Tourism Demand in a Small Island Economy: Evidence from Seychelles

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May 2026

Abstract

Using data from 168 source countries spanning 2000 to 2024, we examine the determinants of inbound tourist arrivals in Seychelles. We find that past travel experience, origin country income, destination visibility, and air connectivity are the primary drivers of tourist arrivals. The income effect is asymmetric: arrivals respond to income gains but are resilient to declines. This pattern is consistent with a compositional mechanism, whereby rising incomes draw newly affluent travellers into the market while moderate declines leave Seychelles' wealthy core clientele largely unaffected. Disaggregating by region of origin reveals substantial heterogeneity: income accounts for 57.8 and 80.4 per cent of explained variation in arrivals from Europe and Africa respectively, while past travel experience accounts for 84.4 per cent of explained variation in Asian arrivals, pointing to a mature and loyal source market. These findings highlight the importance of visitor experience quality, targeted digital marketing, and air access development as policy levers for small island tourism destinations.

Keywords: Tourism demand, Seychelles, Bias-corrected LSDV, Income elasticity, Destination visibility, Air connectivity, Regional heterogeneity

JEL Classification: Z32, C23, F14, O55

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1 Introduction

Tourism is one of the most economically significant sectors of the modern global economy. In 2024, the sector accounted for 10 per cent of global GDP and supported 350 million jobs, equivalent to one in every ten positions worldwide (World Travel and Tourism Council, 2024). These figures are projected to grow, with tourism's GDP contribution expected to reach 11.5 per cent by 2035 and employment rising to one in eight jobs globally (World Travel and Tourism Council, 2025).

For Seychelles, the absence of extractive natural resources such as oil and minerals, combined with an abundance of pristine beaches and a tropical climate implies greater reliance on the sector. Tourism is the primary driver of the Seychelles economy, directly and indirectly accounting for about 70 per cent of GDP and supporting three in ten jobs (Seychelles Trade Portal, 2025). Given this structural dependence, understanding the factors that influence tourism demand is critical from a policy and planning standpoint.

A substantial body of literature examines the determinants of tourism demand across a variety of contexts. The general consensus is that, similar to the demand for other products, the demand for tourism is primarily influenced by income, prices, and consumer preferences. Given that tourism is a normal good (Barman and Nath, 2019), economic theory predicts that rising income in origin countries will lead to higher demand for tourism services in destination countries. This prediction is supported empirically, with studies such as Lim (1997), Akis (1998), Garín-Muñoz and Amaral (2000), Barman and Nath (2019), and Monte-Rojas and Barosso (2020) finding a positive association between origin-country income and tourist arrivals in the destination country. The law of demand stipulates that as tourism services become more expensive, demand for them will fall. However, empirical evidence on this relationship has been mixed: some studies document a negative association between prices and tourist arrivals (e.g., Barman and Nath, 2019), while others find no significant relationship (e.g., Naudé and Saayman, 2005). More recent contributions expand this basic framework to include a broader set of determinants, encompassing supply-side factors such as tourism infrastructure and flight connectivity; origin-country conditions, including income levels and political stability; and demand-side influences such as habit formation.

A key finding that emerges from the literature is that the determinants of tourism demand vary across contexts. That is, factors that are important in Europe may not necessarily be relevant in Africa. Motivated by the continent's potential to become a major tourism hub, Africa has attracted increasing attention in the literature, especially among recent studies.

However, Seychelles, despite its growing popularity as a premium destination, remains understudied. To the best of our knowledge, no existing study examines the determinants of tourist arrivals in Seychelles.

This paper aims to fill this gap by empirically examining the factors that influence the demand for tourism in Seychelles. Using a panel of 168 tourist-originating countries over the period 2000–2024, we investigate the relevance of standard determinants such as visitor income and relative prices between Seychelles and the country of origin. We then expand this set of determinants to include political stability and climatic conditions in the origin country, bilateral economic ties between Seychelles and the origin country, visibility of Seychelles and similar destinations in each origin market, and the availability of direct air services between the origin country and Seychelles. The literature consistently documents a positive association between arrivals and the availability of direct air services. However, establishing whether this relationship is causal has been difficult because reverse causality exists: airlines expand capacity in response to demand, making it difficult to isolate the supply-side effect of connectivity on arrivals (Wu, 2010; Tan et al., 2016; Koo et al., 2017). Using novel administrative data on historical seat capacity to Seychelles, we construct an air disruption dummy that equals one during episodes when direct air connectivity was suspended due to factors exogenous to tourism demand, including geopolitical events, international sanctions, and commercial route withdrawals. This dummy provides plausibly exogenous variation in air connectivity to Seychelles, allowing us to isolate the causal effect of direct air services on tourist arrivals.

Drawing on recent literature that documents persistence in tourist arrivals, we then augment our analysis using a dynamic panel data approach that accounts for the influence of past travel experience on current destination choices. To address the bias that arises when a lagged dependent variable is included in a fixed effects regression, we employ the bias-corrected least squares dummy variable (LSDV) estimator of Bruno (2005), which has the additional advantage of allowing us to uncover the long-run income elasticity of tourism demand for Seychelles.

The findings suggest that Seychelles is a destination whose appeal is self-reinforcing but fragile. Arrivals are primarily driven by past visitor experience, income in the country of origin, destination visibility, and the availability of direct air services. Repeat visitation and word-of-mouth referrals generate a self-sustaining cycle of arrivals, income growth in source markets translates into more arrivals, and greater online visibility of Seychelles seems to generate new interest among potential travellers. We find that the income response is

asymmetric: while rising incomes attract more visitors, falling incomes do not deter them to the same degree. We interpret this finding as evidence of a compositional mechanism: rising incomes in a source market expand the pool of households able to afford a Seychelles holiday, drawing newly affluent travellers in at the margin, whereas moderate income declines fall primarily on the middle of the income distribution, leaving the established high-income core that constitutes the bulk of arrivals largely unaffected. This self-reinforcing demand structure is nevertheless vulnerable to external shocks, including disruptions to direct air services driven by geopolitical events or commercial route withdrawal.

We also find considerable heterogeneity in how travel decisions are shaped across regions. For Europe and Africa, income is the dominant determinant of arrivals, suggesting that economic conditions in origin markets are the primary driver of demand for Seychelles as a destination. Asia presents a different picture: income plays no discernible role, and arrivals are instead driven primarily by past travel experience, through repeat visitation or referrals. This finding points to a mature and loyal Asian source market with fundamentally different demand dynamics from the income-driven European and African markets, with important implications for how Seychelles positions itself across different origin regions.

This paper contributes to the literature in three main ways. First, we construct the largest bilateral panel dataset for Seychelles to date, covering 168 source countries over the period 2000–2024, and conduct the first systematic econometric analysis of the determinants of tourist arrivals in Seychelles. This contribution complements a growing body of work on tourism demand in small island developing states, while addressing a notable gap in the literature on Indian Ocean destinations.

Second, by exploiting exogenous variation in air connectivity driven by geopolitical events, international sanctions, and commercial route withdrawals, we provide novel evidence of the causal effect of direct air services on tourist arrivals. The closest antecedent to this contribution is Koo et al. (2017), which uses an instrumental variable approach to identify the causal effect of direct air connectivity on arrivals in Australia, finding no statistically significant effect. Our results differ, which may reflect the structural differences between the two destinations. Unlike Australia, which is served by a large number of carriers offering multiple routing options, Seychelles is a small island economy served by a limited number of airlines. In this setting, the suspension of a single carrier can eliminate direct access from an entire source market, making the connectivity-arrivals relationship far more binding than in destinations where travellers can substitute across multiple competing routes.

Third, we document asymmetry in the responsiveness of tourism demand to income shocks: arrivals respond significantly to income gains but are resilient to declines. This finding contributes to a small but growing literature on asymmetric income effects in tourism demand (Smeral, 2012; Alegre et al., 2013; Smeral and Song, 2015), while pointing to a different direction of asymmetry from that documented in prior studies. Existing work typically finds that negative income shocks reduce tourism demand by more than equivalent positive shocks increase, which is the opposite of what we find for Seychelles.

The rest of the paper proceeds as follows. Section 2 provides background, Section 3 outlines the empirical strategy, Section 4 describes the data and presents summary statistics, Section 5 presents the results, Section 6 presents robustness checks, and Section 7 discusses the findings and concludes.

