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## Article

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## Drivers of multi-destination tourism in APEC (2008–2023)

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### ABSTRACT

This study examines the economic and policy factors shaping multi-destination tourism flows in the Asia-Pacific Economic Cooperation region, focusing on Japan, Taiwan, and Thailand from 2008 to 2023. Using gravity model and vector autoregression analysis, it identifies GDP, exchange rates, visa policies, government efficiency, and travel distance as key determinants. Results show Japan attracts high-income tourists, Taiwan acts as a transit hub, and Thailand appeals to budget-conscious travelers. The analysis highlights both competitive and complementary dynamics, underscoring the need for regional tourism coordination. The proposed “Sustainable Asia Tourism Trail” supports the United Nations SDGs by encouraging environmentally friendly travel and cross-border cooperation. Policy recommendations include streamlining visas, investing in infrastructure, and implementing coordinated strategies to strengthen regional competitiveness and sustainability.

### 1. Introduction

International tourism plays a critical role in economic development, cultural exchange, and job creation, particularly within the Asia-Pacific Economic Cooperation regional framework. As of 2023, member economies of the Asia-Pacific Economic Cooperation accounted for over 30 % of global international tourist arrivals, underscoring their significance as major travel hubs (SOM Steering Committee on Economic and Technical Cooperation and Tourism Working Group, 2024). However, the landscape for tourism in the years following the coronavirus pandemic is characterized by heightened uncertainty, shaped by evolving traveler behaviors, geopolitical shifts, and fluctuating economic conditions. In this context, understanding the underlying determinants of tourism demand is essential for policymakers and tourism authorities aiming to revitalize and sustain international visitor flows.

This study focuses on Japan, Taiwan, and Thailand—three prominent destinations within the Asia-Pacific Economic Cooperation region that exemplify a wide range of tourism profiles, spanning advanced infrastructure, rich cultural heritage, and affordability. Japan, recognized for its efficiency, safety, and diverse cultural assets, welcomed over 31 million international visitors annually before the onset of the coronavirus pandemic (Navarro et al., 2016; Tang, 2021). Taiwan, strategically situated between Northeast Asia and Southeast Asia, serves both as a destination and as a key transit point, attracting over 11

million international tourists in 2019 (Liou et al., 2019; Lonely Planet, 2022). Thailand, renowned for its affordability, natural beauty, and hospitality, ranks among the world’s most visited destinations, with more than 40 million annual arrivals prior to the global health crisis (Lee-Anant et al., 2024). The differences in tourism scale, infrastructure, and traveler appeal among these locations provide a compelling basis for comparative analysis within the region.

One notable shift in international travel patterns is the rise of multi-destination tourism, in which travelers visit two or more places within a single itinerary. This trend has accelerated due to increased regional connectivity, the expansion of digital booking platforms, and policies that promote greater visa facilitation. While such integration can enhance regional cooperation and shared economic benefits, it also introduces new competitive pressures. The interplay between complementarity and competition among neighboring destinations—particularly for Japan, Taiwan, and Thailand—remains understudied in the field of tourism economics. Most prior research has focused on individual destinations, failing to fully capture the interconnected nature of cross-border tourism flows.

To address this gap, the present study adopts a dual-method approach, combining an augmented gravity model with a vector autoregression modeling framework to analyze both the structural and dynamic drivers of international tourism demand from 2008 to 2023. The gravity model enables the examination of traditional determinants

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such as gross domestic product per capita, exchange rates, geographic distance, visa policies, and the efficiency of governance. The vector autoregression model, in turn, captures the interdependencies and spillover effects among the three destinations, providing insight into how shocks in one market affect tourism flows in the others. This integrated methodology supports a more comprehensive understanding of the dynamics associated with multi-destination travel.

The study's findings offer significant policy implications for tourism development across the Asia-Pacific Economic Cooperation region. By identifying the economic and institutional factors that shape cross-border tourism flows, this research provides practical recommendations for strengthening regional cooperation, optimizing infrastructure investment, and promoting sustainable tourism practices. In particular, the study proposes the strategic initiative of the "Sustainable Asia Tourism Trail," which is aligned with the United Nations Sustainable Development Goals and supports eco-friendly, culturally immersive, and cross-border travel in East and Southeast Asia. Through coordinated visa policies, transportation linkages, and collaborative marketing strategies, Japan, Taiwan, and Thailand can position themselves as leaders in building a resilient and sustainable regional tourism network.

## 2. Literature review

### 2.1. Theoretical foundations and determinants of tourism demand

Tourism demand is shaped by a complex interplay of economic conditions, geographic barriers, and institutional environments. A substantial body of research has relied on the gravity model to explain bilateral tourism flows, drawing upon its origins in international trade theory (Anderson James & van Wincoop, 2003; Tinbergen, 1962) and its subsequent adaptation to tourism contexts (Eilat & Einav, 2004; Morley, Anker, & von Haehling, 2014). Empirical studies consistently demonstrate that tourist flows are positively associated with gross domestic product per capita and negatively associated with geographic distance, reinforcing the predictive power of the gravity model across diverse regions and time periods (Ghosh, 2021; Ulucak et al., 2020).

In addition to income and distance, exchange rates represent a key determinant of cross-border travel decisions. For example, research by Chang and McAleer (2009) found that fluctuations in exchange rate volatility significantly affect tourist arrivals in both Korea and Taiwan, with elasticities varying across different source regions. Further evidence from Sharma et al. (2019) suggests that tourists are highly responsive to changes in real exchange rates when comparing similar destinations within a region, highlighting the centrality of this variable in studies of multi-destination travel demand. Chang and McAleer (2012) also employ a heterogeneous autoregressive model to capture the long-memory properties of exchange rate volatility and its dynamic influence on tourism demand, offering additional evidence that exchange rate movements play a persistent and nuanced role in shaping international travel flows.

Beyond economic drivers, policy variables have emerged as important determinants of tourism flows. Visa facilitation measures, in particular, have been empirically linked to substantial increases in tourist arrivals. For instance, Neumayer (2010) demonstrates that the removal of visa requirements results in an average increase of 25 to 30 % in bilateral travel. Similarly, research by Rašovská et al. (2021) provides evidence that enhanced government efficiency and political stability are associated with greater tourism competitiveness, especially in destinations within the Asia-Pacific region, where infrastructure quality and perceptions of safety are pivotal for inbound tourism demand.

Recent studies have also underscored the growing influence of digital platforms and online travel ecosystems in lowering transaction costs for multi-country trips. Research by Xiang et al. (2015), as well as Buhalis and Law (2008), highlights how platforms such as Skyscanner and Airbnb shape not only destination choice but also the complexity of travel itineraries. These technological developments enable a greater

number of travelers to participate in multi-destination tourism within a single journey, increasing the relevance of regional tourism integration.

