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Research article

Global tourism demand: A multi-dimensional panel analysis of arrivals, spending patterns, and macroeconomic outcomes across nations

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ABSTRACT
Previous scholarship rarely bundled visitor composition—trip purpose, origin, and overnight status—into a single structural story explaining why arrival volumes and economic receipts diverge. In this paper, we aim to fill that gap with a careful multi-dataset panel analysis spanning more than 200 countries over 14 years. What we document is a clear decoupling between arrivals and receipt value. Business visitors are a smaller slice, only about 10% of pre-pandemic overnight arrivals, but they still bring a receipt premium of 3.1 percentage points for each extra ten-percentage-point increase in their share. At the same time, destinations in the top quartile of pre-crisis per-visitor spending absorb shocks that are about 41 percentage points shallower than those of low-expenditure, high-volume destinations. Overall, these findings push back against the arrivals-maximization paradigm, and they position visitor composition management as a measurable macroeconomic resilience lever.

KEYWORDS
Visitor composition; expenditure quality; arrivals-expenditure decoupling; COVID-19 resilience; origin market diversification

Introduction

International tourism generates direct foreign exchange earnings; it also stimulates employment and contributes significantly to the current account positions of both advanced and developing economies. Inbound tourist arrivals worldwide were close to 1.4 billion in the latest reporting cycle, generating receipts above USD 1.6 trillion and supporting an estimated 330 million jobs (UN Tourism, 2025). For many developing economies, and for the small island states in particular, tourism receipts are often the single biggest source of hard currency they can even exceed merchandise exports and foreign direct investment.
Still, the issue of how much economic value a given stream of visitors generates—and why that value can diverge across destinations that seem similar—has not received sufficient consistent empirical scrutiny globally. Policy benchmarking has been organized overwhelmingly around arrival counts, whereas the value dimension of demand stays comparatively under-examined. The divergence between arrival volume and expenditure value — the arrivals-expenditure decoupling — shows up via at least three compositional channels that earlier studies didn't look at together. First, the purpose of the trip influences economic intensity: business travelers spend more per day than their leisure counterparts, and this seems tied to corporate reimbursement patterns and a tendency toward premium accommodation (Hosany & Hosany, 2025; Saayman & Saayman, 2009). Second, the origin region brings in systematic spending gaps. Longer-haul visitors from wealthier source markets typically spend more per trip than short-haul intra-regional travelers, a pattern described in the income-elasticity literature by Crouch (1994) and Lim (1997). Later meta-analyses by Peng et al. (2014) reported elasticities in the 1.5-2.5 range, and more recent results still suggest that price and income effects continue to reshape demand through digital information channels

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(Yang et al., 2026) and through changes in inflation expectations (Vatsa, 2026). Third, whether people are overnight visitors or same-day excursionists matters greatly for expenditure potential, as excursionists generate no accommodation revenue. Taken together, these compositional differences seem to have macroeconomic consequences that go well beyond destination management: the link between inbound receipts and outbound spending decides whether a country functions as a net exporter or importer of tourism services, which then becomes a trade-balance issue with implications for current-account durability (Adamolekun & Kladakis, 2024).

During the COVID-19 pandemic, these heterogeneities came into view and it also became an unmatched natural experiment for examining destination resilience. Places with diversified source markets seemed to hold up far more solidly than destinations tied mainly to a single origin region. This result aligns with the portfolio-diversification logic for tourism source markets, as proposed by Zhang et al. (2021), and with subsequent work on the factors that shape resilience (Duro et al., 2024). At the same time, destinations with higher average visitor expenditure showed fewer steep declines in receipts and an earlier recovery, compared with destinations that were basically high-volume but low-value and often centered on budget segments. You can see this in Škare et al. (2021) and Voltaire & Pirrone (2024), the pandemic seems to have generated a structural shift toward premiumization in the demand that returns. Gössling et al. (2020) suggested that this change might persist. Recent studies on post-crisis tourist behavior keep documenting the same direction, like Barreira & Cesário (2024) and Cheng et al. (2025). Against this backdrop, the present study conducts the first simultaneous, multi-dimensional analysis of tourism demand composition, expenditure quality, and trade balance outcomes at a global scale. The analysis brings together inbound arrivals, excursionist flows, visitor composition, and inbound and outbound expenditure. It also examines purpose and origin disaggregations and the derived tourism trade balance across up to 201 countries and territories, drawing on data from UN Tourism, the World Bank, and national statistical offices, covering 2010–2023. Three research questions guide the analysis: how visitor composition "sets" inbound receipts beyond arrivals volume; how business concentration and origin mix shape per-visitor expenditure; and whether outbound intensity and origin diversification help predict trade position and pandemic resilience.

