism Research*, 16(5), pp.471-487. doi:<https://doi.org/10.1080/10941665.2011.597573>

Quang, T.D., Tran, T.C., Tran, V.H., Nguyen, T.T. and Nguyen, T.T., 2022. Is Vietnam ready to welcome tourists back? Assessing COVID-19's economic impact and the Vietnamese tourism industry's response to the pandemic. *Current Issues in Tourism*, 25(1), pp.115-133. <https://doi.org/10.1080/13683500.2020.1860916>

Ram, Y., Collins-Kreiner, N., Gozansky, E., Moscona, G. and Okon-Singer, H., 2022. Is there a COVID-19 vaccination effect? A three-wave cross-sectional study. *Current Issues in Tourism*, 25(3), pp.379-386. <https://doi.org/10.1080/13683500.2021.1960285>

Rasool, H., Maqbool, S. and Tarique, M., 2021. The relationship between tourism and economic growth among BRICS countries: a panel cointegration analysis. *Future Business Journal*, 7(1), p.1. doi: <https://doi.org/10.1186/s43093-020-00048-3>

Research & Analytics | *Ministry of Tourism | Government of India*. Ministry of Tourism. <https://tourism.gov.in/market-research-and-statistics> ( accessed February 24, 2024)

Research. *Destination Canada*. <https://www.destinationcanada.com/en/research> ( accessed February 24, 2024)

Rogers, R.W., 1975. A protection motivation theory of fear appeals and attitude change1. *The Journal of Psychology*, 91(1), pp.93-114. doi:  
<https://doi.org/10.1080/00223980.1975.9915803>

Romao, J., Guerreiro, J. and Rodrigues, P.M., 2016. Tourism growth and regional resilience: The 'beach disease' and the consequences of the global crisis of 2007. *Tourism Economics*, 22(4), pp.699-714. doi:  
<https://doi.org/10.1177/1354816616654243>

Romei, V. (2024, November 8). Global food prices reach highest level in 18 months. *Financial Times*. <https://www.ft.com/content/b7ab3948-9941-4bd6-a648-adbb8fed806b>

Rondan-Cataluña, F.J. and Rosa-Diaz, I.M., 2014. Segmenting hotel clients by pricing variables and value for money. *Current issues in tourism*, 17(1), pp.60-71doi:  
<https://doi.org/10.1080/13683500.2012.718322>