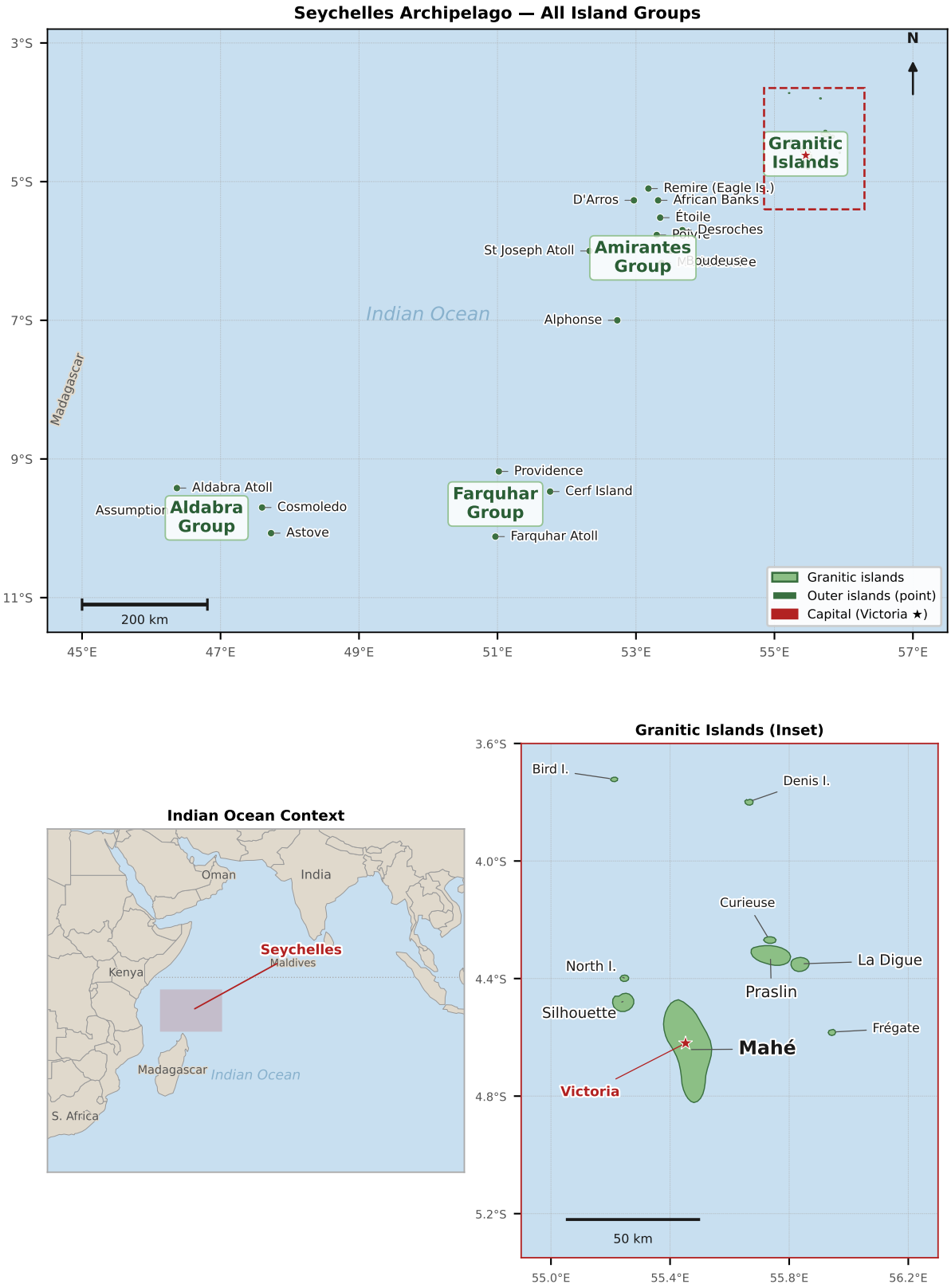
2 Background

Situated in the Indian Ocean, Seychelles is an archipelago of 115 islands with an estimated population of 123,097 (National Bureau of Statistics, 2026). Population and economic activity are concentrated across the three main islands, namely Mahé, Praslin, and La Digue. Mahé is the largest of the three islands and is home to the capital city, Victoria, which is widely regarded as one of the smallest capital cities in Africa (see Figure 1).

The World Travel and Tourism Council consistently ranks Seychelles among the top five most tourism-dependent countries worldwide, with tourism activity directly and indirectly accounting for more than 70 per cent of GDP, a figure that is well above the Small Islands Developing States average of 30 per cent. The sector is the dominant earner of foreign exchange, historically generating over 70 per cent of total foreign exchange receipts, and it is the single largest employer, with roughly 15 per cent of the formal workforce directly engaged in tourism-related activities.

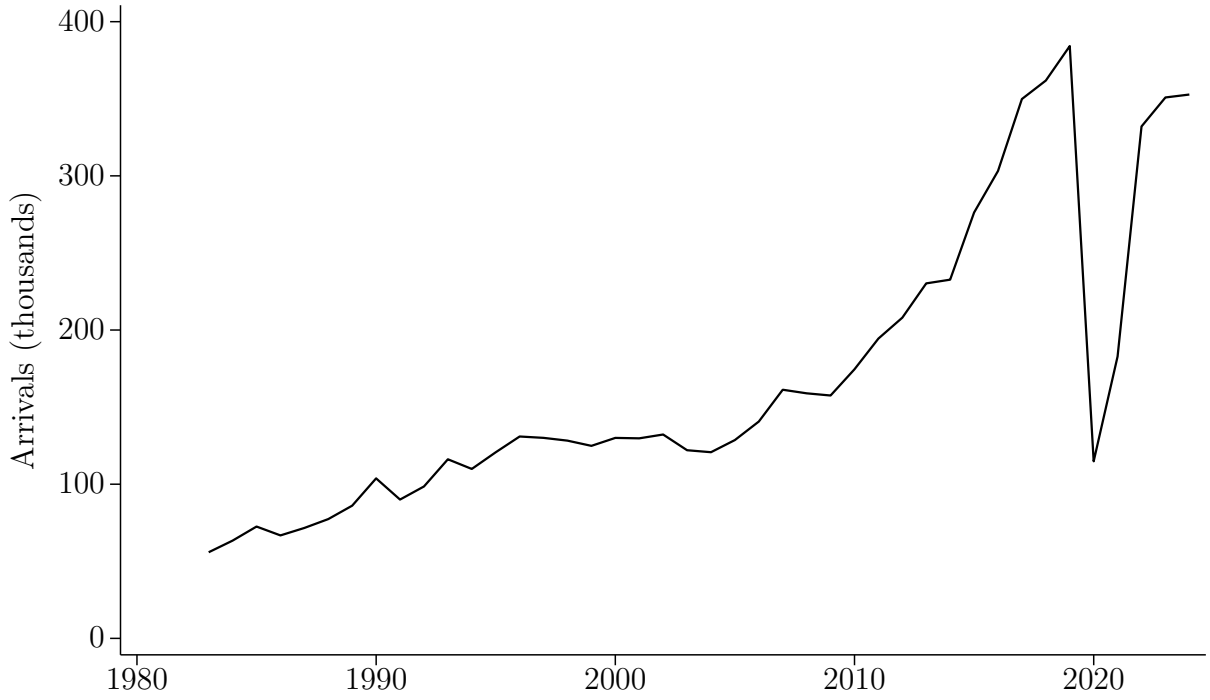
The structural significance of tourism in Seychelles is the product of decades of growth in visitor arrivals. Figure 2 illustrates this trajectory between 1983 and 2025. The modern history of tourism in Seychelles dates to 1971, when the opening of the Seychelles International Airport first enabled direct international access to the islands. From 77,400 arrivals in 1979, the sector expanded steadily through the 1980s before being interrupted by the 1991 Gulf War, which reduced arrivals to 90,050 (Archer and Fletcher, 1996). Recovery was rapid thereafter, and arrivals surpassed 130,000 by 2000. Over the two decades that followed, arrivals grew continuously, nearly doubling from 208,034 in 2012 to reach 384,204 in 2019.

Figure 1. Republic of Seychelles



Notes: The figure shows the geographic location of the main islands of the Seychelles archipelago.

Figure 2. Tourist Arrivals in Seychelles, 1983-2024



Notes: The figure plots the evolution of tourist arrivals in Seychelles over the 1983-2024 period

The COVID-19 pandemic represents the most severe external shock in the history of Seychelles tourism. International border closures and the collapse of global air travel reduced arrivals to just 114,858 in 2020, a contraction of about 70 per cent in a single year (National Bureau of Statistics, 2022). Tourism receipts fell in tandem, from USD 590m in 2019 to USD 221m in 2020, a decline of 63 per cent that translated directly into fiscal stress, current account deterioration, and GDP contraction (Central Bank of Seychelles, 2021). The severity of this episode accurately illustrates the macroeconomic risk embedded in the country's tourism-dependent growth model.

A defining structural feature of Seychelles' tourism demand is its pronounced concentration in a small number of Western European source markets. Historically, Germany, France, Russia, Italy, and the United Kingdom have collectively accounted for the majority of inbound arrivals, reflecting both geographic and cultural ties, the availability of direct long-haul air routes, and the alignment of European consumer preferences with Seychelles' positioning as a premium, nature-based destination. In 2025, Germany was the largest source market, accounting for 13.9 per cent of arrivals, followed by France (10.4 per cent), Russia (9.4 per cent), Italy (5.6 per cent), and the United Kingdom (5.5 per cent).

While this European concentration has historically defined Seychelles' source market structure, the period since 2000 has been characterised by gradual diversification. A comparison of Panels A and B in Figure 3 reveals two trends: (1) the sustained concentration of arrivals from Western Europe and (2) a gradual broadening of the source market base towards the Middle East, South and East Asia, and sub-Saharan Africa. The UAE has consolidated its position as the leading non-European market, driven by growing affluence and expanding Emirates and Etihad connectivity. Meanwhile, arrivals from the United States and regional African markets, particularly South Africa, have grown modestly.

The concentration of arrivals in a small number of origin countries has direct implications for the modelling of tourism demand. Macroeconomic conditions in key source markets, particularly output growth and exchange rate movements, can have outsized effects on Seychelles' aggregate arrivals. A recession in any of these economies can substantially affect the tourism sector. The identification and quantification of these transmission channels is a central objective of the econometric analysis undertaken in this paper.