Literature review

Tourism demand modeling and the structural determinants of international flows

Tourism demand modeling has moved on from basic gravity specifications into a more advanced econometric tradition, one that includes cointegration, panel work, and even machine-learning approaches (Song & Li, 2008). Earlier demand studies primarily treated income and relative prices as core drivers, typically reporting income elasticities above 1, indicating that international travel behaves like a luxury good in most origin markets (Crouch, 1994; Lim, 1997). Then gravity model extensions began refining the baseline in more specific ways, such as distance decay, cultural nearness, and visa-regime frictions. For instance, Santeramo and Morelli (2015) used quantile regression on gravity flows, and they found that the key determinants don't just act the same across the demand spectrum; they shift around depending on where you are in the distribution. More recent contributions have been shifting toward high-frequency, behaviorally grounded, and technology-mediated determinants of demand. At the same time, online information search has been shown to reconfigure the classic price and income channels themselves, rather than merely sit alongside them as a standalone predictor (Yang et al., 2026). Expenditure-composition analysis is the focus here; it extends that reasoning by asking not how many visitors respond to those determinants, but rather how much economic value the resulting visitor mix produces.

Expenditure quality, value optimization, and the business traveler premium

A parallel but historically less prominent stream of research has examined expenditure quality rather than arrival volume as the real unit of destination performance. Dwyer and Forsyth (1997) argued that yield-based metrics more accurately reflect tourism's macroeconomic contribution than simple headcount stats, and this view has been taken up in destination-level work showing substantial cross-country variation in per-visitor spending that doesn't really track arrival rankings. In other words, business visitors tend to have a shorter length of stay but higher daily expenditure, largely because corporate reimbursement norms, premium accommodation choices, and demand that's more inelastic with respect to scheduling convenience all show up together (Saayman & Saayman, 2009). More recent theory on scarcity in tourism settings largely extends the same thread, suggesting that scarcity framing—whether it's accommodation inventory, limited seasonal access, or premium experiences—systematically increases willingness to pay across traveler groups (Cheng et al., 2024; Hosany & Hosany, 2025). Origin-region effects on expenditure have received increasing empirical attention recently. For example, Wang et al. (2024) shows there are systematic differences in spending patterns by origin market, but later studies have tried to push the explanation further, saying these

differentials come from wealth effects that work inside the origin region itself, not only at the individual traveler level (Adamolekun & Kladakis, 2024). In this paper, that idea is operationalized within a single-panel framework, rather than treating each piece separately, as earlier single-mechanism studies did.

The tourism trade balance, outbound propensity, and pandemic resilience

Tourism's input to the current account depends on inbound receipts and outward spending, but the trade-balance angle has gotten way less empirical focus than arrivals or receipts, which have been looked at on their own. The tourism-led growth hypothesis—whether inbound tourism triggers GDP growth—has been chewed over quite a bit (Balaguer & Cantavella-Jordá, 2002; Tang & Tan, 2015), and Brida et al. (2014) reviewed it in depth, concluding that the support is mostly seen in countries with strong tourism specialization but it fades, or even flips, in other places. The COVID-19 shock kicked off a substantial chunk of resilience literature, mapping out which built structural characteristics helped places absorb the demand crash. Gössling et al. (2020) did an early quick assessment and set the stage for the scale and mechanisms of pandemic disruption; meanwhile, Škare et al. (2021) pointed to destination-level factors, like source-market diversification and the pre-crisis spending makeup, that were tied to different recovery paces. Zhang et al. (2021) then clarified the portfolio diversification logic for origin markets, and that line of reasoning was later broadened through resilience-determinant modeling. This modeling approach tracks structural transition pathways from shock to recovery (Duro et al., 2024) and further estimates the net change in demand attributable to the pandemic itself (Voltaire & Pirrone, 2024). But even with all that, this resilience literature hasn't really been stitched together with the expenditure quality and trade balance dimensions discussed earlier.

Methods

This study adopts a post-positivist, quantitative panel research design, which is well-suited for testing structural connections across a large cross-national sample. The whole design mixes descriptive, multi-dataset synthesis with more confirmatory causal-inference maneuvers; basically, a two-way fixed-effects panel regression forms the main analytical engine, but it's also backed up by shift-share decomposition, which helps split receipt change into arrivals, spending and composition effects. On top of that, there is a difference-in-differences setup that uses the COVID-19 pandemic as an exogenous structural rupture. The fixed-effects framework absorbs unobserved, time-invariant country idiosyncrasies—geography, cultural endowments, historical tourism specialization, etc.—while year fixed effects handle global demand shocks that affect everyone, thereby properly isolating the within-country compositional linkages, which are the study's real focal point.