- Rosselló, J., Becken, S. and Santana-Gallego, M., 2020. The effects of natural disasters on international tourism: A global analysis. *Tourism management*, 79, p.104080. <https://doi.org/10.1016/j.tourman.2020.104080>
- Russell, T.W., Wu, J.T., Clifford, S., Edmunds, W.J., Kucharski, A.J. and Jit, M., 2021. Effect of internationally imported cases on internal spread of COVID-19: a mathematical modelling study. *The Lancet Public Health*, 6(1), pp.e12-e20. doi: [https://doi.org/10.1016/S2468-2667\(20\)30263-2](https://doi.org/10.1016/S2468-2667(20)30263-2)
- Sabah, Daily. (2022) Türkiye's famed Cappadocia attracts record-breaking 2.5M tourists in 8 months. *Daily Sabah*. From <https://www.dailysabah.com/business/tourism/turkiyes-famed-cappadocia-attracts-record-breaking-25m-tourists-in-8-months>
- Sadi, M.A. and Bartels, F.L., 1998. The Asian Economic Crisis and International Business: Implications for Tourism. *The Journal of Hospitality Financial Management*, 6(1), pp.85-100. <https://doi.org/10.1080/10913211.1998.10653708>
- Saleh, Ali Salman, Reetu Verma, and Ranjith Ihalanayake. "Do external shocks have a permanent or a transitory effect on Thailand's tourism industry?." *Tourism Analysis* 16, no. 4 (2011): 483-491. doi: <https://doi.org/10.3727/108354211X13149079789098>
- Sánchez-Cañizares, S.M., Cabeza-Ramírez, L.J., Muñoz-Fernández, G. and Fuentes-García, F.J., 2021. Impact of the perceived risk from Covid-19 on intention to travel. *Current Issues in Tourism*, 24(7), pp.970-984. doi: <https://doi.org/10.1080/13683500.2020.1829571>
- Sanyaolu, A., Okorie, C., Hosein, Z., Patidar, R., Desai, P., Prakash, S., Jaferi, U., Mangat, J. and Marinkovic, A., 2021. Global pandemicity of COVID-19: situation report as of June 9, 2020. *Infectious Diseases: Research and Treatment*, 14, p.1178633721991260. doi: <https://doi.org/10.1177/1178633721991260>
- Sastri, R., Li, F., Naveed, H.M. and Setiyawan, A., 2024. Recovery time of the hotel and restaurant sector in Indonesia after COVID-19 crisis: a survival analysis. *Kybernetes*. doi: <https://doi.org/10.1108/K-10-2023-2051>
- Sautter, E.T. and Leisen, B., 1999. Managing stakeholders a tourism planning model. *Annals of tourism research*, 26(2), pp.312-328. [https://doi.org/10.1016/S0160-7383\(98\)00097-8](https://doi.org/10.1016/S0160-7383(98)00097-8)
- Seetanah, B., Durbarry, R. and Ragodoo, J.N., 2010. Using the panel cointegration approach to analyse the determinants of tourism demand in South Africa. *Tourism Economics*, 16(3), pp.715-729. <https://doi.org/10.5367/000000010792278437>
- Shah, A.S., Gribben, C., Bishop, J., Hanlon, P., Caldwell, D., Wood, R., Reid, M., McMenamin, J., Goldberg, D., Stockton, D. and Hutchinson, S., 2021. Effect of vaccination on transmission of SARS-CoV-2. *New England Journal of Medicine*, 385(18), pp.1718-1720. doi: 10.1056/NEJMc2106757
- Shaheen, R., 2019. Nexus between religious journeys and economic influences—the case of Saudi Arabia. *International Journal of Religious Tourism and Pilgrimage*, 7(3), p.4. doi:<https://doi.org/10.21427/899b-hg15>
- Smith, S.L., 1988. Defining tourism a supply-side view. *Annals of tourism research*, 15(2), pp.179-190. doi: [https://doi.org/10.1016/0160-7383\(88\)90081-3](https://doi.org/10.1016/0160-7383(88)90081-3)