Finally, cultural distance and tourist behavior have become important considerations in itinerary planning and destination selection. Studies drawing on Hofstede's (2001) framework of cultural dimensions and the work of Reisinger and Turner (2003) demonstrate that factors such as uncertainty avoidance and novelty-seeking tendencies influence the likelihood of tourists visiting less familiar or more adventurous destinations. This highlights the importance of accounting for behavioral heterogeneity among source regions when modeling tourism flows.

### 2.2. Empirical applications of the gravity model in regional tourism

The gravity model has been widely utilized in tourism research, particularly in examining regional travel flows within East Asia and other interconnected markets. Empirical evidence consistently highlights gross domestic product per capita as a primary determinant of outbound tourism, as wealthier regions tend to generate greater international travel demand due to higher levels of disposable income (Ibragimov et al., 2022; Sadeh, 2024). Similarly, fluctuations in exchange rates have a pronounced effect on tourist flows, since currency appreciation or depreciation alters the relative affordability of travel to specific destinations (Ghosh, 2021; Sharma et al., 2019).

Another key factor in gravity model-based studies is geographic distance, which serves as both a financial and psychological barrier to travel (Addison et al., 2023; Eilat & Einav, 2004; Gómez-Déniz et al., 2023). While greater distances generally reduce travel frequency due to higher costs and longer transit times, some destinations offset these deterrents through affordability and cultural appeal (Morley, Rosselló, & Santana-Gallego, 2014). This is particularly relevant for Thailand, which attracts long-haul travelers despite its distance from major source markets, owing to its low-cost tourism offerings.

Tourism demand is also shaped by external shocks, including economic crises, global pandemics, and natural disasters. Research on SARS and Avian Flu outbreaks highlights their significant impact on tourism flows, leading to long-term economic repercussions (McAleer et al., 2010). The COVID-19 pandemic similarly disrupted global tourism, prompting destinations to implement innovative recovery strategies (Chang et al., 2020). In addition, natural disasters, such as the 1999 Taiwan earthquake, have been shown to severely damage tourism infrastructure and alter tourists' risk perceptions, affecting destination choices and long-term tourism recovery (Huan et al., 2004). These studies underscore the importance of resilient tourism policies that can help mitigate the effects of unexpected crises and support long-term tourism stability.

Moreover, government quality and political stability significantly influence international tourism demand. Regions with stable governance, efficient public services, and robust policy frameworks attract more tourists by ensuring safety, convenience, and positive travel experiences (Hsieh & Kung, 2013; Lee & Chen, 2022). For example, Japan's high-quality infrastructure and reputation for safety make it a preferred destination for high-income travelers. Conversely, political instability—such as Thailand's 2014 military coup—has been shown to disrupt tourism flows, creating uncertainty and reducing tourist confidence (Pitakdumrongkit & Lim, 2021).

Although previous studies have extensively analyzed tourism determinants at the country or region level, few have examined multi-destination tourism flows and their interdependencies. This study addresses this gap by applying the gravity model in a multi-region context, integrating economic and policy factors to understand how Japan, Taiwan, and Thailand interact as part of a broader regional tourism network.

### 2.3. Multi-destination tourism and regional interdependencies

Multi-destination tourism has emerged as a defining trend in

international travel, particularly within regions characterized by strong connectivity and cultural synergies. Research shows that tourists frequently visit multiple destinations within a single trip, driven by factors such as geographic proximity, visa policies, and cross-border transportation networks (Lee-Anant et al., 2024; Loganatan et al., 2019; Tatoglu & Gul, 2020). In East Asia, Japan, Taiwan, and Thailand serve as key nodes in multi-destination travel circuits, offering diverse experiences that appeal to distinct tourist segments (Canton, 2021).

The relationship between competition and complementarity in multi-destination tourism has become a central topic in recent research (Cao et al., 2017; Song et al., 2019). While some destinations compete for similar tourist markets, others benefit from shared visitor flows through strategic collaborations (Kozak & Buhalis, 2019). For example, Taiwan functions as a regional transit hub, facilitating travel between Japan and Thailand. Meanwhile, Japan's strong branding as a high-end destination and Thailand's affordability naturally segment tourist preferences, reducing direct competition and fostering cooperative tourism strategies (Ulucak et al., 2020).

Spillover effects and volatility in multi-destination tourism also warrant further examination. Studies demonstrate that fluctuations in international tourist arrivals can create ripple effects across interconnected markets (Chang et al., 2018; Chang et al., 2019). For instance, changes in Chinese tourism policies significantly influence inbound tourism to Taiwan and Japan, highlighting the interdependent nature of regional tourism economies (Chang et al., 2019).

Sustainability has become an essential consideration in multi-destination tourism. With growing concerns about overtourism and environmental degradation, scholars have emphasized the importance of eco-friendly travel initiatives and responsible tourism policies (Baños-Pino et al., 2023; Gu, 2024). The proposed "Sustainable Asia Tourism Trail", linking Japan, Taiwan, and Thailand, aligns with global sustainability goals by promoting low-impact tourism, cultural preservation, and regional collaboration (SOM Steering Committee on Economic and Technical Cooperation and Tourism Working Group, 2024).

Despite the increasing relevance of multi-destination tourism, research in this area remains fragmented, with most studies focused on tourism demand within individual countries or regions. By integrating the gravity model with the vector autoregression framework, this study captures both the static relationships and dynamic interactions that shape regional tourism flows. The findings provide a more comprehensive understanding of the economic and policy-driven factors influencing multi-destination travel within the Asia-Pacific Economic Cooperation region. These insights offer valuable guidance for policymakers, tourism boards, and destination managers aiming to enhance regional tourism competitiveness and ensure long-term sustainability.

### 3. Methodology

This study employs an integrated quantitative approach to investigate the factors driving multi-destination tourism among Japan, Taiwan, and Thailand within the Asia-Pacific Economic Cooperation region from 2008 to 2023. The methodological framework combines an augmented gravity model with a vector autoregression modeling strategy, allowing for both cross-sectional analysis and the examination of dynamic interdependencies among the selected destinations.

#### 3.1. Gravity model for international tourism flows

The gravity model is a foundational tool in tourism research, widely used to explain bilateral tourism flows based on the economic scale of participating regions, spatial distance, and relevant policy variables (Czaika & Neumayer, 2020; Morley, Anker, & von Haehling, 2014; Park et al., 2018; Vietze, 2012). Drawing inspiration from Newton's Law of Gravitation, this model posits that tourism flows between any two regions increase with their respective economic mass and decrease as the distance between them grows.