3 Empirical Strategy

3.1 Static Panel Approach - Fixed Effects

Economic theory stipulates that the demand for a product is determined by income, prices, and taste and preferences. This relationship can be expressed as:

$$D = f(Y, P, Z) \tag{1}$$

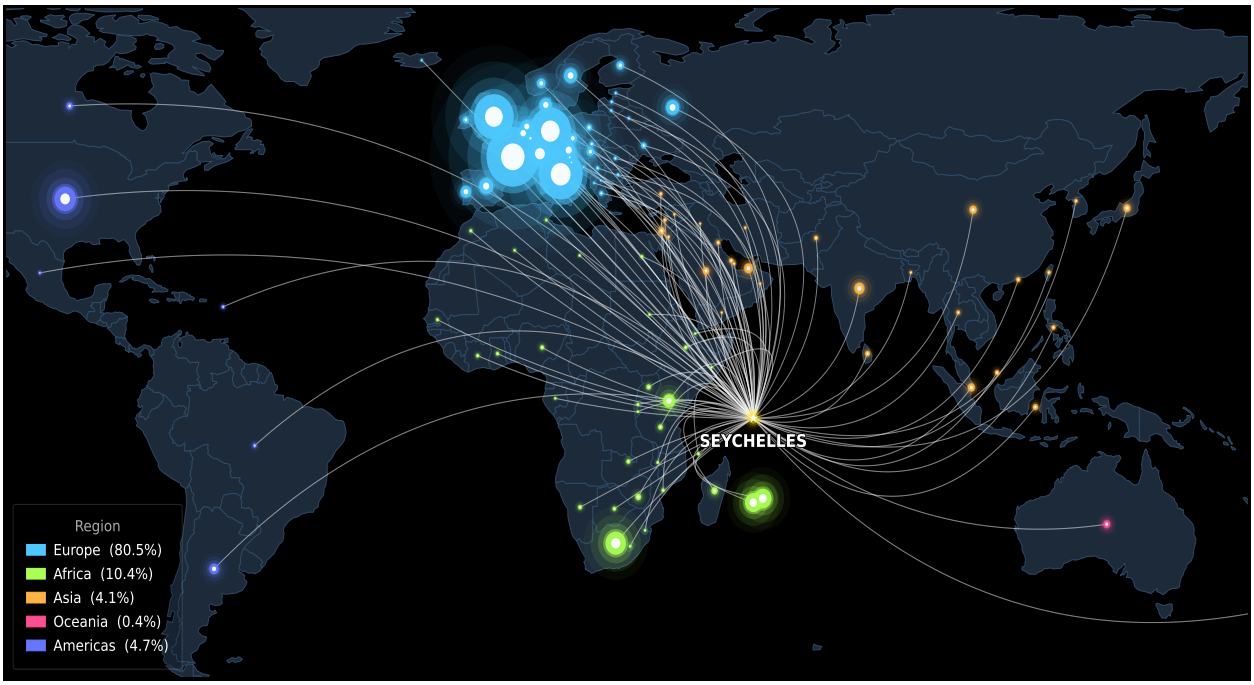
Where D is the quantity of the product demanded, Y represents income, P is the price of the product, and Z is a set of factors that shape consumers' taste and preferences. In the context of international tourism demand, Z captures factors such as destination awareness, political stability in the source market, air connectivity between the destination and origin countries, and climatic conditions in the origin country. Drawing on this theoretical framework, we can start investigating the determinants of tourism demand by estimating the following baseline specification:

$$\ln(\text{Arrivals}_{it}) = \beta + \alpha \ln(\text{Real GDPpc}_{it}) + \delta \ln(\text{Relative Price}_{it}) + \eta_t + \zeta_i + \mu_{it} \tag{2}$$

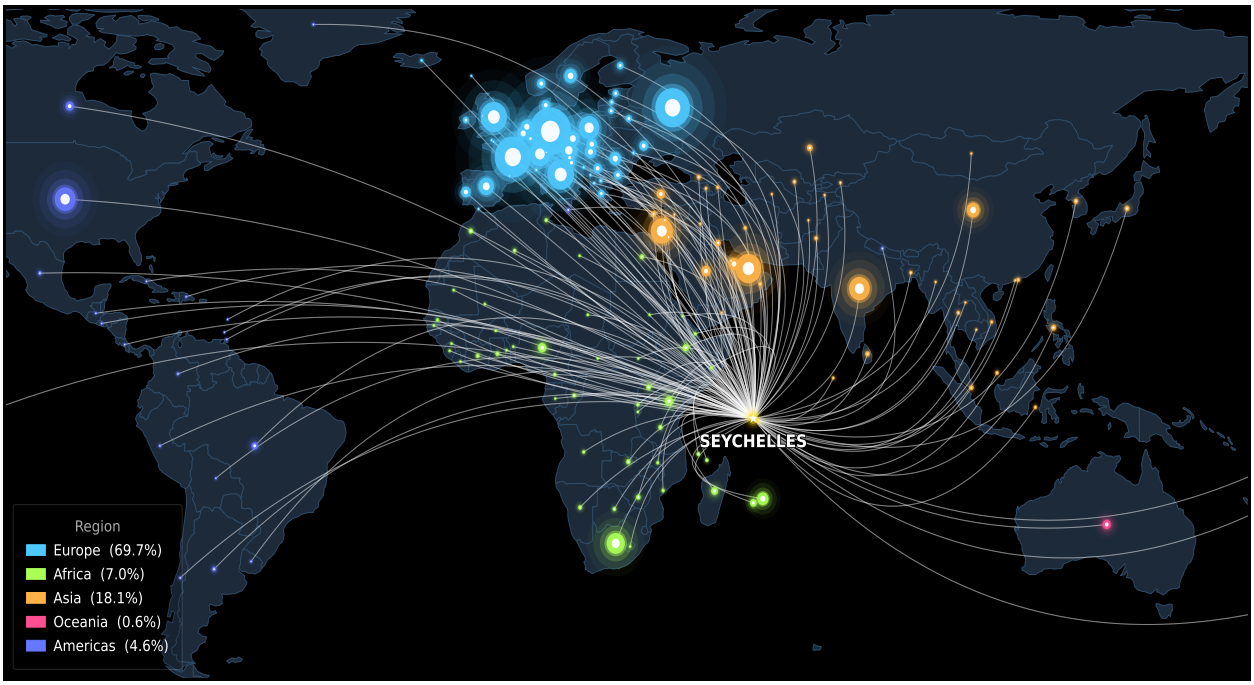
Where Arrivals_{it} is the number of tourist arrivals to Seychelles from country i in year t.

Figure 3. Geographic Distribution of Seychelles' Source Markets, 2000 vs 2025.

Panel A. 2000



Panel B. 2025



Notes: The arcs connect Seychelles with each of its source markets. The market share held by each market is proportional to the size of the bubbles.

Real GDPpc_{it} is an income proxy and denotes the per capita real GDP (in constant 2015 US dollars) of origin country i in year t. Relative Price_{it} captures the relative price level between Seychelles and the origin country, which we proxy using the real exchange rate between the two. μ_{it} is an independently and normally distributed error term. We control for seasonality, common shocks, and unobserved time-varying factors across countries using year fixed effects, denoted by η_t. We also control for time-invariant differences between countries (e.g., geography, culture, religion) by including country fixed effects, denoted by ζ_i, in our specification.

We then augment this baseline specification to capture the full set of factors in Z, adding a measure of political stability in the origin country, destination visibility, bilateral trade flows between Seychelles and the origin country, air connectivity, and climatic conditions in the origin country. We proxy the visibility of Seychelles in each origin market using the Google Search Index, which captures the annual popularity of the search term 'Seychelles' in each origin country. The index is a natural proxy for destination visibility. When someone searches for 'Seychelles' online, they are signalling awareness of the destination: they know it exists, they are curious about it, and they are actively considering it as a travel option. A country with a high search index for 'Seychelles' is therefore one where the destination is prominent in the minds of prospective travellers, which is precisely what we mean by visibility.

An individual's decision to visit Seychelles may also be shaped by their awareness of alternative destinations. We account for these dynamics by incorporating Google Search Index measures for the Maldives, Mauritius, and Tanzania, which are three destinations that share comparable positioning as luxury island products. Including the Google Trends Index as a regressor introduces a potential simultaneity bias, as search interest and tourist arrivals may be jointly determined: prospective visitors search for their destination online as part of the booking process, meaning observed search intensity partly reflects already-formed travel intentions rather than independently driving them. We address this problem by lagging the visibility indicators by one year, assuming that search interest in year t-1 predates the booking decisions that materialise as arrivals in year t. This identification strategy is consistent with typical booking horizons for Seychelles, which generally span months.

The literature consistently finds that air connectivity is positively associated with tourist arrivals, with direct routes reducing travel cost and expanding the pool of reachable source markets (Culiuc, 2014; Zhang and Findlay, 2014; InterVISTAS, 2015). However, a significant identification challenge arises from reverse causality: while direct air services facilitate travel,

airlines simultaneously expand capacity in response to high demand, making it difficult to isolate the supply-side effect of connectivity on arrivals from the demand-side effect of arrivals on airline scheduling decisions. We address this issue by constructing a connectivity disruption dummy that identifies episodes in which established direct air services to Seychelles were suspended or ceased due to geopolitical events, international sanctions, or commercial route withdrawal. These disruptions are plausibly exogenous to Seychelles-specific demand conditions: they reflect decisions taken by airlines or governments for reasons unrelated to the level of tourist arrivals, thereby providing exogenous variation in connectivity that is not contaminated by reverse causality.

Climatic conditions in the source country represent a push factor that may influence the decision to travel to a tropical destination. The climate push hypothesis, documented in the tourism demand literature, posits that tourists from colder climates are more likely to seek out warm-weather destinations, particularly during winter months (Lorde et al., 2015). 'Seychelles' positioning as a tropical destination makes it a natural candidate for this effect. We account for this potential push factor by including a temperature anomaly variable that measures the annual deviation of temperature from each source country's long-run average over the study period.

All specifications are estimated using the robust fixed effects estimator, with standard errors clustered at the country-of-origin level. The fixed effects estimator controls for time-invariant differences across source countries, including factors such as geographic distance, colonial ties, and cultural proximity, which the literature has consistently identified as important determinants of bilateral tourism flows. By absorbing these factors within country fixed effects, the estimator reduces the risk of omitted variable bias. A limitation of this approach, however, is that it cannot identify the effect of variables that do not change over time within a given country (e.g., geographic distance to Seychelles). Similarly, variables that vary only across time but are common to all origin countries, like Seychelles' tourism infrastructure, are absorbed by time fixed effects. Given these limitations, we do not consider the effects of time- and country-invariant factors on arrivals.