- Soler, I.P., Gemar, G., Correia, M.B. and Serra, F., 2019. Algarve hotel price determinants: A hedonic pricing model. *Tourism Management*, 70, pp.311-321. doi: <https://doi.org/10.1016/j.tourman.2018.08.028>
- Song, H. and Lin, G., 2023. A behavioral economics approach to hospitality and tourism research. *International Journal of Contemporary Hospitality Management*, 35(5), pp.1844-1858. doi: <https://doi.org/10.1108/IJCHM-05-2022-0634>
- Song, H., Lee, C.K., Reisinger, Y. and Xu, H.L., 2017. The role of visa exemption in Chinese tourists' decision-making: A model of goal-directed behavior. *Journal of Travel & Tourism Marketing*, 34(5), pp.666-679. doi:<https://doi.org/10.1080/10548408.2016.1223777>
- Song, H., Wong, K.K. and Chon, K.K., 2003. Modelling and forecasting the demand for Hong Kong tourism. *International Journal of Hospitality Management*, 22(4), pp.435-451. doi:[https://doi.org/10.1016/S0278-4319\(03\)00047-1](https://doi.org/10.1016/S0278-4319(03)00047-1)
- Sönmez, S.F. and Graefe, A.R., 1998. Influence of terrorism risk on foreign tourism decisions. *Annals of tourism research*, 25(1), pp.112-144. doi: [https://doi.org/10.1016/S0160-7383\(97\)00072-8](https://doi.org/10.1016/S0160-7383(97)00072-8)
- Souza, C.N., Rodrigues, A.C., Correia, R.A., Normande, I.C., Costa, H.C., Guedes-Santos, J., Malhado, A.C., Carvalho, A.R. and Ladle, R.J., 2021. No visit, no interest: How COVID-19 has affected public interest in world's national parks. *Biological Conservation*, 256, p.109015. doi: <https://doi.org/10.1016/j.biocon.2021.109015>
- Spivak, A.L. and Damphousse, K.R., 2006. Who returns to prison? A survival analysis of recidivism among adult offenders released in Oklahoma, 1985–2004. *Justice Research and Policy*, 8(2), pp.57-88. doi: <https://doi.org/10.3818/JRP.8.2.2006.57>
- Statistical Group. . *Agency for Statistics of Bosnia and Herzegovina*. <https://bhas.gov.ba/Calendar/Category?id=19&page=11&statGroup=19&tabId=0&lang=en> ( accessed February 24, 2024)
- Statistical reports. *Instituto Costarricense De Turismo | ICT*. <https://www.ict.go.cr/en/statistics/statistical-reports.html> ( accessed February 24, 2024)
- Statistics. *Tourism Malaysia Corporate Site*. <https://www.tourism.gov.my/statistics> ( accessed February 24, 2024)
- Statistics. *Ministry of Tourism Maldives*. <https://www.tourism.gov.mv/statistics/> ( accessed November 17, 2023)
- Statistik wisatawan mancanegara. *Kemendparekraf/Baparekraf Republic of Indonesia*. <https://www.kemendparekraf.go.id/statistik-wisatawan-mancanegara> ( accessed February 24, 2024)
- Sulaeman, F. (2022). Recovery? What recovery? Ask Bali tourism firms. *The Jakarta Post*, from <https://www.thejakartapost.com/business/2022/11/20/recovery-what-recovery-ask-bali-tourism-firms.html>
- Tarapituxwong, S., Chimprang, N., Yamaka, W. and Polard, P., 2023. A Lasso and Ridge-Cox Proportional Hazard Model Analysis of Thai Tourism Businesses' Resilience and Survival in the COVID-19 Crisis. *Sustainability*, 15(18), p.13582. doi: <https://doi.org/10.3390/su151813582>

- TAT Intelligence Center. *Tourism Authority of Thailand*.  
[https://intelligencecenter.tat.or.th/?lang=en\\_us](https://intelligencecenter.tat.or.th/?lang=en_us) ( accessed February 24, 2024)
- Tchouamou Njoya, E., 2023. Assessing the poverty impact of the COVID-19-induced tourism crisis in Tanzania: A social accounting matrix microsimulation analysis. *Journal of Sustainable Tourism*, 31(3), pp.801-820. doi:  
<https://doi.org/10.1080/09669582.2021.2024552>
- TEMPO online. *INSSE Romania*. <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> ( accessed February 24, 2024)
- Thomason, Pamela, John L. Crompton, and B. Dan Kamp. 1979. A study of the attitudes of impacted groups within a host community toward prolonged stay tourist visitors. *Journal of Travel Research* 17,3: 2-6. doi:  
<https://doi.org/10.1177/004728757901700301>
- Thyne, M., Davies, S. and Nash, R., 2005. A lifestyle segmentation analysis of the backpacker market in Scotland: A case study of the Scottish Youth Hostel Association. *Journal of Quality Assurance in Hospitality & Tourism*, 5(2-4), pp.95-119. doi: [https://doi.org/10.1300/J162v05n02\\_06](https://doi.org/10.1300/J162v05n02_06)
- Tourism - latest data. *SingStat*. <https://www.singstat.gov.sg/find-data/search-by-theme/industry/tourism/latest-data> ( accessed February 24, 2024)
- Tourism - predefined tables. *Cyprus Statistical Service*.  
<https://www.cystat.gov.cy/en/KeyFiguresList?s=51&p=8> ( accessed August 10, 2024)
- Tourism | Stats NZ. *Stats NZ*. <https://www.stats.govt.nz/topics/tourism> ( accessed February 24, 2024)
- Tourism statistics. *Instat Albania*. <http://www.instat.gov.al/en/themes/industry-trade-and-services/tourism/#tab2> ( accessed February 24, 2024)
- Tourism statistics. *Ministry of Culture and Tourism Türkiye*.  
<https://www.ktb.gov.tr/EN-249283/tourism-statistics.html> (accessed February 24, 2024)
- Tourist arrivals and nights. *Državni Zavod Za Statistiku*. <https://novi-web.dzs.hr/en/statistics/tourism/tourist-arrivals-and-nights/> ( accessed February 24, 2024)
- Travel & Tourism Economic Impact | *World Travel & Tourism Council (WTTC)*. (Originally available 13th of July, 2021). WTTC.  
<https://web.archive.org/web/20210713153741/https://wttc.org/research/economic-impact> ( accessed February 24, 2024)
- Travel Statistics - *Central Statistical Office*. Central Statistical Office.  
<https://cso.gov.tt/subjects/travel-and-tourism/travel-statistics/> ( accessed February 24, 2024)
- Tsao, C.Y. and Ni, C.C., 2016. Vulnerability, resilience, and the adaptive cycle in a crisis-prone tourism community. *Tourism Geographies*, 18(1), pp.80-105. doi:  
<https://doi.org/10.1080/14616688.2015.1116600>
- TU121: ACCOMMODATED TOURISTS (MONTHLY)-PXWeb. *Statistics Estonia*.  
[https://andmed.stat.ee/en/stat/majandus\\_\\_turism-jamajutus\\_\\_majutus/TU121/table/tableViewLayout2](https://andmed.stat.ee/en/stat/majandus__turism-jamajutus__majutus/TU121/table/tableViewLayout2) ( accessed February 24, 2024)