In this study, an expanded version of the gravity model is applied to assess international tourist arrivals from forty-two origin regions to the destinations of Japan, Taiwan, and Thailand over the period from 2008 to 2023. To control for differences in the size of the origin regions, the population of each source region is included as a control variable. This ensures that the estimated tourism flows are not merely reflections of population size. Additional explanatory variables incorporated in the model include gross domestic product per capita, exchange rate measures, geographic distance, the presence or absence of visa facilitation agreements, and indicators of governance efficiency. Each of these variables captures distinct economic, policy-related, and spatial influences on international tourism flows. The empirical specification of the model is as follows:

$$\begin{aligned} \ln TA_{ijt} = & \beta_0 + \beta_1 \ln PCGDP_{ijt} + \beta_2 \ln ER_{ijt} + \beta_3 \ln Dist_{ij} + \beta_4 \ln S_{jt} \\ & + \beta_5 \ln GE_{jt} + \beta_6 FV_{ijt} + \lambda_t + \varepsilon_{ijt} \end{aligned} \quad (1)$$

where  $\ln TA_{ijt}$  represents the natural logarithm of **tourist arrivals** from origin region  $i$  to destination region  $j$  in year  $t$ ;  $\ln PCGDP_{ijt}$  is the **logarithms of relative** gross domestic product per capita between the destination and origin regions, reflecting differences in income levels;  $\ln ER_{ijt}$  is the logarithm of the exchange rate-adjusted price index, indicating the relative cost of living in the destination compared to the origin;  $\ln Dist_{ij}$  is the logarithm of the great-circle distance (in kilometers) between the capital cities of the origin and destination regions, representing travel cost and accessibility;  $\ln S_{jt}$  is the logarithm of the average length of stay of tourists in destination  $j$ , capturing the depth of engagement with the destination;  $\ln GE_{jt}$  represents the logarithm of the government efficiency ratio between the destination and origin regions, measuring institutional quality and governance attractiveness;  $FV_{ijt}$  is a Dummy variable indicating the presence of visa-free access (1 if visa-free entry exists; 0 otherwise);  $\lambda_t$  captures year-fixed effects to control for time-specific global shocks and policy changes;  $\varepsilon_{ijt}$  is error term.

This model specification enables a systematic examination of the principal economic, geographic, and policy-related factors that influence international tourism demand, while also accounting for year to year variations. To assess how these determinants have shifted over time, the gravity model is estimated separately for each destination region, as well as for two distinct sub-periods.

Panel regression techniques are used, including Pooled Ordinary Least Squares regression, Fixed Effects regression, and Random Effects regression models. The Hausman specification test is applied to determine the most appropriate model for each scenario. To ensure the reliability of the estimates, potential issues such as heteroskedasticity and serial correlation are addressed within the regression framework.

#### 3.2. Vector autoregression model for multi-destination tourism dynamics

While the gravity model captures the static determinants of bilateral tourism flows, it does not account for the dynamic interactions that occur among multiple destinations. To address this limitation, a vector autoregression model is introduced, enabling the analysis of spillover effects and interdependencies within the context of multi-destination tourism.

The vector autoregression model is particularly valuable in tourism research, as it examines how changes in tourism demand in one region influence arrivals in other regions over time (Cao et al., 2017; Song et al., 2019). Unlike static regression models, this approach incorporates feedback effects, making it a robust tool for analyzing regional tourism spillovers and cross-border interconnections.

The general specification of the vector autoregression model is as follows:

$$Y_t = \alpha + \sum_{p=1}^P \beta_p Y_{t-p} + \varepsilon_t \quad (2)$$

where  $Y_t$  is a **vector of endogenous variables**, representing the number of **international tourist arrivals** in Japan, Taiwan, and Thailand at time  $t$ ;  $\alpha$  is the intercept term;  $\beta_p$  are coefficient matrices, quantifying the effect of lagged tourism arrivals on current arrivals in other destination;  $p$  is the optimal lag order, selected based on the Akaike information Criterion (AIC) or Schwarz Bayesian information Criterion (SBIC); and  $\epsilon_t$  is the error term, capturing unexplained shocks.

By estimating this model, the study explores competitive effects (whether an increase in tourist arrivals in one region leads to a decline in others due to market substitution), complementary effects (whether higher tourist arrivals in one destination positively influence neighboring regions), and the persistence of tourism demand (the extent to which past trends shape future travel patterns).

#### 4. Data specification

To more accurately capture the evolving dynamics of international tourism demand, the study period is divided into two sub-periods: from 2008 to 2014 and from 2015 to 2023. This segmentation is motivated by distinct structural changes observed in the global and regional tourism landscape. The first period encompasses the aftermath of the Global Financial Crisis, which profoundly disrupted international travel patterns and tourism flows across Japan, Taiwan, and Thailand. The second period, commencing in 2015, represents a phase of recovery and transformation, characterized by the implementation of visa facilitation measures, shifting political landscapes, and the emergence of new macroeconomic and tourism trends within the Asia-Pacific region. This division enables a systematic assessment of how the determinants of tourism demand evolved before and after a pivotal turning point in global tourism behavior.<sup>1</sup>

The forty-two origin regions included in this study were selected based on their cumulative contribution to international tourist arrivals in Japan, Taiwan, and Thailand during the study period. Specifically, these regions together account for more than 95 % of total arrivals to each destination, ensuring that the sample captures the overwhelming majority of inbound tourism flows. The selection spans regions from Northeast Asia, Southeast Asia, North America, Europe, and Oceania, thereby providing a geographically and economically diverse basis for robust empirical analysis. This approach enhances the representativeness of the findings and follows established best practices in the modeling of tourism demand.

For the vector autoregression model, this study utilizes monthly time-series data on international tourist arrivals to Japan, Taiwan, and Thailand over the same period. This dataset supports a detailed examination of short-term tourism dynamics, including spillover effects and interdependencies among the three destinations. By integrating panel regression techniques with time-series econometric analysis, the study offers a comprehensive perspective on the key factors and interrelationships that shape multi-destination tourism within the Asia-Pacific region.

Definitions and sources for all variables used in the empirical analysis are provided in [Table 1](#), and descriptive statistics for the principal variables are presented in [Table 2](#).

<sup>1</sup> While population size is often included in gravity models to account for scale effects, we have opted to use GDP per capita to better reflect the average income level and travel propensity of residents in origin countries. This choice aligns more directly with the economic capacity of individuals to undertake international travel. Including both GDP per capita and population would increase multicollinearity and reduce model parsimony. Nevertheless, we acknowledge the potential relevance of population and suggest its inclusion in future robustness checks or sensitivity analyses.

**Table 1**  
Variable definitions and data sources.

Variables	Definition	Source
TA	Annual number of international tourist arrivals to Japan, Taiwan, and Thailand from 42 origin regions (2008–2023)	JNTO (2023) TBM (2023) MTS (2023)
PCGDP	Ratio of per capita GDP of the destination region to the origin region	WDI (2023) OECD (2023)
ER	Relative price level, calculated as the ratio of CPI adjusted by exchange rate between destination and origin regions	WDI (2023)
Dist	Great-circle distance (in miles) between the capital cities of the origin and destination regions	CEPII
S	Average length of stay in the destination region (in days)	TBM (2023) MTS (2023)
GE	Ratio of government efficiency index of the destination region to that of the origin region	WGI (2023)
FV	Dummy variable for visa-free access (1 if visa exemption exists between the origin and destination regions; 0 otherwise)	BOCA (2024) MOFA (2024) Thai Embassy (2024)

Note: BOCA: Ministry of Foreign Affairs, Republic of China(Taiwan); CEPII: Centre for Prospective Studies and International Information; JNTO: Japan National Tourism Organization; MOFA: Ministry of Foreign Affairs of Japan; OECD: Organization for Economic Co-operation and Development; TBM; Tourism Bureau Ministry of Taiwan; MTS: Ministry of Tourism and Sports of Thailand; WDI: World Development Indicators; WGI: The Worldwide Governance Indicators.