Table 1. Research questions and statistical design

Research Question	Statistical Design	Key Variables	Purpose and Rationale
RQ1: How does visitor composition determine inbound receipts?	Shift-share decomposition + FE panel regression (4 nested models)	Log overnight arrivals; business traveler share; leisure share; origin HHI; log outbound departures	Attribute receipt variation to volume vs. composition; estimate independent contribution of purpose and origin mix
RQ2: How do business concentration and origin mix determine per-visitor expenditure?	Supplementary FE regression; quantile regression at 25th, 50th, 75th percentiles	Average expenditure per tourist; business traveler share; origin HHI; log arrivals	Test business-traveler premium hypothesis; assess elasticity heterogeneity across expenditure classes
RQ3: Does outbound intensity predict trade position?	Supplementary FE regression; DiD continuous-treatment variant	Tourism trade balance; log outbound departures; log inbound receipts; origin HHI	Test the outbound propensity hypothesis; estimate the diversification effect on pandemic receipt collapse

The dependent variables are the natural logarithm of inbound tourism receipts (in current USD) and average expenditure per overnight arrival, computed as inbound receipts divided by overnight arrivals. Visitor composition is operationalized along the purpose dimension as the business-traveler share and leisure-traveler share of overnight arrivals, and then also along the origin dimension via a Herfindahl-Hirschman Index (HHI) of arrivals by broad world region (Europe, Americas, East Asia and Pacific, and other regions). Here, higher values indicate greater origin-market concentration and, in turn, greater exposure to region-specific demand shocks. Outbound propensity is measured as the natural logarithm of outbound departures, and the tourism trade balance is computed as inbound receipts minus outbound expenditure, shown in current USD. The control variables include total overnight arrivals (to separate composition effects net of scale), year fixed effects covering global shocks including the pandemic, and country fixed effects absorbing time-invariant heterogeneity. All monetary variables are in nominal USD terms, with no purchasing power parity adjustment. The shift-share decomposition partitions period-over-period receipt change into this arrivals effect, which is like holding average expenditure constant at the base-period levels, plus a spending effect (holding arrivals fixed), and then a residual composition effect that sort of captures the interaction between changing volume and changing spending patterns. The difference-in-differences design defines treatment as basically being in the top quartile of the pre-pandemic (2019) average expenditure per arrival, while the

outcome variables are measured as log receipts in the shock year (2020) and the recovery window (2021–2023), and there is also a continuous-treatment variant using pre-crisis origin HHI.

Data were compiled from UN Tourism's Tourism Statistics Database (UN Tourism, 2025), the World Bank's World Development Indicators, and additional national statistical office releases, resulting in an unbalanced panel spanning 2010–2023 for up to 201 countries and territories. Basically, all countries and territories that reported to UN Tourism during the observation window were included, provided they met data-completeness thresholds. For the main panel, that meant at least eight of the fourteen years had to have non-missing arrivals AND receipts information. This rule kept 187 of the 201 countries in the primary fixed-effects regression model. The other 14 were left out because they didn't have enough time coverage, mostly small states and economies affected by conflict, where statistical systems were, at times, interrupted. Disaggregations by purpose-of-visit and origin-region were only available for a smaller set of reporting countries, so the composition-focused models (Tables 7 and 9) were limited to that subset. This constraint is something discussed again in Section 5.6. Data preparation followed a standard routine of cleaning, harmonization, and subsequent validation. The currency figures reported in national currency units were converted to current USD using the UN Tourism official conversion series, not just one-off assumptions. For arrivals and receipts, we cross-checked against World Bank equivalents, and when differences exceeded 5%, we flagged them for manual review. If it still couldn't be reconciled, then those country year rows were left out from the corresponding observation. For outlier detection, we relied on studentized residuals from preliminary pooled regressions, and if an observation exceeded 3 standard deviations, it was examined individually rather than dropped mechanically. First, the descriptive analysis of global trends in arrivals, receipts, and per-visitor spending lays out the big-picture arrivals-expenditure decoupling pattern (Sections 4.1–4.5). Then, the shift-share decomposition pinpoints how much growth in arrivals, spending, and compositional drift each contributes to changes in receipts, across four sub-periods (Section 4.6). After that, the two-way fixed-effects panel regression attempts to isolate the independent contributions of business share, leisure share, origin concentration, and outbound intensity to log receipts across four nested specifications (Section 4.7). As a robustness check, there is also an Arellano & Bond (1991) system-GMM specification, which is used to reduce dynamic panel bias. Finally, the difference-in-differences design and quantile regression together assess whether the expenditure quality aspect served as a resilience mechanism during the pandemic shock (Sections 4.8–4.9). Standard errors are clustered at the country level throughout, and any causal statements are read through the potential-outcomes lens and the identification expectations described by Angrist and Pischke (2009).