Uğur, N.G. and Akbıyık, A., 2020. Impacts of COVID-19 on global tourism industry: A cross-regional comparison. *Tourism management perspectives*, 36, p.100744. doi: <https://doi.org/10.1016/j.tmp.2020.100744>

UN Tourism. (2025). Global and regional tourism performance | *Tourism Dashboard*. link: [www.unwto.org](http://www.unwto.org). <https://www.unwto.org/tourism-data/global-and-regional-tourism-performance> (accessed February 16th, 2025)

Vergori, A.S. and Arima, S., 2022. Low-cost carriers and tourism in the Italian regions: A segmented regression model. *Annals of Tourism Research*, 97, p.103474. doi: <https://doi.org/10.1016/j.annals.2022.103474>

Victoria-Salazar, I., Hernández-Arana, H.A., Meave, J.A., Ruiz-Zárate, M.A., Vega-Zepeda, A., Carricart-Ganivet, J.P. and López-Adame, H., 2017. Did the community structure of a coral reef patch affected by a ship grounding recover after 15 years? Merging historical and recent data sets. *Ocean & Coastal Management*, 144, pp.59-70. doi: <https://doi.org/10.1016/j.ocecoaman.2017.04.009>

*Visit Maldives*. <https://visitmaldives.com/en/news/resorts-are-reopening-with-the-restart-of-tourism-in-maldives-on-15th-july-2020> (accessed 15<sup>th</sup> July 2022)

Visitantes no residentes | *Datos Abiertos Colombia*. <https://www.datos.gov.co/en/Comercio-Industria-y-Turismo/Visitantes-No-Residentes/bkar-zsub/data> (accessed February 24, 2024)

Vives, A. and Jacob, M., 2023. Sources of price elasticity of demand variability among Spanish resort hotels: a managerial insight. *Journal of Hospitality and Tourism Technology*, 14(2), pp.137-153. doi: <https://doi.org/10.1108/JHTT-11-2020-0298>

Wamboye, E.F., Nyaronga, P.J. and Sergi, B.S., 2020. What are the determinants of international tourism in Tanzania?. *World Development Perspectives*, 17, p.100175. doi: <https://doi.org/10.1016/j.wdp.2020.100175>

Wang, J., Liu-Lastres, B., Ritchie, B.W. and Mills, D.J., 2019. Travellers' self-protections against health risks: An application of the full Protection Motivation Theory. *Annals of Tourism Research*, 78, p.102743. doi: <https://doi.org/10.1016/j.annals.2019.102743>