**Table 2**  
Descriptive statistics.

Japan					
Variable	Observations	Mean	SD	Min	Max
LnTA	670	10.639	2.127	3.989	16.077
LnPCGDP	672	0.968	1.345	-2.041	5.625
LnER	672	4.777	0.275	4.286	5.89
LnDist	672	8.829	0.556	7.053	9.828
LnS	462	2.328	0.513	1.026	4.265
LnGE	519	0.714	1.085	-0.531	4.586
FV	672	0.714	0.452	0	1
Taiwan					
LnTA	672	9.458	2.487	1.386	15.247
LnPCGDP	672	0.572	1.566	-1.468	7.666
LnER	672	3.680	0.256	3.311	4.758
LnDist	672	8.210	0.770	6.133	9.337
LnS	672	2.415	0.58	1.364	5.786
LnGE	519	0.501	1.091	-0.790	4.311
FV	672	0.670	0.471	0	1
Thailand					
LnTA	629	12.025	1.756	3.912	16.226
LnPCGDP	672	-1.018	1.333	-4.143	3.523
LnER	672	3.554	0.164	3.283	4.321
LnDist	672	8.137	1.054	4.733	9.401
LnS	539	2.451	0.559	1.089	4.301
LnGE	519	-1.484	1.342	-4.087	3.580
FV	672	0.8333	0.373	0	1

#### 5. Results and discussions

This section presents the empirical findings obtained from both the augmented gravity model and the vector autoregression model, analyzing the determinants of international tourism demand in Japan, Taiwan, and Thailand, as well as the interdependencies and spillover effects among these destinations. The discussion is organized into four main parts: diagnostic assessment of multicollinearity, model selection and estimation, analysis of the determinants of international tourism demand, and exploration of multi-destination tourism dynamics.

5.1. Multicollinearity diagnostics

Before estimating the gravity model, a diagnostic test for multicollinearity was conducted to ensure that the explanatory variables were not excessively correlated, as high multicollinearity could distort the reliability of the regression estimates. The variance inflation factor was employed as the diagnostic measure; a value for the variance inflation factor exceeding ten, or an inverse variance inflation factor value below zero point one, is considered evidence of problematic multicollinearity (Ibragimov et al., 2022; Jhantasana, 2023). The diagnostic results, which are presented in Table 3, indicate that all variables included in the models for Japan, Taiwan, and Thailand have variance inflation factor values below ten and inverse variance inflation factor values above zero point one. These findings confirm that multicollinearity does not pose a concern for the subsequent regression analyses. Accordingly, all specified variables are retained in the empirical models.

5.2. Model selection and estimation

To ensure robust estimation of the gravity model, this study adopted a systematic, multi-step approach to determine the most suitable panel regression method for each combination of destination region and time period. The selection process involved three principal statistical tests: the F-test, the Hausman specification test, and the Mundlak approach.

The F-test was initially conducted to compare the performance of the fixed effects model and the pooled ordinary least squares model. In all cases, the F-test results favored the fixed effects model, confirming the presence of unobserved heterogeneity across pairs of origin and destination regions that could bias the results if not properly controlled.

To further differentiate between the fixed effects model and the random effects model, both the traditional Hausman specification test and the Mundlak approach were applied. The Hausman specification test is widely used to assess whether the explanatory variables are correlated with unobserved individual-specific effects; rejection of the null hypothesis indicates that the fixed effects estimator is more appropriate. The Mundlak approach enhances this assessment by explicitly incorporating the group means of the time-varying explanatory variables into the random effects specification, thereby providing a direct test for the presence of correlation between regressors and unobserved effects. If the Mundlak test rejects the null hypothesis of no correlation, the fixed effects estimator is selected; otherwise, the random effects estimator is adopted.

This rigorous model selection process ensures that the regression estimates are both robust and consistent, with the appropriate method applied for each destination region and period. The results of these diagnostic tests and the selected model for each case are presented in Table 4.

As presented in Table 4, the results of the model selection process are as follows. For Japan, the random effects model was identified as the most appropriate for both the full sample period (2008–2023) and the crisis period (2008–2014), while the fixed effects model was selected for the post-crisis period (2015–2023). In the case of Taiwan, the random effects model was applied for the full period and the post-crisis period, whereas the fixed effects model was preferred for the crisis period. For

Table 3  
Multicollinearity test.

Region	LnPCGDP	LnER	LnDist	LnS	LnGE	FV
Japan	3.16, 0.32	2.13, 0.14	1.5, 0.67	1.65, 0.61	2.75, 0.36	1.4, 0.71
Taiwan	1.85, 0.54	1.04, 0.96	1.18, 0.85	1.45, 0.69	1.66, 0.60	1.1, 0.91
Thailand	2.81, 0.36	1.65, 0.61	1.13, 0.88	1.36, 0.74	2.25, 0.44	1.21, 0.83

Note: The values in each cell represent Variance Inflation Factor (VIF) and 1/VIF, respectively.

Table 4  
Statistic tests for model selection.

Region (period)	F-Test	Hausman Test	Mundlak test	Selected Model
Japan (2008–2023)	Reject POLS, FE preferred	Accept RE	Accept RE	RE
Japan (2008–2014)	Reject POLS, FE preferred	Accept RE	Accept RE	RE
Japan (2015–2023)	Reject POLS, FE preferred	Reject RE	Reject RE	FE
Taiwan (2008–2023)	Reject POLS, FE preferred	Accept RE	Accept RE	RE
Taiwan (2008–2014)	Reject POLS, FE preferred	Reject RE	Reject RE	FE
Taiwan (2015–2023)	Reject POLS, FE preferred	Accept RE	Accept RE	RE
Thailand (2008–2023)	Reject POLS, FE preferred	Reject RE	Reject RE	FE
Thailand (2008–2014)	Reject POLS, FE preferred	Reject RE	Reject RE	FE
Thailand (2015–2023)	Reject POLS, FE preferred	Accept RE	Reject RE	RE

Note: POLS = Pooled Ordinary Least Squares; FE = Fixed Effects; RE = Random Effects.

Thailand, the fixed effects model was determined to be most suitable for both the full period and the crisis period, with the random effects model applied for the post-crisis period.

This systematic approach to model selection ensures that all coefficient estimates presented in subsequent analyses are robust to unobserved heterogeneity and potential endogeneity. By rigorously following the outcomes of these statistical tests, the study adheres to methodological best practices and supports comparability with prior research in the field of international tourism demand modeling.