3.2 Dynamic Panel Approach – Bias-Corrected LSDV

A well-documented feature of tourism demand is its persistence: arrivals in one year are highly correlated with arrivals in subsequent years (Naudé and Saayman, 2005; Barman and Nath, 2019; Viljoen et al., 2019; Monte-Rojas and Barroso, 2020). This persistence reflects, first, repeat visitation behaviour, whereby satisfied tourists return to familiar destinations.

Prior experience at a destination is itself a determinant of future visitation, as familiarity reduces the perceived risk and search costs associated with travel. Second, it reflects word-of-mouth effects, whereby people who have been to the destination recommend it to others. To account for this persistence, we include the lagged dependent variable as a regressor, yielding the following dynamic specification:

$$\begin{aligned}\ln(\text{Arrivals}_{it}) = \beta + \theta \ln(\text{Arrivals}_{i,t-1}) + \alpha \ln(\text{Real GDPpc}_{it}) + \delta \ln(\text{Relative Price}_{it}) \\ + Z_{it} + \eta_t + \zeta_i + \mu_{it}\end{aligned} \tag{3}$$

Where $\text{Arrivals}_{i,t-1}$ denotes the number of tourist arrivals from country i in the previous year. Z_{it} is a vector of arrivals determinants that contains the additional explanatory variables introduced in the augmented model discussed in Sub-section 3.1. All other variables are as defined in specification (2). While this specification makes it possible to account for the role of past experience in shaping current travel decisions, it does not allow us to identify the precise channel through which persistence operates: whether through repeat visitation, word-of-mouth referrals, or a combination of both. Disentangling these channels would require individual-level data on travel history and referral behaviour, which are unavailable at the aggregate level. We therefore treat the lagged arrivals coefficient as a composite measure of demand persistence, encompassing both channels.

Estimating specification (3) using the fixed effects estimator would yield biased and inconsistent estimates due to correlation between the lagged dependent variable and country-specific effects, a problem commonly referred to as the Nickell bias (Nickell, 1981). The common solution to this problem is to employ the Generalised Method of Moments (GMM) estimator developed by Arellano and Bond (1991), which is well-suited for panels with a small time dimension (T) and a large number of cross-sectional units (N). However, the dataset we use in this study spans the period 2000 to 2024, resulting in a moderately large time dimension. In such cases, System GMM can become unreliable owing to instrument proliferation and weak identification (Roodman, 2009).

Given the limitations of System GMM in panels with large T, we adopt the bias-corrected Least Squares Dummy Variable estimator of Bruno (2005). This estimator is similar to the standard fixed effects estimator but corrects for the bias introduced by including the lagged dependent variable as a regressor. Monte Carlo evidence in Judson and Owen (1999) suggests that the estimator performs well when T is between 10 and 30, which encompasses

our sample, making it more appropriate than GMM-based alternatives for the dataset at hand.

An advantage of the dynamic specification is that it allows us to recover both short-run and long-run income elasticities. The coefficient α on $\ln(\text{Real GDPpc}_{it})$ captures the short-run income elasticity of arrivals: the immediate response of arrivals to a change in origin country average income within a given year. However, because of persistence, the full effect of an income shock takes several periods to materialise. The long-run income elasticity, which accounts for this dynamic adjustment, is given by:

$$\text{Long-run elasticity} = \frac{\hat{\alpha}}{1 - \hat{\theta}} \tag{4}$$

Where $\hat{\alpha}$ is the estimated short-run income elasticity and $\hat{\theta}$ is the estimated coefficient on the lagged dependent variable. The denominator $(1 - \hat{\theta})$ scales the short-run effect upward to account for the cumulative impact of persistence, yielding the total long-run response of arrivals to a change in income.

4 Data

We draw on data from five main sources: (i) the World Bank World Development Indicators (WDI), (ii) the National Bureau of Statistics, (iii) Google Trends, (iv) the IMF International Trade in Goods dataset, and (v) the NASA Prediction of Worldwide Energy Resources (POWER) project. Combining data from these sources yields an unbalanced panel covering 168 origin countries over the 2000-2024 period.

Dependent Variable.—The outcome of interest is the annual number of inbound tourists to Seychelles by country of origin, *Arrivals*. we obtain tourist arrivals data from the National Bureau of Statistics.[1]

Independent Variables.—We consider ten potential determinants of arrivals: *Real GDPpc*, *Relative Price*, *Air Disruption*, *Trade Value*, *Temperature Anomaly*, *Political Stability*, *Search Seychelles*, *Search Maldives*, *Search Mauritius*, and *Search Tanzania*. *Real GDPpc* is defined as the per capita real GDP of the country of origin (in 2015 dollars) and serves as a proxy for average visitor income. *Relative Price* is the real exchange rate between Seychelles and the country of origin, measuring the real cost of a unit of the origin country's

[1]The data are accessible at: Visitor Arrivals Data Series

currency in Seychelles rupees. Higher values indicate that the Seychelles rupee has depreciated in real terms relative to the origin currency, implying that Seychelles has become relatively more affordable for visitors from that market. *Political Stability* is an index that captures perceptions of the likelihood of political instability and/or politically motivated violence in each origin country. The index ranges from −2.5 (low stability) to 2.5 (strong stability), with higher values indicating a more politically stable environment. We obtain these data from the WDI.[2]

Trade value measures the strength of bilateral economic ties between Seychelles and each origin country, and is defined as the total value of goods exports and imports between the two countries, expressed in US dollars. We source these data from the IMF International Trade in Goods dataset.[3] *Temperature Anomaly* is a climatic conditions proxy that measures the deviation of each origin country's mean annual temperature from its long-run average over the sample period, capturing whether a given year was unusually warm or cold for that market. We source temperature data from the NASA POWER project, which provides gridded monthly surface temperature estimates at 0.5 × 0.625 degree resolution derived from the Modern-Era Retrospective Analysis for Research and Applications (MERRA-2) reanalysis dataset.[4]

Air Disruption Air Disruption is a dummy variable that equals one if a source country's direct air service to Seychelles was suspended or effectively ceased due to geopolitical events, international sanctions, or commercial route withdrawal, and zero otherwise. We construct this variable using annual seat capacity data obtained from the Seychelles Civil Aviation Authority (SCAA), which records the number of available seats on each carrier operating scheduled services to Seychelles. A country-year observation is coded as one when available seats fall to zero or near-zero following an established period of service, indicating a genuine disruption rather than the absence of a historical route. Table 1 shows that the disruption episodes identified in the data include the suspension of Qatar Airways services during 2014–2016, the non-resumption of British Airways and Austrian Airlines routes following the COVID-19 pandemic, the suspension of Air Mauritius operations in 2021–2022, the withdrawal of SriLankan Airlines in 2023, a decline in Iranian arrivals following the reimposition of US sanctions in 2018, and the collapse of South African Airways in 2021. These events are plausibly exogenous to Seychelles-specific demand conditions, as they reflect decisions driven by geopolitical developments, international sanctions, or broader airline network

[2]The data can be accessed at: World Development Indicators
[3]The data are available at: International Trade in Goods
[4]The temperature data can be accessed at: NASA POWER

Table 1. Exogenous Air Connectivity Disruption Events

Disruption Event	Period	Countries Affected
Geopolitical Events		
Qatar Airways route suspension	2014–2016	Qatar
International Sanctions		
US reimposition of sanctions on Iran	2018–2019	Iran
Commercial Route Withdrawals		
British Airways post-pandemic non-resumption	2021–2024	United Kingdom
Austrian Airlines route exit	2020–2024	Austria
Air Mauritius suspension	2021–2022	Mauritius
SriLankan Airlines route withdrawal	2023–2024	Sri Lanka
Airline Insolvency		
South African Airways collapse	2021	South Africa

Notes: The table lists all disruption episodes used to construct the air disruption dummy. Each episode is classified by its primary cause. A country-year observation is coded as one when direct air services to Seychelles were suspended or effectively ceased due to the listed event. All disruption events are plausibly exogenous to Seychelles-specific tourism demand conditions.

restructuring rather than changes in tourist demand for Seychelles.

Search Seychelles is a visibility proxy measuring the annual popularity of the search term 'Seychelles' in each origin country. A higher value of the index indicates greater visibility. We obtain these search intensity data from Google Trends.[5] Similarly, *Search Mauritius*, *Search Maldives*, and *Search Tanzania* represent visibility proxies for Mauritius, the Maldives, and Tanzania, respectively. Table 2 presents summary statistics for the full sample and by region.

4.1 Preliminary Analysis

Prior to presenting the main results, we graphically examine the bivariate relationship between each determinant and arrivals. This step serves two purposes. First, it provides an intuitive visual sense of the data and the direction of the raw correlations before imposing the structure of a regression model. Second, it allows us to identify any obvious anomalies or non-linearities in the data that may inform the empirical specification.