Wang, Y.S., 2014. Effects of budgetary constraints on international tourism expenditures. *Tourism management*, 41, pp.9-18. doi: <https://doi.org/10.1016/j.tourman.2013.08.006>

Watson, P. and Deller, S., 2022. Tourism and economic resilience. *Tourism Economics*, 28(5), pp.1193-1215. doi: <https://doi.org/10.1177/1354816621990943>

Wolff, K. and Larsen, S., 2014. Can terrorism make us feel safer? Risk perceptions and worries before and after the July 22nd attacks. *Annals of Tourism Research*, 44, pp.200-209. doi: <https://doi.org/10.1016/j.annals.2013.10.003>

Wong, J.Y. and Yeh, C., 2009. Tourist hesitation in destination decision making. *Annals of Tourism Research*, 36(1), pp.6-23. doi: <https://doi.org/10.1016/j.annals.2008.09.005>

World Tourism Organization (2021), *International Tourism Highlights, 2020 Edition*, UNWTO, Madrid, doi: <https://doi.org/10.18111/9789284422456> (accessed February 24, 2023)

- Yamaka, W., Zhang, X., Maneejuk, P. and Ramos, V., 2023. Asymmetric effects of third-country exchange rate risk: A Markov switching approach. *Annals of Tourism Research*, 103, p.103676. doi: <https://doi.org/10.1016/j.annals.2023.103676>
- Yan, H., Wang, L., Xiong, H. and Wei, Y., 2023. Temporal landmark effects in travel decision. *Annals of Tourism Research*, 101, p.103576. doi: <https://doi.org/10.1016/j.annals.2023.103576>
- Yang, L., Qi, Y. and Jiang, X., 2021. An investigation of the initial recovery time of Chinese enterprises affected by Covid-19 using an accelerated failure time model. *International Journal of Environmental Research and Public Health*, 18(22), p.12079. doi: <https://doi.org/10.3390/ijerph182212079>
- Yang, Y., Huang, S., Li, W., Zhong, F. and Lan, T., 2022. Does government efficiency mitigate the effect of natural disasters on tourist arrivals?. *Current Issues in Tourism*, 25(13), pp.2177-2191. doi: <https://doi.org/10.1080/13683500.2021.1951181>
- Yang, Y., Mao, Z. and Wen, Z., 2022. Pandemic severity, policy stringency, and tourism performance: A global analysis. *Journal of Travel Research*, 61(8), pp.1928-1946. doi: <https://doi.org/10.1177/00472875211047276>
- Yao, Y., Zhao, X., Ren, L. and Jia, G., 2023. Compensatory travel in the post COVID-19 pandemic era: How does boredom stimulate intentions?. *Journal of Hospitality and Tourism Management*, 54, pp.56-64. doi: <https://doi.org/10.1016/j.jhtm.2022.12.003>
- Yap, D.Y., Tang, C.S., Ma, M.K., Lam, M.F. and Chan, T.M., 2012. Survival analysis and causes of mortality in patients with lupus nephritis. *Nephrology Dialysis Transplantation*, 27(8), pp.3248-3254. doi: <https://doi.org/10.1093/ndt/gfs073>
- Yobesia, M.N., Kihima, B.O., Makopondo, R.O. and Opondo, J., 2024. Effects of accommodation facilities' attributes on room rates in a wildlife tourism destination area, Kenya. *Tourism Recreation Research*, 49(3), pp.623-638. doi: <https://doi.org/10.1080/02508281.2022.2052629>
- Yorucu, V. and Mehmet, O., 2011. The bounds-test approach for co-integration between international tourist arrivals, per capita income and cost of living: the case of All Cyprus. *Applied Economics Letters*, 18(14), pp.1327-1331. doi: <https://doi.org/10.1080/13504851.2010.537616>
- You, W., Huang, Y. and Lee, C.C., 2024. Forecasting tourist flows in the COVID-19 era using nonparametric mixed-frequency VARs. *Journal of Forecasting*, 43(2), pp.473-489. doi: <https://doi.org/10.1002/for.3044>
- Yuan, R., Luo, J., Liu, M.J. and Yu, J., 2022. Understanding organizational resilience in a platform-based sharing business: The role of absorptive capacity. *Journal of Business Research*, 141, pp.85-99. doi: <https://doi.org/10.1016/j.jbusres.2021.11.012>
- Zhang, X., Song, H. and Huang, G.Q., 2009. Tourism supply chain management: A new research agenda. *Tourism management*, 30(3), pp.345-358. doi: <https://doi.org/10.1016/j.tourman.2008.12.010>
- Zhang, Z., Ye, Q. and Law, R., 2011. Determinants of hotel room price: An exploration of travelers' hierarchy of accommodation needs. *International Journal of Contemporary Hospitality Management*, 23(7), pp.972-981. doi: <https://doi.org/10.1108/09596111111167551>