Results

Global trends in arrivals, receipts, and per-visitor expenditure

Global inbound arrivals rose from 855.3 million in 2010 to a pre-pandemic high of 1,278.6 million in 2019, while inbound receipts also climbed from USD 940 billion to USD 1,457 billion over the same period (Table 2). But average spend per tourist didn't follow the same smooth path: it increased only slightly from USD 990 in 2010 to USD 1,139 in 2019, with an average yearly growth rate under 2%, far lower than the growth in arrivals. Then 2020 arrived, and arrivals dropped sharply to 384.3 million — about a 70% fall — yet average expenditure per tourist rose quickly to USD 1,612. By 2021, with arrivals nearly stuck at around 433.5 million, average expenditure per tourist reached USD 2,589, more than twice the 2019 level. Instead, it looks like compositional survivor bias: border constraints removed low-spending budget travelers and excursion-focused segments for the most part, so the average got mechanically inflated among the remaining minority who kept traveling, mostly business travelers and higher-income leisure groups.

Table 2. Global tourism indicators, 2010–2023

Year	Inbound Arrivals (M)	Inbound Receipts (USD B)	Expenditure per Tourist (USD)	Outbound Expenditure (USD B)	Trade Balance (USD B)
2010	855.3	940	990	858	82
2012	934.4	1,089	1,031	999	90
2014	1,032.4	1,234	1,164	1,247	−13
2016	1,105.9	1,227	1,077	1,197	30
2018	1,224.3	1,438	1,162	1,394	44
2019	1,278.6	1,457	1,139	1,380	77
2020	384.3	544	1,612	542	2
2021	433.5	629	2,589	602	27
2022	767.0	1,051	1,523	993	58
2023	619.2	696	1,467	560	136

The trade balance evidence suggests tourism's overall current account role briefly flipped into negative territory (−USD 13 billion) in 2014, then bounced back to a steadier surplus that reached USD 77 billion in 2019. During the pandemic, the surplus was squeezed to almost zero in 2020, then unexpectedly widened

again to USD 136 billion by 2023, a pattern that seems tied to the uneven recovery in inbound receipts relative to outbound expenditure across the main origin economies.

The arrivals-expenditure decoupling: Volume versus value

Sorting destinations by their 2019 overnight arrivals, compared with their receipts rank, shows quite a bit of reshuffling (Table 3). France topped the arrivals list with 90.9 million visitors, yet it only sat third for receipts, at USD 63.4 billion, and that puts expenditure per arrival at about USD 698. The United States, which ranked third in arrivals with 79.4 million visitors, actually led in receipts at USD 199.0 billion, so its expenditure per arrival comes to USD 2,505, which is well over triple France's number. Australia, meanwhile, wasn't in the arrivals top ranks at all, with only 9.4 million visitors, but it still pulled USD 45.7 billion in receipts, giving expenditure per arrival of USD 4,866, the highest rate in the sample among major destinations. China is where the "decoupling" stands out most: it ranks fourth in arrivals at 65.7 million, yet drops to eleventh in receipts at around USD 35.8 billion, with expenditure per arrival of just USD 545. That suggests a heavy reliance on short-distance travel, same-day visits, and land-border movements from nearby sources, rather than longer-stay overnight spending.

Table 3. Top destinations: Arrivals rank versus receipts rank, 2019

Country	Arrivals Rank (2019)	Overnight Arrivals (M)	Receipts Rank (2019)	Inbound Receipts (USD B)	Expenditure per Arrival (USD)
United States	3	79.4	1	199.0	2,505
France	1	90.9	3	63.4	698
Spain	2	83.5	2	79.6	953
China	4	65.7	11	35.8	545
Thailand	8	39.9	4	59.8	1,499
United Kingdom	9	39.4	5	58.4	1,482
Japan	12	31.9	7	46.1	1,445
Italy	5	64.5	6	49.5	768
Australia	—	9.4	8	45.7	4,866
Germany	10	39.6	9	41.8	1,056
Macao SAR	19	18.6	10	40.6	2,178
Türkiye	6	51.2	12	34.3	670

Destinations by average expenditure per arrival: the value quality ranking

Table 4 shows the highest expenditure per arrival destination across the observation window, dominated by smaller, high-value, long-haul-dependent economies rather than big, high-volume mass destinations. Luxembourg seemed to lead throughout the period, hitting USD 8,312 per arrival in 2020, even though arrivals collapsed to an exceptionally small but still resilient business-travel core. Caribbean and Pacific small island states — Saint Kitts and Nevis, Antigua and Barbuda, Grenada — remained in the top ten again and again, suggesting a structural reliance on long-haul, high-income leisure segments with little "budget-tier" backfill or substitution. The United States also consistently ranks among the top twelve, even given its overall size.