The preliminary analysis reveals a positive association between arrivals and income, consistent with Seychelles being a normal good. The Seychelles visibility indicator also displays a clear positive association with arrivals, consistent with destination visibility playing a meaningful role in shaping travel decisions. Somewhat surprisingly, the search indices for the

[5]Google Trends data are accessible at: Google Trends

Table 2. Summary Statistics by Region of Origin

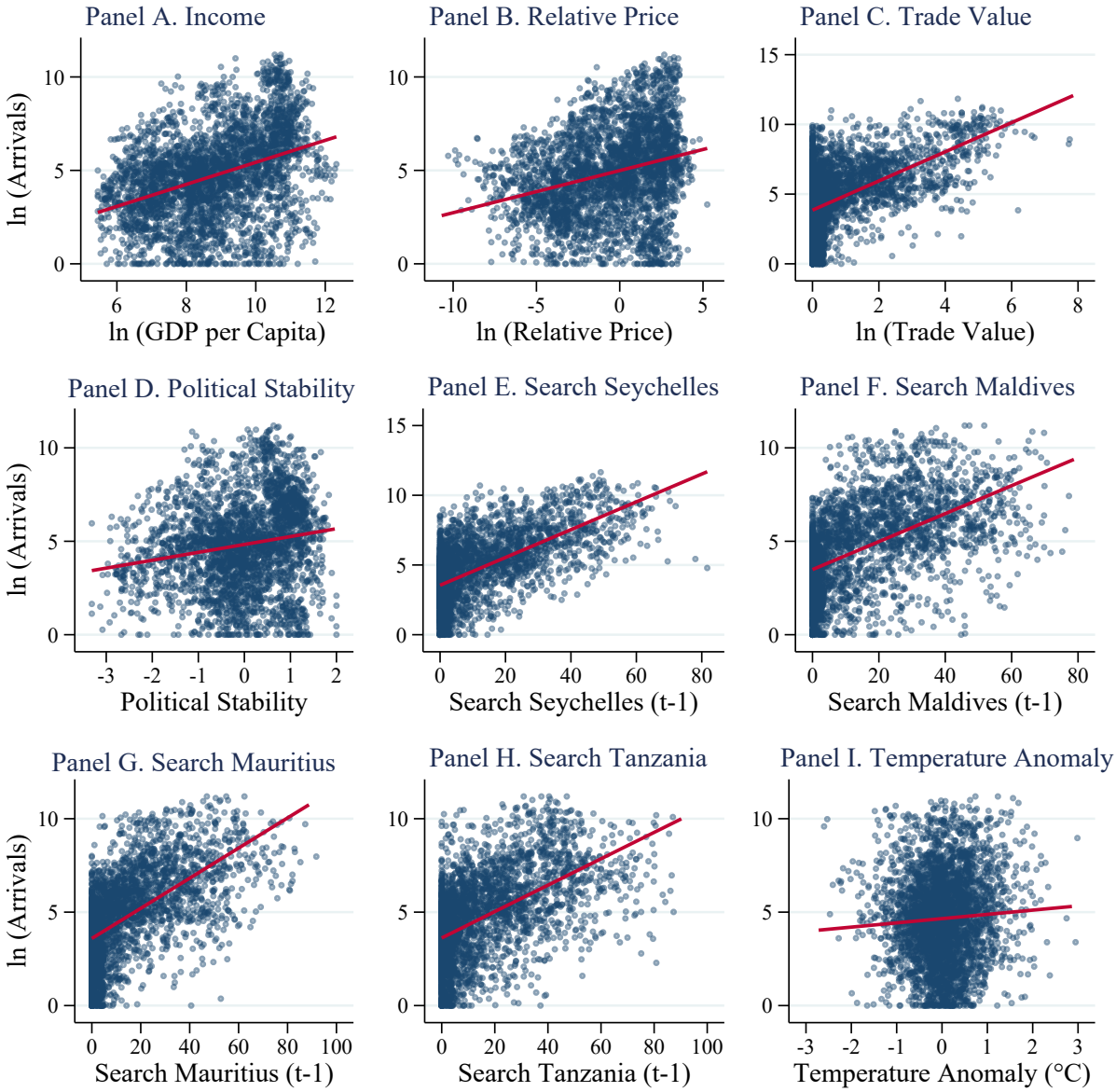
	Full Sample	Europe	Africa	Asia	Americas	Oceania
Arrivals	1,456.13	3,707.79	448.10	879.64	386.31	188.97
	(5,009.43)	(8,419.54)	(1,551.06)	(2,934.79)	(1,367.94)	(424.36)
GDP per Capita ($)	15,555.01	28,989.35	2,379.89	14,936.06	15,716.21	18,177.12
	(19,984.81)	(24,289.89)	(2,454.39)	(17,717.65)	(15,562.91)	(20,394.34)
Relative Price (SR)	5.01	8.78	0.82	5.00	5.14	7.74
	(8.76)	(10.76)	(1.92)	(10.51)	(5.57)	(5.21)
Trade Value ($m)	10.67	15.21	2.76	19.86	3.12	1.57
	(68.05)	(38.85)	(11.72)	(125.86)	(11.98)	(3.02)
Temperature Anomaly (°C)	−0.02	−0.03	−0.05	−0.03	0.05	0.05
	(0.58)	(0.73)	(0.52)	(0.50)	(0.58)	(0.39)
Political Stability	−0.01	0.59	−0.53	−0.38	0.15	0.85
	(0.95)	(0.63)	(0.86)	(1.02)	(0.64)	(0.52)
Search Seychelles	12.95	22.87	6.18	12.41	9.20	7.36
	(15.78)	(18.99)	(11.01)	(13.88)	(10.41)	(10.77)
Search Maldives	17.52	24.54	7.65	21.40	13.82	16.35
	(17.73)	(16.40)	(14.63)	(17.27)	(17.34)	(17.97)
Search Mauritius	15.80	24.46	10.22	14.77	11.02	16.38
	(18.40)	(19.86)	(16.30)	(15.49)	(15.90)	(23.68)
Search Tanzania	16.38	23.86	12.44	14.35	13.92	14.84
	(18.83)	(19.83)	(17.14)	(16.66)	(19.02)	(21.30)
Air Disruption	0.01	0.01	0.00	0.01	0.00	0.00
	(0.07)	(0.09)	(0.06)	(0.09)	(0.00)	(0.00)

Notes: Standard deviations in parentheses. Arrivals are measured in number of tourist arrivals. GDP per Capita is in constant 2015 US dollars. Trade Value is total bilateral goods trade in millions of US dollars. Temperature Anomaly is the deviation from each country's long-run mean temperature in degrees Celsius. Search indices are Google Trends scores on a 0–100 scale. Political Stability is the World Bank Governance Indicator ranging from −2.5 (low stability) to 2.5 (high stability). Air Disruption is a binary variable equal to one during episodes of exogenous connectivity loss driven by geopolitical events, international sanctions, or commercial route withdrawals; the mean reflects the proportion of country-year observations coded as disrupted.

Maldives, Mauritius and Tanzania are also positively associated with arrivals to Seychelles, rather than negatively as one might expect if these destinations operate as substitutes. A potential explanation for this finding is that online interest in these destinations is also a proxy for general interest in luxury Indian Ocean destinations, including Seychelles. Panel B reveals a positive bivariate relationship between relative price and arrivals, consistent with the expectation that a weaker Seychelles rupee makes the destination relatively more affordable, thereby attracting more visitors. A weak positive relationship is also evident between arrivals and trade value in Panel C, though a dense cluster of observations at zero, reflecting the many country-year pairs with no recorded bilateral trade relationship, limits the interpretability of the bivariate fit.

Political stability exhibits a weak positive relationship with arrivals in the raw data, suggesting that the effect of origin country stability on travel decisions may operate primarily through income and other correlated channels rather than independently.

Figure 4. Bivariate relationship between Arrivals and Independent Variables



Notes: Each panel plots the bivariate relationship between the natural log of tourist arrivals to Seychelles and the indicated covariate. The fitted line is an OLS regression line estimated without controls. The air connectivity disruption variable is not shown as it is a binary indicator.

The temperature anomaly panel shows a near-flat slope, indicating that the climate push effect is not apparent in the raw bivariate data. These patterns are purely descriptive and do not account for confounding factors, which are addressed in the regression analysis that follows.

Also evident in these graphical illustrations is the high degree of variability present in the data, reflecting the substantial heterogeneity among origin countries included in the sample, which spans markets ranging from major European economies to small island states with negligible tourist flows to Seychelles. This heterogeneity underscores the importance of the country fixed effects in the regression specifications, which absorb time-invariant differences across source markets and isolate within-country variation in the determinants of arrivals.

5 Results

5.1 Fixed Effects, Static Estimates

Table 3 presents results from the static specifications. For variables expressed in natural logarithms, the estimated coefficients represent the elasticity of arrivals with respect to the corresponding variables. Column (1) reports estimates from the baseline specification, which includes only the fundamental determinants of tourism demand as regressors. The results show that income in the country of origin is positively associated with arrivals from that country, further indicating that Seychelles is perceived as a normal good. In contrast, the relative price between Seychelles and the origin country appears to have no significant influence on arrivals.

Moving from left to right, each column presents results from a specification that marginally adds other variables deemed to influence travel decisions. The most comprehensive specification (Column 9) reveals that income, climatic conditions in the origin country, destination visibility, and the availability of direct air services are all significant determinants of arrivals to Seychelles. The income elasticity of 0.98 suggests that a one per cent increase in origin-country income is associated with an almost one per cent increase in arrivals. Visibility of Seychelles and the Maldives are also positively associated with arrivals. The air disruption dummy is negative and indicates that during periods of direct air services disruptions, arrivals are 36 per cent fewer relative to non-disruption periods.[6] By contrast, variables such as relative price, bilateral trade, political stability in the origin country, and visibility of Mauritius and Tanzania appear to have no statistically significant influence on arrivals.

The within R^2 rises only modestly across specifications, from 0.42 to 0.46, despite the addition of several significant regressors. This pattern reflects the fact that country and year

[6]The semi-elasticity is computed as $e^{\hat{\beta}} - 1$, where $\hat{\beta}$ is the estimated coefficient on the air disruption dummy. For a binary indicator in a log-linear model, this transformation recovers the exact percentage change in arrivals associated with a unit change in the dummy, rather than the approximate percentage change given directly by the coefficient.