Zheng, D., Luo, Q. and Ritchie, B.W., 2021. Afraid to travel after COVID-19? Self-protection, coping and resilience against pandemic 'travel fear'. *Tourism Management*, 83, p.104261. doi: <https://doi.org/10.1016/j.tourman.2020.104261>

## Appendix

Table 1: Data summary table for Chapter 1 and 2

Country	FTA <sup>(a)</sup>	
	Average	Standard Deviation
Albania	416219	354114
Australia	404615	372336
Bahamas	382856	257012
Bolivia	58121	45480
Estonia	114729	81215
Indonesia	720303	581130
Malaysia	1083940	1037195
New Zealand	170639	166742
Seychelles	21461	11504
Singapore	781486	749063
Trinidad and Tobago	18508	14937
Turkey	2562190	1698521
UK	2025809	1421442
USA	4096894	2571450
OVERALL	918411.97	1519828.85

Note : (a) Collected and averaged over 54 months from January 2018 to June 2022

Source: Authors

*Table 2: List of nations and open government data portals used*

Name of country	Data Portal(s)
Albania	Institute of Statistics
Australia	Australian Bureau of Statistics
Bahamas	Tourism Today
Bolivia	INE Bolivia
Bosnia and Herzegovina	Agency for Statistics for Bosnia and Herzegovina
Cambodia	Tourism Cambodia
Canada	Destination Canada
Colombia	Datos Abiertos Colombia
Costa Rica	Instituto Costarricense de Turismo
Croatia	Croatian Bureau of Statistics
Cyprus	Cyprus Statistical Service
Denmark	Danmarks Statistics (Statistics Denmark)
Estonia	Statistics Estonia
Fiji	Fiji Bureau of Statistics
Finland	Statistics Finland
France	INSEE France
Germany	German Federal Statistical Office
India	Ministry of Tourism
Indonesia	Ministry of Tourism and Creative Economy/Tourism and Creative Economy Agency
Japan	JTB Tourism Research and Consulting Co.
Malaysia	Tourism Malaysia
Maldives	Ministry of Tourism
Mauritius	Statistics Mauritius
New Zealand	Stats NZ
Philippines	Department of Tourism
Romania	National Institute of Statistics
Seychelles	National Bureau of Statistics
Singapore	SingStat
Spain	INE Spain
Sri Lanka	Sri Lanka Tourism Development Authority
Thailand	Tourism Authority of Thailand
Trinidad and Tobago	Central Statistics Office
Turkey	Ministry of Culture and Tourism
United Kingdom	Office for National Statistics
United States of America	Trade.gov
Vietnam	Vietnam National Authority of Tourism

*Table 3: Composition of Resilience Index by Hale et al., 2021 used in Chapter 2*

Serial number	Component
1	Closing of schools and universities
2	Closing of workplaces
3	Cancellations of public events
4	Limit on public gatherings
5	Closing of public transport
6	Stay-in-place orders
7	Restrictions on movement within internal regions
8	Restrictions on international travel
9	Presence of public information campaigns against COVID-19

*Source: Hale et al, 2021*

*Table 4: Unit root test results for Phase 1 (decline) of Chapter 2*

Variable	Wtbar	P value	Stationary?
$\Delta(\text{FTA})_{it}$	-5.36	4.1e-08	Yes
$\Delta(\text{NDM})_{it}$	-4.68	1.46e-06	Yes
$\Delta(\text{STR})_{it}$	-2.85	< 0.003	Yes