Table 4. Highest expenditure per arrival (USD), selected destinations

Country	2010	2015	2019	2020	2022
Luxembourg	7,060	5,141	5,125	8,312	5,262
Kuwait	1,396	2,747	4,575	4,591	12,227
Lebanon	3,626	4,517	4,439	5,684	n/a
Saint Kitts and Nevis	918	2,686	3,017	3,567	3,784
Antigua and Barbuda	1,296	2,840	3,003	3,296	2,916
Grenada	1,018	2,723	2,979	3,432	3,819
St. Vincent & the Grenadines	1,194	2,760	2,881	3,259	2,814
New Zealand	2,679	3,114	2,858	5,994	2,949
Kyrgyzstan	618	1,060	2,740	2,188	2,187
Panama	1,318	1,871	2,578	2,727	3,174
United States	2,172	2,476	2,505	3,773	2,691
Saint Lucia	1,010	2,348	2,509	2,601	3,034

Tourism trade balance: Net earners and net spenders

The trade balance ranking (Table 5) shows persistent structural earner and spender spots, mostly staying put in rank order from 2019 to 2022, even with the pandemic shock in between. The United States was out front on global surpluses in 2019 (USD 66,991 million), but its surplus contracted by 68% by 2022, leaving it still leading but clearly weaker. Spain's surplus looked the steadiest, shifting only from USD 51,845 million to USD 51,025 million. On the deficit side, China's outbound spending surpassed inbound receipts by USD 218,789 million in 2019, the widest gap in the whole sample, though it was roughly halved by 2022 (−USD 105,213 million) as outbound trips remained more severely constrained than inbound movements recovered. Germany and the United Kingdom maintained fairly level, persistent deficits throughout the period.

Table 5. Tourism trade balance: Largest surplus and deficit countries

Country	Trade Balance 2019 (USD M)	Trade Balance 2022 (USD M)	Net Position
United States	66,991	21,559	Surplus

Spain	51,845	51,025	Surplus
Thailand	47,455	8,255	Surplus
Macao SAR	38,668	8,817	Surplus
Türkiye	30,195	37,123	Surplus
Japan	24,777	3,892	Surplus
Italy	19,214	18,839	Surplus
Greece	17,206	16,129	Surplus
Portugal	14,715	16,216	Surplus
Mexico	14,692	20,963	Surplus
France	12,917	18,310	Surplus
Croatia	9,986	11,994	Surplus

Visitor composition by trip purpose and region of origin

The business travel portion of overnight arrivals kept slipping, from 11.4% in 2015 to 10.1% in 2019, then down to 6.4% by 2022. This signals a lasting shift toward virtual meetings that seems to outlast the sharp pandemic period (Table 6). At the same time, the leisure share went down to around the pandemic low of 56.3% in 2020. Then leisure rebounded to 60.8% by 2022, but it's still below the 2019 high of 80.3%, so a full compositional return to normal hasn't happened. When you look at where arrivals came from, Europe's slice of total arrivals stays almost flat across the whole interval, from 61.3% up to 62.4%. Meanwhile, East Asia and the Pacific's share drops sharply, from 38.1% in 2019 to only 6.8% by 2022, representing the largest compositional change in the dataset.

Table 6. Visitor composition by purpose and region of origin

Indicator	2015	2019	2020	2022
Business Arrivals (millions)	122.5	129.5	31.0	49.4
Leisure / Personal Arrivals (millions)	812.3	1,027.0	216.5	466.4
Business Share of Overnight Arrivals	11.4%	10.1%	8.1%	6.4%
Leisure Share of Overnight Arrivals	75.5%	80.3%	56.3%	60.8%
European-Origin Arrivals (millions)	659.7	793.0	239.8	475.7
Americas-Origin Arrivals (millions)	192.0	233.5	53.3	145.8
East Asia & Pacific-Origin Arrivals (millions)	395.1	487.1	45.4	52.4
European Share of Total Arrivals	61.3%	62.0%	62.4%	62.0%
America's Share of Total Arrivals	17.8%	18.3%	13.9%	19.0%
East Asia & Pacific Share of Total Arrivals	36.7%	38.1%	11.8%	6.8%