Table 3. Static Estimates

	Dependent Variable: Ln(Arrivals)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln(GDP per Capita)	1.25***	1.24***	1.25***	1.30***	1.18***	1.19***	1.21***	1.22***	0.97***
	(0.22)	(0.22)	(0.22)	(0.24)	(0.24)	(0.25)	(0.25)	(0.26)	(0.31)
Ln(Relative Price)	0.03	0.03	0.02	0.02	−0.00	−0.01	−0.01	−0.01	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Ln(Trade Value)		0.04	0.04	0.03	0.03	0.04	0.04	0.04	0.02
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Temperature Anomaly			0.09***	0.10***	0.09***	0.07***	0.07***	0.07**	0.05*
			(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Political Stability				−0.03	−0.01	−0.02	−0.02	−0.02	−0.03
				(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Search Seychelles$_{t-1}$					0.009***	0.008***	0.007***	0.007***	0.012***
					(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Search Maldives$_{t-1}$						0.008***	0.008***	0.008***	0.007***
						(0.002)	(0.002)	(0.003)	(0.003)
Search Mauritius$_{t-1}$							0.002	0.002	0.004
							(0.002)	(0.003)	(0.003)
Search Tanzania$_{t-1}$								0.002	0.002
								(0.002)	(0.004)
Air Disruption									−0.44**
									(0.19)
Country Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,537	2,537	2,537	2,345	2,258	1,970	1,946	1,946	1,559
Within R^2	0.42	0.42	0.42	0.42	0.41	0.42	0.43	0.43	0.46

Note: Robust standard errors clustered at the country-of-origin level in parentheses. All specifications include country and year fixed effects. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

fixed effects, together with origin-country income, already absorb most of the within-country variation in arrivals. Some of the additional determinants are statistically significant and economically meaningful, but they explain a small share of the residual variation once these factors are accounted for.

5.2 Bias-Corrected, Dynamic Estimates

While insightful, the results presented in the previous subsection are from specifications that do not account for the role of past travel experience in shaping current travel decisions. If past arrivals correlate with any of the regressors considered above, their estimated influence on current arrivals may be biased.

Table 4 presents results from specifications that account for the potential role of past experience, through repeat visitation and referrals, in shaping travel decisions. The estimated coefficients on lagged arrivals are positive and statistically significant across all specifications,

Table 4. Bias-Corrected Dynamic Estimates

	Dependent Variable: Ln(Arrivals)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Arrivals)$_{t-1}$	0.29***	0.29***	0.28***	0.25***	0.22***	0.22***	0.22***	0.24***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Ln(GDP per Capita)	0.94***	0.94***	0.95***	0.89***	0.95***	0.96***	0.96***	0.72***
	(0.15)	(0.15)	(0.15)	(0.17)	(0.17)	(0.17)	(0.17)	(0.22)
Ln(Relative Price)	0.03	0.03	0.02	0.00	−0.01	−0.00	−0.00	0.03
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Ln(Trade Value)		0.03	0.03	0.03	0.03	0.03	0.03	0.01
		(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Temperature Anomaly			0.04	0.05	0.04	0.04	0.04	0.02
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Political Stability				0.00	−0.01	−0.01	−0.01	−0.08
				(0.06)	(0.07)	(0.05)	(0.05)	(0.08)
Search Seychelles$_{t-1}$					0.007***	0.007***	0.006**	0.010***
					(0.002)	(0.002)	(0.002)	(0.002)
Search Maldives$_{t-1}$						0.007***	0.006***	0.006***
						(0.002)	(0.002)	(0.002)
Search Mauritius$_{t-1}$							0.001	0.005*
							(0.002)	(0.003)
Search Tanzania$_{t-1}$							0.001	0.002
							(0.002)	(0.002)
Air Disruption								−0.40**
								(0.17)
Country Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
Year Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
Observations	2,327	2,327	2,327	2,153	1,880	1,863	1,863	1,403

Note: Standard errors in parentheses, obtained via bootstrap with 100 replications. The bias correction is initialised using the Anderson-Hsiao estimator following Judson and Owen (1999). All specifications include country and year fixed effects. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

providing evidence that some variation in arrivals can be explained by past experience. Accounting for these dynamics attenuates the estimated income elasticity, which suggests that the standard fixed effects estimator may have attributed some variation in arrivals driven by persistence to changes in income. The estimated short-run income elasticity of 0.72 indicates that a one per cent increase in real per capita income in the country of origin is associated with a 0.72 per cent increase in tourist arrivals within the same year. Using equation (4), we estimate the long-run income elasticity at 0.93, implying that a permanent one per cent increase in origin-country income ultimately raises arrivals by 0.93 per cent once the full dynamics of persistence have played out.

The temperature anomaly variable loses statistical significance in the dynamic specifications, likely reflecting that its effect operates through the persistence mechanism already captured by the lagged dependent variable. The visibility indicators for Seychelles and the Maldives

remain significant at the one per cent level across all specifications, while the visibility indicator for Mauritius becomes marginally significant. The air disruption dummy remains statistically significant with a coefficient of -0.40, indicating that episodes of direct flight disruption are associated with a decline in arrivals of about 33 per cent relative to non-disruption periods.

5.3 Determinants by Region

5.3.1 Regression Results

The estimates presented so far are pooled across all source countries, imposing common slope coefficients regardless of origin region. Motivated by evidence in the literature that the determinants of tourism demand vary across regions (e.g. Lim, 1997; Song and Li, 2008), in this section we present estimates disaggregated by region of origin. For each region, we restrict the sample to the countries within that region and re-estimate specification (3) on the resulting subsample. We exclude the Americas and Oceania due to insufficient observations for reliable estimation using the bias-corrected LSDV estimator. Table 5 presents the results.

The main takeaway from these results is that the determinants of tourism demand vary considerably across regions. For visitors from Europe, travel decisions are primarily influenced by past travel experience, income, relative price, and destination visibility. The income elasticity of 1.17 indicates that a one per cent increase in European per capita income is associated with about 1.2 per cent more arrivals, the second highest income response across all three regions. The relative price coefficient is negative and significant at the ten per cent level, suggesting that a one per cent appreciation of the origin country currency against the Seychelles rupee, which makes Seychelles relatively more affordable, is associated with a 0.1 per cent decrease in arrivals. This counterintuitive result likely reflects the high correlation between currency strength and income: wealthier origin countries tend to have stronger currencies, and once income is controlled for, the residual price variation may capture affordability in ways that do not map cleanly onto travel demand for a luxury destination such as Seychelles. Destination visibility also appears to have a positive influence on arrivals from Europe.

Arrivals from Africa exhibit persistence, with a coefficient of 0.23, suggesting that past travel experiences play a meaningful role in shaping subsequent travel decisions. The income elasticity of 1.75 is the highest across all three regions, indicating that African arrivals are

Table 5. Determinants of Tourist Arrivals by Region of Origin

	Europe (1)	Africa (2)	Asia (3)
Ln(Arrivals)$_{t-1}$	0.31***	0.23***	0.46***
	(0.06)	(0.07)	(0.05)
Ln(GDP per Capita)	1.17***	1.75***	0.06
	(0.34)	(0.46)	(0.32)
Ln(Relative Price)	−0.13*	−0.11**	−0.01
	(0.07)	(0.05)	(0.10)
Ln(Trade Value)	−0.04	0.10	−0.03
	(0.05)	(0.07)	(0.08)
Temperature Anomaly	−0.04	0.18**	0.08
	(0.05)	(0.08)	(0.07)
Political Stability	0.12	−0.34**	−0.07
	(0.10)	(0.14)	(0.21)
Search Seychelles$_{t-1}$	0.006***	0.007	0.010*
	(0.002)	(0.007)	(0.005)
Search Maldives$_{t-1}$	−0.003	−0.007	0.013**
	(0.003)	(0.005)	(0.006)
Search Mauritius$_{t-1}$	0.007**	−0.002	0.005
	(0.003)	(0.006)	(0.005)
Search Tanzania$_{t-1}$	0.006**	0.009*	−0.016***
	(0.002)	(0.005)	(0.006)
Air Disruption	−0.11	−1.02*	−0.79**
	(0.16)	(0.59)	(0.40)
Country Fixed Effects	✓	✓	✓
Year Fixed Effects	✓	✓	✓
Observations	448	329	367

Note: Each column represents a different region of origin. Standard errors in parentheses are clustered at the country-of-origin level. All specifications are estimated using the bias-corrected LSDV estimator with Anderson-Hsiao initialisation and 100 bootstrap replications. Americas and Oceania are excluded due to insufficient observations for reliable estimation. All specifications include country and year fixed effects. The symbols *, **, and *** indicate significance at the levels of 10%, 5%, and 1%, respectively.

highly sensitive to income shocks: a one per cent increase in origin country income is associated with about 1.8 per cent more arrivals to Seychelles. The temperature anomaly is positive and statistically significant, suggesting that warmer-than-usual conditions in African source markets are associated with higher arrivals, a finding at odds with the standard climate push hypothesis. It may reflect that warmer African markets tend to have higher income levels, which is the true driver of the positive association. Political stability is negative and significant, suggesting that citizens of less politically stable African countries are more likely to travel to Seychelles, possibly reflecting a flight tourism effect whereby residents of unstable environments seek leisure destinations abroad. Africa is the only region in which political stability exerts a statistically significant influence on arrivals. Finally, disruptions to direct

air services have a significant negative effect on arrivals from Africa: connectivity disruptions reduce arrivals from African countries by about 64 per cent.

Asia presents a different picture. Income is not a significant driver of travel decisions, whereas persistence is the highest of all three regions at 0.46, suggesting that Asian arrivals are driven primarily by repeat visitation and established travel relationships rather than income growth. This pattern is consistent with a mature and loyal source market where prior experience of Seychelles is the dominant determinant of return and new visits. The Maldives' visibility indicator is positive and significant only for Asian markets, which suggests that awareness of the Maldives as a luxury Indian Ocean destination is positively associated with arrivals to Seychelles among Asian travellers. By contrast, Tanzania's visibility seems to exert a negative and statistically significant effect on arrivals, which is the only region where this is the case. This finding may suggest that Tanzania and Seychelles function as substitutes in the Asian market, competing for the same pool of luxury travellers seeking exotic Indian Ocean and East African experiences. Finally, disruptions to direct air services have an economically significant negative effect on arrivals from Asia, with a coefficient of -0.79, indicating that connectivity disruptions reduce arrivals from the region by about 54 per cent.

5.3.2 Decomposition Analysis

We now turn to a decomposition analysis, in which we attribute the variation in arrivals explained by the model to each of its determinants, separately for each origin region. This analysis allows us to compare the relative importance of determinants across regions.