5.3. Determinants of international tourism demand

The empirical analysis offers a comprehensive examination of the principal determinants of international tourism demand for Japan, Taiwan, and Thailand, considering three distinct time periods: the entire sample (2008–2023), the Global Financial Crisis period (2008–2014), and the post-crisis recovery period (2015–2023). For each destination and sub-period, the choice between fixed effects and random effects estimation follows the rigorous model selection process described in Table 4, thereby ensuring that the most appropriate econometric approach is applied. Complete coefficient estimates for all models are presented in Tables 5, 6, and 7.

Results for the entire sample period show that the relative per capita gross domestic product is a consistently strong and positive predictor of inbound tourism across all three destinations, with elasticity estimates highest for Thailand. Increases in the relative income gap between the destination and origin regions are most strongly associated with higher tourist arrivals in Thailand, while Japan and Taiwan also experience positive, albeit more moderate, effects. This pattern suggests that Thailand’s tourism sector appeals to a wide range of source markets, whereas Japan and Taiwan attract travelers from more narrowly defined economic segments.

Exchange rate fluctuations are also an important driver, with the greatest sensitivity observed for Japan. In particular, a depreciation in the Japanese yen, as captured in the empirical model, leads to significant increases in inbound arrivals, reflecting the enhanced affordability of travel. For Taiwan, exchange rate effects are positive and statistically significant but less pronounced, while the estimated effects for Thailand are negative and significant in certain specifications. This indicates that appreciation of the Thai baht can act as a constraint on inbound tourism, highlighting the complex role of currency movements in regional tourism competition.

The expected negative relationship between geographical distance

**Table 5**  
Key Determinants of international tourist arrivals in Japan, Taiwan, and Thailand (2008–2023).

Variables	Japan		Taiwan		Thailand	
	RE	FE	RE	FE	RE	FE
<i>LnPCGDP<sub>ijt</sub></i>	0.108 (0.201)	-0.632** (0.289)	0.099*** (0.025)	0.097*** (0.025)	0.328** (0.167)	0.286 (0.366)
<i>LnER<sub>ijt</sub></i>	0.995** (0.375)	0.25 (0.423)	0.566*** (0.098)	0.558*** (0.104)	-2.014** (0.671)	-2.457** (0.79)
<i>lnDist<sub>ij</sub></i>	-1.24** (0.416)	-	-1.121** (0.417)	-	0.442** (0.173)	-
<i>LnS<sub>jt</sub></i>	-2.567*** (0.089)	-2.584*** (0.088)	-2.214*** (0.059)	-2.22*** (0.059)	-1.634*** (0.133)	-1.655*** (0.12)
<i>LnGE<sub>ijt</sub></i>	-0.187** (0.076)	-0.173** (0.076)	0.083* (0.048)	0.09* (0.049)	-0.885 (0.059)	0.104* (0.061)
<i>FV<sub>ijt</sub></i>	1.126* (0.632)	-	0.919*** (0.093)	0.931*** (0.094)	0.672*** (0.166)	0.738** (0.168)
GFC	-1.065*** (0.116)	-1.178*** (0.119)	-0.597*** (0.092)	-0.591*** (0.092)	-2.179*** (0.194)	-2.236*** (0.203)
Constant	375.326*** (40.53)	375.326*** (39.793)	74.879*** (24.334)	63.457*** (24.091)	432.352*** (42.984)	437.479*** (43.304)
$\lambda_t$		Yes		Yes		Yes
R <sup>2</sup>	0.84	0.84	0.83	0.83	0.37	0.53
Hausman test		10.65 (0.154)		9.25 (0.235)		10.65 (0.154)
Mundlak test		12.11** (0.0166)		8.54 (0.128)		32.32*** (0.0000)
Observations		360		519		418

Note. RE: random effects; FE: fixed effects; POLS: pooled ordinary least squares. LnPCGDP = log ratio of per capita GDP of destination to origin; LnER = log exchange rate-adjusted price level; LnDist = log distance; LnS = log average length of stay; LnGE = log government efficiency; FV = visa-free policy dummy. \*\*\* denotes significant at 1 %; \*\* significant at 5 %; \*significant at 10 %. Numbers in the parentheses are robust standard errors. Year and country-pair fixed effects are not reported.

**Table 6**  
Impact of the GFC (2008–2014) on International Tourism Demand in Japan, Taiwan, and Thailand.

Variables	Japan		Taiwan		Thailand	
	RE	FE	RE	FE	RE	FE
<i>LnPCGDP<sub>ijt</sub></i>	-0.105 (0.217)	-0.315 (0.276)	0.045* (0.025)	-0.596*** (0.120)	0.502** (0.235)	0.741 (0.384)
<i>LnER<sub>ijt</sub></i>	2.013 (0.398)	0.016 (0.342)	0.267** (0.098)	0.118** (0.034)	-3.784** (1.50)	-2.432* (1.350)
<i>lnDist<sub>ij</sub></i>	-1.812*** (0.448)	-	-1.125** (0.411)	-	0.279 (2.16)	-
<i>LnS<sub>jt</sub></i>	-0.700*** (0.141)	-0.700*** (0.143)	-2.338*** (0.059)	-0.538*** (0.140)	2.106*** (0.216)	2.703*** (0.204)
<i>LnGE<sub>ijt</sub></i>	-0.030 (0.031)	-0.276 (0.031)	0.120** (0.050)	0.043 (0.334)	-0.086 (0.103)	-0.196 (0.094)
<i>FV<sub>ijt</sub></i>	1.945** (0.735)	-	0.970*** (0.097)	-	-1.445 (0.996)	0.604** (0.192)
Constant	-312.556*** (75.237)	-311.740*** (76.194)	-58.324*** (13.306)	-145.171*** (12.637)	319.992*** (68.187)	212.474** (64.820)
$\lambda_t$		Yes		Yes		Yes
R <sup>2</sup>	0.88	0.88	0.64	0.65	0.70	0.72
Hausman test		2.74 (0.601)		9.18** (0.018)		46.72*** (0.000)
Mundlak test		2.56 (0.6338)		26.78*** (0.0000)		73.41*** (0.0000)
Observations		95		221		186

Note. See Table 5.

and inbound tourism is strongly supported for Japan and Taiwan. Greater distances consistently reduce arrivals, in line with gravity model predictions that both physical and psychological barriers affect international travel flows. However, the effect of distance is less negative, and at times even positive, for Thailand. This finding reflects Thailand’s established role as a destination for long-haul travelers and its global positioning as an accessible market despite greater distances.

The estimated coefficients for the average length of stay are negative and highly significant for all three destinations. This suggests that Japan, Taiwan, and Thailand predominantly attract short-stay visitors, a pattern that mirrors common travel behavior in the Asia-Pacific region

and the prevailing structure of tourism products offered.

Institutional quality, as measured by the relative government efficiency index, has a positive association with tourism arrivals in Taiwan and Thailand under most specifications, while for Japan the effect is negative and only marginally significant. This divergence points to the nuanced and context-specific role that governance plays in enhancing a destination’s competitiveness and appeal.