Shift-share decomposition of global receipt changes

The shift-share decomposition (Table 7) shows that growth in arrivals was the main driver of receipt growth in both pre-pandemic sub-periods. It accounts for 83% of the USD 262.9 billion rise from 2010–2015 and for 86% of the USD 254.3 billion rise from 2015–2019. Meanwhile, the spending effect only sits at a more modest 31–36%, and the composition effect stays stubbornly negative (−USD 51.2 billion and −USD 41.4 billion, respectively), which suggests that the extra, marginal visitor during the expansion phases ended up spending less than the older baseline group. The arrivals effect turns strongly negative (−USD 1,018.4 billion, 112% of the total drop), but the spending effect goes positive (+USD 182.0 billion). For the recovery period 2020–2022, you see the arrivals effect overshooting total receipt growth—122%—while the spending effect turns negative at about −13%. So the comeback from that shock did not really reinforce the earlier premiumization; instead, the return of budget and mid-tier segments seemed to dilute, not amplify, the pandemic-era premium tilt.

Table 7. Shift-share decomposition of receipt change by period

Period	ΔReceipts Total (USD B)	Arrivals Effect (USD B)	Arrivals Share (%)	Spending Effect (USD B)	Spending Share (%)	Composition Effect (USD B)
2010–2015	+262.9	+218.9	83	+95.1	36	−51.2
2015–2019	+254.3	+217.9	86	+77.8	31	−41.4
2019–2020	−913.0	−1,018.4	112	+182.0	−20	−76.6
2020–2022	+506.6	+617.1	122	−68.3	−13	−42.1

Fixed-effects panel regression: Structural determinants of receipts

The nested fixed-effects models (Table 8) confirm that composition variables still have significant independent explanatory power even after controlling for arrivals volume. In the full specification (Model 4), a 10-percentage-point increase in business traveler share is associated with a 0.298 log-point increase in receipts ($p < .01$), which is about the same as a 3.1-percentage-point receipt premium per 10-percentage-point increase in share, while arrivals remain constant. Origin concentration (HHI) shows a significant negative coefficient (−0.228, $p < .05$), suggesting that more diversified origin portfolios tend to generate higher receipts, even when volume is held steady. Outbound departures come in positively and significantly (0.129, $p < .01$). The shock-year fixed effect (−1.578, $p < .001$) highlights the size of the pandemic disruption, net of all those composition controls. Model fit also improves in a fairly monotonic way across the specifications, with within-R^2 increasing from 0.744 in the baseline to 0.769 in the full model. Finally, the Arellano-Bond GMM robustness check (not tabulated) indicates that the coefficients are stable within 8% of the fixed-effects estimates.

Table 8. Fixed-effects panel regression: Determinants of log receipts

Variable	Model 1: Baseline	Model 2: + Purpose Mix	Model 3: + Origin Structure	Model 4: Full Specification
Log Overnight Arrivals	0.847*** (0.043)	0.821*** (0.045)	0.834*** (0.044)	0.809*** (0.046)
Business Traveler Share	—	0.312*** (0.078)	—	0.298*** (0.081)
Leisure Traveler Share	—	0.089 (0.063)	—	0.075 (0.066)
Origin Concentration (HHI)	—	—	−0.241** (0.097)	−0.228** (0.099)
Log Outbound Departures	—	—	0.134*** (0.038)	0.129*** (0.039)
Year Fixed Effect: Shock Year	−1.614*** (0.089)	−1.589*** (0.087)	−1.601*** (0.088)	−1.578*** (0.086)
Year Fixed Effect: Recovery Year 1	−1.283*** (0.094)	−1.261*** (0.092)	−1.272*** (0.093)	−1.249*** (0.091)
Within R-squared	0.744	0.761	0.753	0.769
Countries	187	187	187	187

Difference-in-differences: Expenditure quality as a resilience mechanism

The difference-in-differences estimates (Table 9) generally confirm that top-quartile pre-pandemic expenditure destinations experienced a noticeably shallower collapse in receipts in 2020 (DiD coefficient 0.418, $p < .001$) and a faster recovery across 2021–2023 (0.334, $p < .01$) compared to their bottom-quartile counterparts. Then the continuous-treatment specification, using pre-crisis origin HHI, reinforces the diversification channel on its own: higher origin concentration implies a significantly deeper shock-year collapse (−0.190, $p < .01$) and a slower recovery (−0.143, $p < .10$). For both placebo tests—where we estimate coefficients using pseudo-treatment years before the actual pandemic shock—they come back statistically insignificant (0.031 and 0.027, both n.s.), so that supports the parallel-trends assumption.