The share of explained variation in arrivals for region r attributable to determinant k is given by:

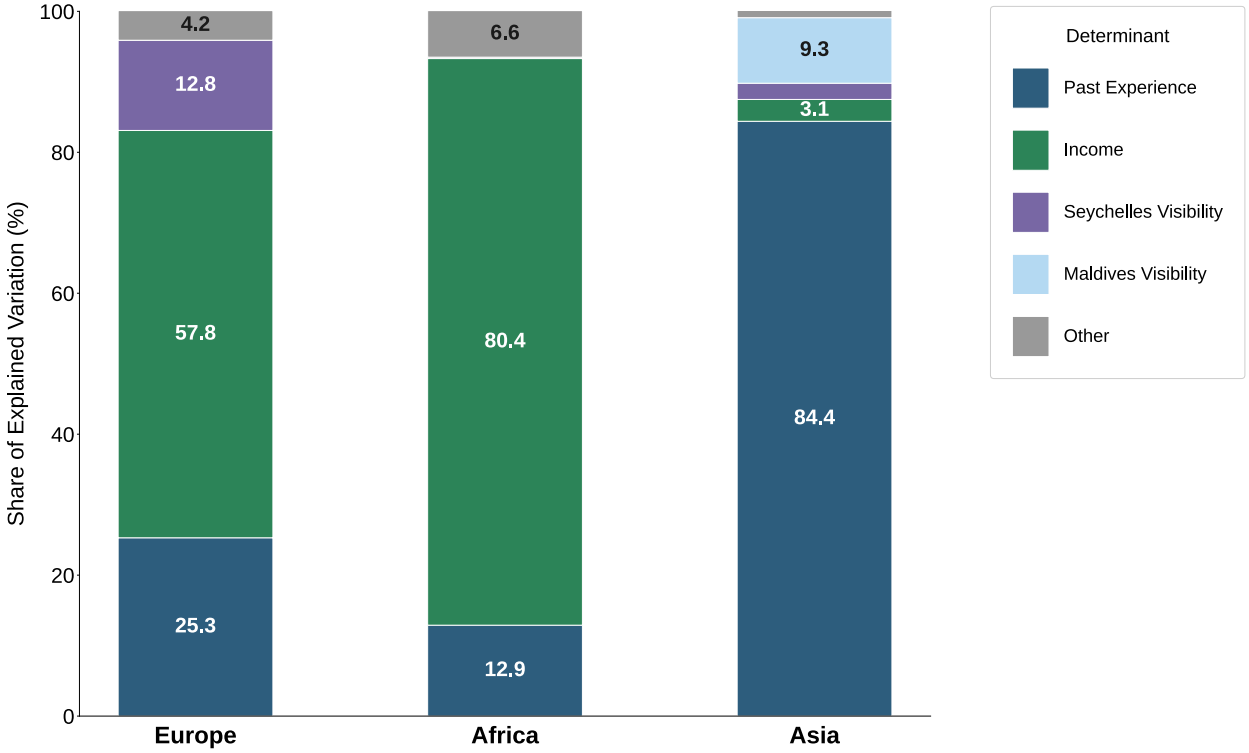
$$\omega_{kr} = \frac{\mathrm{Cov}(\hat{\beta}_k x_{kr},\, \hat{y}_r)}{\mathrm{Var}(\hat{y}_r)} = \rho\Big(\hat{\beta}_k x_{kr},\, \hat{y}_r\Big) \cdot \frac{\mathrm{sd}(\hat{\beta}_k x_{kr})}{\mathrm{sd}(\hat{y}_r)} \tag{5}$$

where $\hat{y}_r = \sum_k \hat{\beta}_k x_{kr}$ denotes the total fitted value for region r, $\hat{\beta}_k x_{kr}$ is the fitted contribution of determinant k, and $\rho(\cdot)$ denotes the Pearson correlation coefficient. By construction, $\sum_k \omega_{kr} = 1$ for each region.

Figure 5 presents the results. For Europe, income is the dominant driver, accounting for 57.8 per cent of explained variation, followed by past experience at 25.3 per cent and destination visibility at 12.8 per cent. A similar pattern holds for Africa, where income accounts for an even larger share at 80.4 per cent, with past experience contributing 12.9 per cent.

Asia presents a different picture. Past travel experience, operating through repeat visitation

Figure 5. Contribution of Each Determinant to Explained Variation in Arrivals by Origin



Note: The figure decomposes the share of explained variation in tourist arrivals attributable to each determinant. Estimates are based on the bias-corrected LSDV specifications reported in Table 5. Determinants contributing small shares are collapsed into 'Other'. Minor departures from 100 in the displayed values reflect rounding.

and word-of-mouth referrals, accounts for 84.4 per cent of explained variation, the largest share across the three regions. This finding suggests that arrivals from Asia are driven overwhelmingly by accumulated familiarity with the destination rather than income considerations. The Maldives' visibility is the second largest contributor at 9.3 per cent, consistent with the broader finding that online search interest in similar Indian Ocean destinations is positively associated with arrivals from Asian markets.

5.4 Asymmetric Income Effects

The specifications presented throughout assume symmetry in the income response: a one per cent increase in income raises arrivals by the same amount that a one per cent decrease reduces them. However, there are several reasons why symmetry may not hold in practice. During a recession, unemployment may affect the structure of household expenditure more than it does during an upturn (Alegre et al., 2013). On the other hand, during periods of crisis firms may be reluctant to lay off workers in anticipation that the downturn will

be short-lived, while during a boom they may hire immediately to meet higher demand. These asymmetric labour market responses imply that income declines may have a smaller effect on household disposable income, and therefore on tourism demand, than income gains of equivalent size. To examine whether the income response is symmetric, we decompose annual GDP per capita growth into its positive and negative components, following Smeral and Song (2015).

More precisely, we estimate the following specification:

$$\begin{aligned}\ln(\text{Arrivals}_{it}) = \beta + \theta \ln(\text{Arrivals}_{i,t-1}) + \beta^{+}\Delta \ln(\text{Real GDPpc}^{+}_{it}) + \beta^{-}\Delta \ln(\text{Real GDPpc}^{-}_{it}) \\ + \delta \ln(\text{Relative Price}_{it}) + Z_{it} + \eta_t + \zeta_i + \mu_{it}\end{aligned} \tag{6}$$

where $\Delta \ln(\text{Real GDPpc}^{+}_{it}) = \max(\Delta \ln(\text{Real GDPpc}_{it}), 0)$ and $\Delta \ln(\text{Real GDPpc}^{-}_{it}) = \min(\Delta \ln(\text{Real GDPpc}_{it}), 0)$ denote the positive and negative components of annual real GDP per capita growth respectively. All other variables are as defined in equation (3). The null hypothesis of symmetric income effects is $H_0 : \beta^{+} = -\beta^{-}$.

The results in Table 6 reveal significant asymmetry. The estimated coefficient on positive income growth is 1.21 and statistically significant at the one per cent level, indicating that rising incomes in origin markets generate a strong and precisely estimated increase in arrivals. By contrast, the estimated coefficient on negative income growth is statistically insignificant, suggesting that arrivals to Seychelles are largely resilient to income declines in source markets.

We argue that the asymmetry reflects how the visitor pool changes with income. When incomes rise in a source market, more households cross the affordability threshold for a Seychelles holiday, drawing in new visitors at the margin and raising arrivals. When incomes fall moderately, the households affected are predominantly those in the middle of the income distribution, who were unlikely to undertake a long-haul luxury trip in any case. The wealthy core that constitutes the majority of arrivals is left largely untouched. Income gains therefore expand the visitor pool at the margin, while moderate income declines do not erode the existing base. We acknowledge that our data and identification strategy do not permit a direct test of this mechanism. However, suggestive evidence lends support to the argument. The regional heterogeneity results show that income elasticities exceed one for both Europe and Africa, confirming that these markets treat Seychelles as a luxury destination whose demand is disproportionately concentrated among high-income households.

Table 6. Asymmetric Income Effects

	Ln(Arrivals)
Ln(Arrivals)$_{t-1}$	0.37***
	(0.03)
GDP Growth^{+}	1.21***
	(0.46)
GDP Growth^{-}	0.79
	(0.57)
Ln(Relative Price)	0.07**
	(0.03)
Ln(Trade Value)	0.01
	(0.04)
Temperature Anomaly	0.03
	(0.03)
Political Stability	−0.07
	(0.08)
Search Seychelles$_{t-1}$	0.007***
	(0.003)
Search Maldives$_{t-1}$	0.004
	(0.002)
Search Mauritius$_{t-1}$	0.004*
	(0.002)
Search Tanzania$_{t-1}$	0.000
	(0.002)
Air Disruption	−0.36**
	(0.181)
Country Fixed Effects	✓
Year Fixed Effects	✓
Symmetry Test χ^2	8.81
Symmetry Test p-value	0.003
Observations	1,403

Note: Standard errors in parentheses, obtained via bootstrap with 100 replications. GDP Growth^{+} and GDP Growth^{-} denote the positive and negative components of annual GDP per capita growth. Symmetry test: $H_0 : \beta^{+} = -\beta^{-}$. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 7. Robustness Checks

	(1) Excl. COVID	(2) BB Initialiser	(3) Anderson-Hsiao
Ln(Arrivals)$_{t-1}$	0.28***	0.43***	0.48***
	(0.037)	(0.028)	(0.136)
Ln(GDP per Capita)	0.89***	0.60**	5.12***
	(0.261)	(0.261)	(1.188)
Ln(Relative Price)	0.02	0.04	−0.80***
	(0.068)	(0.043)	(0.166)
Ln(Trade Value)	0.01	0.00	0.07**
	(0.039)	(0.042)	(0.032)
Temperature Anomaly	−0.01	0.05	0.06
	(0.034)	(0.030)	(0.038)
Political Stability	−0.12	−0.07	−0.01
	(0.094)	(0.095)	(0.140)
Search Seychelles$_{t-1}$	0.005**	0.005	−0.019***
	(0.003)	(0.003)	(0.006)
Search Maldives$_{t-1}$	0.002	0.002	−0.006
	(0.003)	(0.002)	(0.004)
Search Mauritius$_{t-1}$	0.004	0.002	−0.016***
	(0.004)	(0.003)	(0.005)
Search Tanzania$_{t-1}$	0.001	−0.000	0.001
	(0.003)	(0.003)	(0.004)
Air Disruption	−0.43	−0.36*	−0.84***
	(0.297)	(0.206)	(0.185)
Country Fixed Effects	✓	✓	✓
Year Fixed Effects	✓	✓	–
Estimator	LSDVC	LSDVC	IV
Initialiser	AH	BB	–
Observations	1,079	1,257	1,403

Note: Column (1) excludes 2020–2021. Column (2) uses Blundell-Bond initialiser. Column (3) instruments Δy_{t-1} with y_{t-2}. Standard errors bootstrapped for (1)–(2), clustered for (3). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

6 Robustness

To assess the robustness of our main findings, we subject our estimates to three alternative specifications. Table 7 presents the results.