Visa-free travel policies are found to be a consistent and significant stimulus for inbound tourism in all three countries. The results demonstrate that relaxing visa requirements is a highly effective strategy for encouraging cross-border travel, especially as regional

**Table 7**  
Effects of visa policy changes, political developments, and regional trends on tourism demand in Japan, Taiwan, and Thailand (2015–2023).

Variables	Japan		Taiwan		Thailand	
	RE	FE	RE	FE	RE	FE
$LnPCGDP_{ijt}$	0.309 (0.241)	-1.244** (0.419)	0.124*** (0.031)	0.125*** (0.031)	-0.052 (0.182)	0.342 (0.048)
$LnER_{ijt}$	0.138 (0.531)	-1.594** (0.638)	2.339** (0.687)	2.237** (0.722)	-0.087 (0.656)	0.289 (0.898)
$lnDist_{ij}$	-1.18** (0.423)	-	-0.954** (0.445)	-	0.498** (0.187)	-
$LnS_{jt}$	-2.622*** (0.101)	-2.663*** (0.099)	-2.107*** (0.800)	-2.117*** (0.082)	-2.616*** (0.808)	-2.620*** (0.835)
$LnGE_{ijt}$	-0.318** (0.117)	-0.343** (0.121)	-0.031 (0.078)	0.001 (0.081)	0.085* (0.047)	0.076* (0.043)
$FV_{ijt}$	1.054 (0.653)	-	175.981*** (32.502)	0.791*** (0.104)	0.764*** (0.104)	0.794*** (0.104)
Constant	348.777*** (46.653)	362.911*** (45.276)	175.981*** (32.502)	167.311*** (32.492)	133.201*** (34.489)	139.726*** (35.138)
$\lambda_t$		Yes		Yes		Yes
R <sup>2</sup>	0.85	0.86	0.82	0.89	0.90	0.90
Hausman test		23.55** (0.003)		6.12 (0.410)		10.16 (0.118)
Mundlak test		12.12** (0.0165)		6.99 (0.2215)		29.87*** (0.0000)
Observations		265		298		232

Note. See Table 5.

integration deepens. Analysis of the sub-periods highlights further variation in determinants over time. During the Global Financial Crisis, both income and exchange rate sensitivities are heightened, with Taiwan experiencing an atypical negative income elasticity, indicating that wealthier travelers reduced their visits, possibly in response to heightened uncertainty or risk aversion. In the post-crisis recovery period, the positive association between income and arrivals reasserts itself for Taiwan, and the effect of visa liberalization grows even more pronounced in both Taiwan and Thailand. The impacts of government efficiency and distance remain broadly consistent, although the relative strength and statistical significance of certain variables shift in response to changing macroeconomic and policy environments.

All interpretations are closely anchored in the appropriate period-specific model specifications, and each empirical insight is explicitly connected to the corresponding estimation method and time frame. This careful alignment guarantees the transparency and robustness of the analysis and provides a solid empirical foundation for subsequent sections, including the exploration of multi-destination tourism dynamics and policy implications.

**5.4. Multi-destination tourism dynamics: Finding from vector autoregression model**

To analyze the evolving interrelationships among international tourism flows in Japan, Taiwan, and Thailand, this study employs a vector autoregression (VAR) model. This approach enables the assessment of how changes in tourism demand in one destination can dynamically influence arrivals in the other two regions over time, thus capturing both feedback and spillover effects within the Asia-Pacific context.

In specifying the appropriate lag length for the vector autoregression model, several established statistical criteria were consulted, including the Akaike Information Criterion (AIC), the Hannan-Quinn Criterion (HQIC), and the Schwarz Bayesian Information Criterion (SBIC). Across all model specifications, these information criteria consistently identify a lag order of three as the optimal choice. This decision ensures that the model effectively incorporates the long-term dependencies and delayed effects that characterize multi-destination tourism flows, while also preserving statistical efficiency.

The detailed results of the vector autoregression analysis, as summarized in Table 8, provide insight into the persistence,

**Table 8**  
Selection of lag order.

Lag	AIC	HQIC	SBIC
0	99.5623	99.5355	99.6927
1	100.015	99.9081	100.537
2	100.616	100.429	101.529
3	97.6877*	97.4197*	98.9914*

Note. \*The minimum values of AIC, HQIC, and SBIC indicate the optimal lag order.

complementarity, and competition that define the interconnected tourism systems of Japan, Taiwan, and Thailand. By modeling these dynamic interactions, the study advances our understanding of regional tourism circuits and offers a foundation for subsequent impulse response and policy analyses.

**Table 10**  
Vector autoregression model results on multi-destination tourism dynamics in Japan, Taiwan, and Thailand.

Variables	Japan	Taiwan	Thailand
$Japan_{t-1}$	1.012** (0.385)	0.347*** (0.080)	1.174*** (0.270)
$Japan_{t-2}$	1.858** (0.650)	0.881*** (0.136)	2.230*** (0.457)
$Japan_{t-3}$	1.133** (0.565)	0.380** (0.118)	1.617*** (0.397)
$Taiwan_{t-1}$	2.883 (2.117)	2.875*** (0.442)	6.873*** (1.488)
$Taiwan_{t-2}$	16.937** (5.048)	5.797*** (1.053)	18.803*** (3.549)
$Taiwan_{t-3}$	9.804** (4.249)	5.484*** (0.886)	16.452*** (2.987)
$Thailand_{t-1}$	-1.907** (0.891)	-1.369*** (0.186)	-3.564*** (0.626)
$Thailand_{t-2}$	-7.310*** (2.028)	-2.701*** (0.423)	-8.466*** (1.426)
$Thailand_{t-3}$	-4.680** (1.732)	-2.380*** (0.361)	-7.301*** (1.217)
Constant	42,357.51*** (7912.522)	20,034.56*** (1650.593)	60,102.18*** (5562.659)
R <sup>2</sup>	0.81	0.94	0.92

Note. \*\*\* denotes significant at 1%; \*\* significant at 5%; \* significant at 10%. Numbers in the parentheses are robust standard errors.

The results of the VAR model, shown in Table 10, identify three key patterns in the international tourism flows among Japan, Taiwan, and Thailand: persistence, complementarity, and competition. These findings provide deeper insight into how tourist arrivals in one region affect those in others, offering valuable guidance for regional tourism strategies and market positioning.

**(1) Persistence in Tourism Demand**

The vector autoregression results reveal a strong self-reinforcing, or persistent, effect in tourism demand across all three destinations. In Japan, Taiwan, and Thailand, previous levels of international tourist arrivals are shown to exert a significant and positive influence on future demand. For example, a 1 % increase in Japan’s tourist arrivals in the preceding period (t-1) results in a 1.012 % increase in the current period, while a two-period lag (t-2) further amplifies this effect to 1.858 %. Taiwan demonstrates even stronger persistence, with a 5.797 % increase in arrivals at a two-period lag, underscoring its stability as a regional tourism hub. These findings highlight the importance of sustained branding efforts, consistent infrastructure investment, and stable tourism policies to promote long-term growth in visitor numbers.