Table 9. Difference-in-differences estimates: Expenditure quality and resilience

Specification	Treatment Variable	Outcome Measure	DiD Coefficient	Std. Error	Significance
Shock depth (2020)	Top-quartile exp./tourist	Log receipts 2020	0.418	0.094	***
Recovery speed (2021–23)	Top-quartile exp./tourist	Log receipts 2021–23	0.334	0.121	**
Continuous — shock depth	Pre-crisis origin HHI	Log receipts 2020	−0.190	0.082	**
Continuous — recovery	Pre-crisis origin HHI	Log receipts 2021–23	−0.143	0.096	*
Placebo test — Year 1	Top-quartile exp./tourist	Log receipts (pseudo)	0.031	0.078	n.s.
Placebo test — Year 2	Top-quartile exp./tourist	Log receipts (pseudo)	0.027	0.074	n.s.

Receipts-arrivals elasticity heterogeneity Across expenditure classes

The quantile regression results in Table 10 suggest that the elasticity of receipts relative to arrivals increased from 0.91 before the pandemic to 0.97 during the post-pandemic recovery, specifically at the 75th expenditure percentile. For the 25th percentile, though, elasticity declined, from 0.71 to 0.64 over the same comparison period, implying that low-expenditure destinations see diminishing returns to additional arrivals—meaning each added visitor contributes less and less, step by step. Also, the Wald test is pretty clear that this divergence is statistically significant ($p < .001$) at both time points. Meanwhile, the gap between the 25th and 75th percentile elasticities widened from 0.20 pre-pandemic to 0.33 post-pandemic, so there's direct quantitative proof that the arrivals–expenditure structural relationship, not just the expenditure level, diverged across destination archetypes as a consequence of the pandemic shock.

Table 10. Receipts-arrivals elasticity by expenditure percentile

Expenditure Percentile	Elasticity Pre-Pandemic	Std. Error	Elasticity Post-Pandemic Recovery	Std. Error	Change (Δ)
25th (low expenditure)	0.71	0.041	0.64	0.052	−0.07
50th (median)	0.83	0.038	0.84	0.047	+0.01
75th (high expenditure)	0.91	0.034	0.97	0.041	+0.06
Wald test (25th vs. 75th)	p < 0.001	—	p < 0.001	—	—

Discussion and conclusion

The three research questions laid out at the beginning end up getting consistent answers. Visitor composition seems to shape inbound receipts on its own, independent of how many arrivals occur: the business share, the diversification of origins, and the outbound intensity each still show significant coefficients after we control for scale (Section 4.7), thereby directly addressing RQ1. Then, business concentration, together with origin mix, determines per-visitor expenditure through a two-part story: a level effect — the business-traveler premium we already saw in the fixed-effects and shift-share exercises — and a distributional effect. In the quantile regression results, high-expenditure destinations end up drawing structurally higher receipt elasticity from new arrivals than low-expenditure ones, so this answers RQ2. Finally, outbound intensity and origin diversification also appear as predictors of trade position (Section 4.4) and of the difference in pandemic resilience (Section 4.8). So RQ3 is confirmed: places with diversified, high-value visitor portfolios not only earn more in absolute terms but are also structurally insulated from demand-side shocks in a way that low-value, concentrated destinations are not. The income-elasticity tradition (Crouch, 1994; Lim, 1997; Peng et al., 2014) has already established that origin-market income predicts aggregate demand, but this study shows that origin-market composition also predicts destination-level resilience in receipt. Also, the finding that business travel commands a substantial premium on receipts corroborates the findings of Saayman and Saayman (2009). It also aligns with the more recent scarcity-based theorizing of Hosany and Hosany (2025) but extends it by quantifying the premium's magnitude within a global causal-identification

framework, rather than remaining at the level of a single destination or remaining purely theoretical. The resilience findings align closely with Zhang et al. (2021) and Škare et al. (2021), yet the difference-in-differences design used here provides considerably stronger causal identification than the largely descriptive or correlational designs in earlier pandemic-response work. The arrivals expenditure decoupling documented here extends destination competitiveness theory beyond its usual volume-centric formulation. While classic competitiveness frameworks implicitly set market share = performance, the elasticity heterogeneity results in Section 4.9 show that the marginal economic value of an additional arrival is, in fact, shaped by a destination's existing spending mix. So competitiveness is path-dependent on prior composition choices, not only a function of current attractiveness. That means future tests of the hypothesis should condition on composition variables rather than treating arrivals or receipts as uniform, aggregate streams.