Column (1) excludes the COVID-19 pandemic years of 2020 and 2021. The pandemic represented an unprecedented structural shock to global tourism, and there is a reasonable concern that including these years may distort the estimated relationships between the determinants

and arrivals. Reassuringly, the core findings survive this restriction. The positive effects of income and past experience are confirmed, with the income elasticity slightly larger at 0.89 compared to the baseline estimate of 0.72, suggesting that the pandemic years modestly attenuate the income effect in the full sample. Destination visibility retains a positive and significant effect. The air disruption estimated coefficient, while retaining the expected negative sign, loses statistical significance, which is unsurprising given that several of the disruption episodes identified in Table 1 coincide with the excluded years, reducing variation in the disruption dummy and limiting its statistical power in this subsample.

Column (2) re-estimates Specification (3) using the Blundell-Bond initialiser for the bias correction in place of the Anderson-Hsiao initialiser used throughout. The two initialisers represent alternative approaches to obtaining starting values for the bias correction procedure. The results are broadly consistent with the main estimates. Income retains a positive and significant effect, and the air disruption coefficient is negative and significant at the ten per cent level. The coefficient on lagged arrivals is somewhat larger under the Blundell-Bond initialiser at 0.43, compared to 0.24 in the baseline, which is consistent with the known tendency of the Blundell-Bond estimator to produce upward-biased estimates of the autoregressive parameter in panels with moderate T.

Column (3) reports estimates from the Anderson-Hsiao IV estimator, which addresses dynamic panel bias through a fundamentally different approach: first-differencing the model to eliminate fixed effects and instrumenting the differenced lagged dependent variable with its second lag in levels. The Anderson-Hsiao estimator yields an income elasticity of 5.12, far above the 0.72 from our preferred specification. Both estimators target the same income elasticity but differ in how they remove unobserved country characteristics: the bias-corrected LSDV estimator works with the data in levels, while Anderson-Hsiao relies on first differences. The gap between the two does not reflect a weak instrument, which we rule out using diagnostic test. Instead It reflects the unreliability of the first-differenced estimate on our sample. The estimate is unstable, growing larger rather than smaller when the most extreme income changes are removed, which indicates that it should not be read as a credible measure of the size of the income effect. The same specification also overturns results that are stable throughout the rest of the analysis: relative price becomes significant despite being insignificant in most specifications, and the visibility indicators switch sign. These reversals reinforce the conclusion that the first-differenced estimates are unreliable on our sample. We therefore take the Anderson-Hsiao result as confirming that income has a positive and significant effect on arrivals, while relying on the bias-corrected LSDV estimates for

the magnitude. The bias-corrected LSDV specification remains our preferred approach.

7 Discussion and Conclusion

We examine the determinants of inbound tourist arrivals to Seychelles using a bilateral panel dataset covering 168 source countries over the period 2000 to 2024. Motivated by the structural dependence of the Seychelles economy on tourism and the limited evidence on tourism demand in small island developing states, we estimate both static and dynamic panel specifications, with the bias-corrected LSDV estimator of Bruno (2005) as our preferred approach. The results point to four main findings.

First, past visitor experience; operating through repeat visitation, word-of-mouth referrals, or a combination of both; are a robust and economically significant determinant of arrivals. Our methodology does not permit us to distinguish between the two channels, but the finding is consistent with a growing body of literature documenting persistence in international tourism flows, including Fourie and Santana-Gallego (2013), Ghaderi et al. (2017), and Barman and Nath (2019). From a policy perspective, this result suggests that investments in the quality of the visitor experience generate lasting returns: satisfied visitors are more likely to return and to share positive impressions in their home markets, creating a self-reinforcing cycle of arrivals growth.

Second, income in the country of origin is a positive and significant driver of arrivals, with a short-run elasticity of 0.72 and a long-run elasticity of 0.93. These estimates fall below the meta-analytic averages reported in the literature. Peng et al. (2014), for instance, document income elasticities typically exceeding one across bilateral tourism flows. Our smaller estimate reflects two factors: (1)the attenuation of the income coefficient in dynamic specifications, where persistence absorbs part of the variation attributed to income in static models, and (2) the averaging across 168 source markets with heterogeneous income levels. Disaggregating by region of origin recovers income elasticities exceeding one for both Europe and Africa, confirming that residents of these regions perceive Seychelles as a luxury destination, consistent with prior literature. Importantly, we also find evidence of asymmetry in the income response: arrivals respond significantly to income gains but are resilient to declines. We interpret this asymmetry as compositional in nature: rising incomes expand the pool of households able to afford the destination, drawing newly affluent travellers in at the margin, while moderate income declines fall on a middle segment unlikely to travel to Seychelles in any case, leaving the wealthy core clientele largely unaffected. These findings

are consistent with prior evidence on income effects in tourism demand, including Tan et al. (2002), Khadaroo and Seetanah (2007), and Barman and Nath (2019), and contribute to this literature by documenting significant asymmetry in the income response and considerable regional heterogeneity in the income elasticity of demand.

Third, destination visibility, proxied by online search interest for Seychelles in each source market, is positively associated with arrivals, consistent with the view that information diffusion plays a meaningful role in shaping travel decisions. Notably, online search interest in similar destinations, including the Maldives, is also positively associated with arrivals to Seychelles. A potential explanation for this finding is that search interest in comparable destinations proxies for general interest in luxury Indian Ocean destinations.

Fourth, disruptions to direct air connectivity have a significant negative effect on arrivals. With a coefficient of 0.40 in the preferred specification, disruptions to direct air services reduce arrivals by about 33 per cent. This finding is consistent with the broader literature documenting a positive association between air connectivity and tourist flows, while extending it by providing evidence of a causal effect in the context of a small island economy. The magnitude of the effect is notably large, which may reflect the structural characteristics of Seychelles as a destination served by a limited number of carriers with no alternative modes of international access. In this setting, the suspension of a single carrier can eliminate direct access from an entire source market entirely, making the connectivity-arrivals relationship far more binding than in larger destinations where travellers can substitute across multiple competing routes. These findings highlight the vulnerability of Seychelles' tourism sector to geopolitical developments and airline network restructuring that lies entirely outside the control of domestic policymakers, and reinforce the case for proactive air access development policies as a core component of tourism development strategy.

The analysis also reveals considerable heterogeneity in the drivers of arrivals across regions of origin. For Europe, income and destination visibility are the dominant factors, while for Africa income dominates overwhelmingly, with the political environment in origin markets also playing a meaningful role. Asia presents a markedly different picture: income is insignificant, and past experience accounts for over 84 per cent of the explained variation in arrivals, which points to a mature and loyal source market where repeat visitation and social referral dominate booking decisions. These regional differences carry important implications for destination marketing strategy. A one-size-fits-all approach to source market promotion is unlikely to be optimal: the factors that attract European visitors differ fundamentally from those that sustain Asian visitors, and marketing efforts should be tailored accordingly.

Several limitations of this study are worth acknowledging. First, while the bias-corrected LSDV estimator addresses the Nickell bias arising from the inclusion of the lagged dependent variable, the coefficient on lagged arrivals conflates two distinct mechanisms, repeat visitation and word-of-mouth referrals generating new visits, that our methodology does not permit us to distinguish. Disentangling these channels would require individual-level travel history data that are not available for Seychelles. Second, while the air disruption dummy provides plausibly exogenous variation in connectivity, it captures a binary shift in service availability and does not capture the intensive margin, including partial reductions in seat capacity, changes in flight frequency, or deterioration in service quality, which may also influence arrivals. Third, while we document asymmetry in the income response, the underlying mechanism, whether it reflects wealth effects, precautionary saving, or the composition of the visitor pool, cannot be identified from aggregate panel data alone.

Notwithstanding these limitations, the findings carry clear policy implications for Seychelles and for small island tourism destinations more broadly. The dominance of past experience points to visitor experience quality as a first-order policy lever: investments in the quality of the visitor stay generate lasting returns through repeat visitation and referrals. The significant role of destination visibility suggests that targeted digital marketing campaigns in key source markets, particularly in Europe and Asia where visibility effects are strongest, represent a high-return investment. The asymmetric income response suggests that Seychelles is relatively insulated from cyclical downturns in key source markets, as arrivals prove resilient to income declines. However, the concentration of arrivals in a small number of high-income markets means that sustained growth depends heavily on continued prosperity in those markets, underscoring the value of diversifying the source market base as a strategy for reducing structural dependence and broadening the foundations for long-run arrivals growth. Finally, the large negative effect of air connectivity disruptions reinforces the case for proactive air access development policies, including route incentive schemes and airline partnership agreements, as a core component of tourism development strategy.

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