**(2) Complementarity Between Destinations**

Beyond persistence, the analysis reveals substantial complementarity among Japan, Taiwan, and Thailand, reinforcing the concept of multi-destination travel circuits within the region. Taiwan emerges as a key connector between East and Southeast Asia. The results indicate that a 1 % increase in tourist arrivals to Taiwan at a two-period lag (t-2) is associated with a 16.937 % rise in arrivals to Japan. Moreover, increases in Taiwan’s arrivals have a pronounced effect on Thailand, where a 1 % increase in Taiwan’s arrivals at a two-period lag leads to an 18.803 % increase in arrivals to Thailand. Japan’s tourism flows also stimulate arrivals in Thailand, with a 2.230 % increase observed at a two-period

lag. These patterns suggest that travelers frequently combine multiple destinations within a single journey, highlighting the importance of coordinated regional tourism strategies, joint destination marketing, and enhanced cross-border travel infrastructure.

**(3) Competitive Dynamics in Tourism Demand**

Despite the overall complementarity, the vector autoregression model also identifies competitive dynamics, particularly involving Thailand. The analysis shows that a 1 % increase in tourist arrivals to Thailand at a one-period lag corresponds with a 1.907 % decline in Japan and a 1.369 % decrease in Taiwan, suggesting that Thailand may function as a substitute destination for certain international travelers. Notably, these competitive effects diminish over longer lags (t-2 and t-3), indicating that competition may be more acute in the short term but less significant as travelers’ itineraries and preferences evolve. This finding points to the need for strategic differentiation in tourism offerings: for instance, high-end cultural experiences in Japan, transit-oriented and flexible tourism models in Taiwan, and affordability-driven travel options in Thailand. Such differentiation can help mitigate direct competition while fostering greater opportunities for regional tourism cooperation.

**(4) Impulse Response Analysis and Strategic Implications**

To further explore the dynamic interactions that characterize multi-destination tourism in East and Southeast Asia, this study employs orthogonalized impulse response functions, as illustrated in Fig. 1. These functions show how unexpected shocks in tourism demand in one region propagate to the other destinations over time, revealing both the intensity and duration of these interconnections.

The results indicate that a sudden increase (shock) in international tourist arrivals to Thailand initially produces short-term declines in arrivals to both Japan and Taiwan. This immediate response reflects

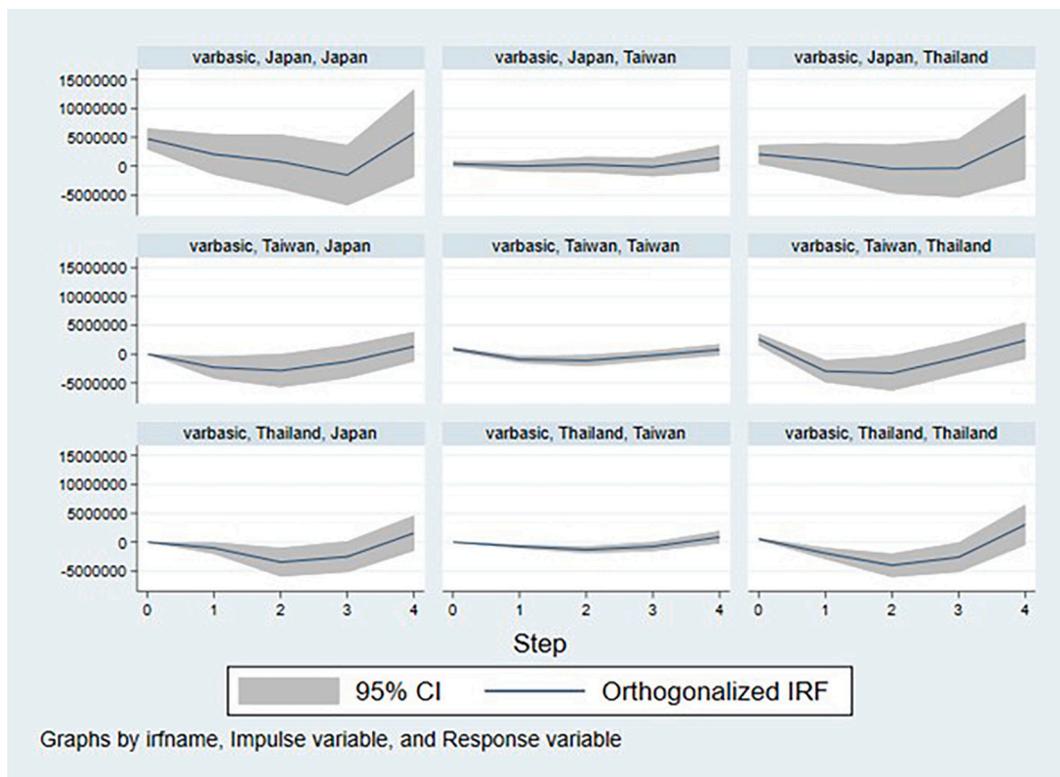


Fig. 1. Orthogonalized impulse response functions for multi-destination tourism. Note. CI: Confidence Interval.

competitive pressures, suggesting that, in the short run, Thailand may attract travelers who might otherwise have visited one of the other destinations. However, the negative effects on Japan and Taiwan dissipate over time, indicating that competitive substitution is primarily a transient phenomenon and does not persist in the long term. This temporal pattern suggests that there is scope for enhanced regional coordination and joint marketing strategies to reduce short-term rivalry and foster sustained growth in overall tourism flows.

Moreover, the analysis reveals that a positive shock to tourist arrivals in Taiwan results in a delayed but significant increase in arrivals to Thailand. This finding underscores Taiwan's vital role as a regional transit hub, facilitating onward travel and contributing to the overall expansion of multi-destination tourism circuits. It also highlights the importance of developing seamless travel connections, efficient transportation links, and collaborative regional branding to leverage the complementarities among these destinations.

### (5) The Sustainable Asia Tourism Trail: A Strategic Framework for Regional Tourism Collaboration

The Sustainable Asia Tourism Trail, illustrated in Fig. 2, presents a strategic model for leveraging the complementary advantages of Japan, Taiwan, and Thailand in advancing regional tourism development. This framework promotes cross-border tourism integration, supports eco-tourism initiatives, and aligns with sustainable tourism policies.

Within this framework, Japan serves as a high-end cultural tourism hub, attracting higher-income travelers seeking premium experiences. Taiwan functions as a gateway destination, catering to visitors from neighboring Asian regions and facilitating connectivity for multi-destination tourism. Thailand, known for its affordability and natural attractions, appeals to budget-conscious tourists and long-haul travelers. By strengthening cross-border mobility, launching joint marketing initiatives, and prioritizing sustainable tourism development, these destinations can enhance regional tourism competitiveness while ensuring long-term sustainability.