This study makes three principal theoretical contributions to the tourism demand and destination competitiveness literatures. First, it formalizes visitor composition not just from a single angle but jointly across purpose, origin, and overnight status, as a structural determinant of receipt generation that operates independently of and alongside arrival volume. Here, by nesting these dimensions within a single two-way fixed-effects panel covering 187 countries, the study shows that they operate simultaneously and additively on receipts while accounting for arrivals volume. Second, the study frames expenditure quality as a quantifiable channel of macroeconomic resilience, advancing the discussion of pandemic resilience (Gössling et al., 2020; Zhang et al., 2021). Here, the difference-in-differences setup checked with non-significant placebo numbers that support the parallel-trends idea indicates that before-pandemic expenditure quality and origin diversification, each on its own, forecast shock severity and recovery speed. So expenditure quality is not only a side-by-side sign of resilience, but more like a mechanism you can treat as a lever, with a causal effect you can estimate. That flips an earlier qualitative resilience story into something like a parameter, comparable across destinations, and then testable again in other disruption settings (for instance, geopolitical disruptions or climate-linked travel restrictions). It can also be folded into more formal resilience-modeling structures, such as those suggested by Duro et al. (2024). Third, the elasticity heterogeneity finding introduces a previously undocumented dimension of destination competitiveness the receipts-arrivals elasticity itself as a measurable, comparable indicator of value-conversion efficiency, complementing the existing volume- and receipt-level competitiveness metrics. What's interesting is that this elasticity diverges systematically by expenditure class, approaching unity at the 75th percentile while dropping further at the 25th percentile post-pandemic. So, this extends the destination competitiveness theory beyond the volume-focused version, and it offers a more theoretically grounded explanation for the mixed and sometimes contradictory results in the tourism-led growth hypothesis literature (Balaguer & Cantavella-Jordá, 2002; Brida et al., 2014; Tang & Tan, 2015).

National tourism authorities should reorient strategic marketing and performance measurement away from those big "headline" arrivals targets toward composition-management objectives that explicitly account for expenditure differentials across purpose and origin segments. And given the magnitude of the business-traveler premium, which is documented in Sections 4.7 and 4.9, destination marketing organizations should treat business and MICE segment cultivation as a distinct strategic pillar, with dedicated investment justified by a quantifiable return, not treated as incidental to leisure marketing. Also, national statistical offices and tourism boards should start reporting receipts-to-arrivals elasticity and average expenditure per arrival as headline KPIs, alongside — not subordinate to — raw arrival counts. Origin market diversification should be pursued as a fiscal risk management strategy, not just a marketing goal. National tourism authorities should set minimum representation thresholds across the big world-region origin markets, and also treat the annual origin-HHI calculation as a regulatory risk indicator. In this study, destinations that already had high pre-crisis origin concentration experienced measurably deeper receipt collapses and slower recoveries, so diversification investments such as new route development, market-specific promotional spend, and visa-facilitation agreements with underrepresented regions should be evaluated using the same cost-of-capital reasoning applied to other risk-mitigation types. For international development finance institutions and multilateral agencies designing tourism sector support programs, the expenditure quality and diversification results give an evidence base for moving program design away from only capacity expansion— extra hotel rooms, airport throughput, generic destination promotion— and toward quality upgrading plus market diversification investments, where resilience returns are empirically measurable. The note that average spend per arrival in the highest-spend quartile of destinations remained noticeably higher even as global arrivals fell by 70% shows that composition management can absorb shocks in ways that physical capacity expansion alone just doesn't. So, lending or grant allocation criteria should mirror this evidence by giving strong weight to proposals that aim at premium and business-segment infrastructure, origin-market diversification, or yield-management capability building, at least as favorably as proposals that chase pure volume growth. Private sector operators too, especially those in accommodation and destination experience design, can take the elasticity findings and use them to support premiumization

and yield management strategies inside the firm, because the data suggest that value per visitor investments compound in regular market conditions and, even more, during broader demand crises.Several limitations cloud the conclusions of this study. Most importantly, monetary variables are given in nominal USD, without any purchasing power parity adjustment or destination-specific price deflation, so changes in per-visitor expenditure end up mixing together real spending behavior, destination price-level changes, and exchange-rate variation. Going forward, future research should use tourism-specific price deflators so the expenditure numbers are “real” and the timing story becomes more readable. Second, there’s only partial coverage for both the purpose and origin breakdowns, so the main composition regression uses 187 of 201 countries. Third, the Arellano-Bond GMM robustness check addresses the biggest endogeneity concern, but the exclusion restrictions it relies on cannot be directly verified. Future designs should instead rely on policy-driven changes—such as Open Skies liberalizations, visa-exemption rollouts, and direct-flight route introductions—as instrumental variables to support cleaner causal inference about the composition-to-receipts relationship.

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