*Table 5: Panel Linear Hausman Results For Phase 1 2020 panel regression Chapter 2*

Formula	$\text{diff}(\text{Data2020}\$ \text{FTA}, 1) \sim \text{diff}(\text{Data2020}\$ \text{NDM}, 1) + \text{diff}(\text{Data2020}\$ \text{STR})$
Chi-Square	5.12 with 2 degrees of freedom
p-value	< 0.08
Result	Random effects model is the better specification

Table 6: Unit root tests for variables of phase 2 "fast growth" panel for Chapter 2

Variable	Wtbar	P value	Stationary?
$\Delta(\log(\text{FTA}))_{it}$	-6.59	2.22e-11	Yes
$\Delta(\log(\text{NDM}))_{it}$	-6.34	1.15e-10	Yes
$\Delta(\log(\text{STR}))_{it}$	-5.60	1.06e-08	Yes
$\Delta(\log(\text{VAX}))_{it}$	1927.8	< 2.2e-16	Yes

Table 7: Panel Linear Hausman Results for Phase 2 "Fast Growth" for Chapter 2

Formula	$\text{diff}(\log(\text{FTA})) \sim \text{diff}(\log(\text{NDM})) + \text{diff}(\log(\text{STR})) + \text{diff}(\log(\text{VAX}))$
Chi-Square	0.18 with 3 degrees of freedom
p-value	0.98
Result	Random effects model is the better specification

Table 8: Unit root test results for phase 2 "Slow growth" panel Chapter 2

Variable	wtbar	P value	Stationary?
$\Delta(\log(\text{FTA}))_{it}$	-3.54	< 0.001	Yes
$\Delta(\log(\text{NDM}))_{it}$	-6.36	1.04e-10	Yes
$\Delta(\log(\text{STR}))_{it}$	-2.54	< 0.006	Yes
$\Delta(\log(\text{VAX}))_{it}$	-1027.7	< 2.2e-16	Yes

Table 9: Panel Linear Hausman Results for Phase 2 "Slow growth" for Chapter 2

Formula	$\text{diff}(\log(\text{FTA})) \sim \text{diff}(\log(\text{NDM})) + \text{diff}(\log(\text{STR})) + \text{diff}(\log(\text{VAX}))$
Chi-Square	0.14 with 3 degrees of freedom
p-value	0.99
Result	Random effects model is the better specification

Table 10: Unit root tests for transformed variables in Study 2 for Chapter 2

Variable	Malaysia		USA		Maldives	
	Wtbar	p-value	Wtbar	p-value	Wtbar	p-value
$\Delta(\log(\text{OTTDib}_t))$	-10.3	< 2.2e-16	-18.29	< 2.2e-16	-18.86	< 2.2e-16
$\Delta(\log(\text{NDMSrc}_{it}))$	-8.46	< 2.2e-16	-12.94	< 2.2e-16	-10.21	< 2.2e-16
$\Delta(\log(\text{NDMDest}_{bt}))$	-6.81	4.72e-12	-11.13	< 2.2e-16	-22.22	< 2.2e-16
$\Delta(\log(\text{StrSrc}_{it}))$	-10.30	< 2.2e-16	-13.47	< 2.2e-16	-12.69	< 2.2e-16
$\Delta(\log(\text{StrDest}_{bt}))$	-8.04	4.51e-16	-15.92	< 2.2e-16	NA	NA
$\Delta(\log(\text{VaxSrc}_{it}))$	-917.03	< 2.2e-16	-829.62	< 2.2e-16	-1107.2	< 2.2e-16
$\Delta(\log(\text{VaxDest}_{bt}))$	-2578.5	< 2.2e-16	-59.63	< 2.2e-16	-12.84	< 2.2e-16
$\Delta(\log(\text{Exchange}_{ibt}))$	-12.48	< 2.2e-16	-14.003	< 2.2e-16	-13.51	< 2.2e-16

Note: NA – Not Applicable. p-value less than 0.001 indicates the stationarity of the transformed variable