#### 5.5. Strategic implications for multi-destination tourism

The empirical findings of this study offer actionable strategic guidance for fostering collaborative and sustainable multi-destination tourism in the Asia-Pacific region. The persistence of tourism flows, demonstrated by the strong self-reinforcing effects in the vector autoregression model, underscores the need for long-term destination branding, sustained infrastructure investment, and consistent marketing to maintain international visitor demand. Policymakers should prioritize nurturing distinct tourism identities for each destination, while

maintaining flexibility to adapt to evolving traveler preferences and economic shocks.

The pronounced complementarity observed among Japan, Taiwan, and Thailand provides a compelling foundation for region-wide travel corridors, such as the proposed Sustainable Asia Tourism Trail (SATT). The SATT is conceptualized as an integrated, cross-border tourism initiative that aligns with the United Nations Sustainable Development Goals (SDGs) by promoting eco-friendly travel, shared cultural heritage, and responsible tourism practices. The VAR results demonstrate that increases in arrivals to one destination significantly boost arrivals in neighboring destinations, suggesting that multi-country itineraries are both popular and feasible. To capitalize on these spillover effects, the regions should pursue joint marketing campaigns, integrated travel packages, and coordinated festival tourism, all of which can extend visitor stays and enhance the overall appeal of the region.

Visa facilitation emerges as a critical policy lever: our gravity model results confirm that visa-free arrangements significantly increase in-bound tourism. Regional cooperation toward broader visa exemptions, such as a unified Asia-Pacific travel pass, could streamline cross-border mobility and stimulate tourism flows, especially among major source markets in Northeast and Southeast Asia. Infrastructure development also remains vital; expanding direct flight routes, high-speed rail connections, and harmonized border procedures would further reduce travel friction and support the seamless movement of multi-destination travelers.

Exchange rate dynamics, as revealed by our model estimates, exert substantial influence on international visitor flows. Policymakers should consider adaptive pricing strategies and promotional incentives, such as currency-based discounts or seasonal travel deals, to mitigate the impact of exchange rate volatility and maintain price competitiveness.

The Sustainable Asia Tourism Trail specifically leverages the distinct strengths of each destination. Japan's appeal as a high-end cultural destination, Taiwan's role as a transit and innovation hub, and Thailand's strengths in nature-based and affordable tourism can be harnessed to create diversified, low-carbon travel options. This collaborative framework can incorporate digital passes, multi-country rail tickets, eco-certification programs, and joint environmental preservation projects, providing a holistic approach to tourism development that balances growth with sustainability.

## 6. Conclusion

This study provides a comprehensive analysis of the drivers and dynamics of international tourism demand among Japan, Taiwan, and Thailand from 2008 to 2023. By employing both a gravity modeling framework and a vector autoregression analysis, the research captures

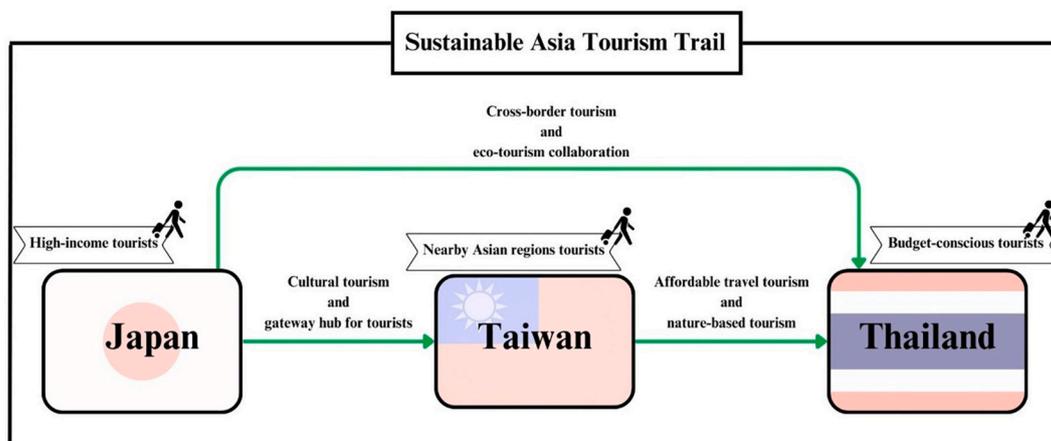


Fig. 2. The sustainable asia tourism trail – An integrated framework for regional tourism collaboration.

how economic, geographic, and policy-related factors interact to shape cross-border tourism flows within the Asia-Pacific region.

The findings highlight that relative per capita gross domestic product is the primary economic determinant of inbound tourism, with Thailand exhibiting the highest elasticity and thus appealing to a broad spectrum of international travelers. Exchange rate fluctuations are especially influential for both Japan and Thailand, indicating that favorable currency movements can substantially boost tourist arrivals by enhancing destination affordability. Geographic distance remains a significant barrier, particularly for long-haul travel to Japan and Taiwan, while the results also show that destinations with longer average visitor stays tend to have lower turnover, suggesting a predominance of short-term tourism in these markets. Government efficiency is positively associated with tourism demand in both Taiwan and Thailand, although this relationship does not hold for Japan. Visa-free entry policies emerge as a consistently significant facilitator, underlining the importance of travel facilitation measures for sustaining international arrivals.

Beyond destination-specific determinants, the analysis reveals significant regional interconnections. The vector autoregression analysis demonstrates persistent and complementary relationships among tourism flows, with Taiwan acting as a vital transit hub in multi-destination travel circuits. Notably, increases in arrivals to one destination can generate positive spillover effects for neighboring regions, highlighting the value of integrated regional tourism strategies. Nevertheless, the study also identifies the presence of short-term competition, particularly between Japan and Thailand, which underscores the need for strategic differentiation and carefully targeted policy interventions to minimize overlap in source markets.

The policy implications derived from this research are clear. Ongoing investment in infrastructure, continued expansion of visa facilitation, and the implementation of coordinated regional marketing campaigns are essential for ensuring long-term tourism growth. The proposed Sustainable Asia Tourism Trail embodies a framework for aligning regional cooperation with global sustainability objectives, promoting eco-friendly travel routes, cross-border tourism passes, and collaborative conservation initiatives that seek to balance economic gains with cultural and environmental preservation.

### 6.1. Research limitations and future research directions

While this research offers important insights, several limitations should be acknowledged. First, the empirical analysis relies on historical data from 2008 to 2023, which may not fully capture the dynamic and evolving travel patterns that characterize the post-pandemic environment. Future research should incorporate real-time data sources, such as digital mobility tracking, sentiment analysis of tourism-related content, and forecasting tools driven by artificial intelligence, to better reflect rapidly shifting demand. Second, policy interventions such as visa waivers and regional agreements are modeled as binary variables, which limits the detection of more nuanced or heterogeneous policy impacts.

Furthermore, although the vector autoregression approach successfully models dynamic relationships, it does not account for potential nonlinearities or structural breaks caused by major shocks such as pandemics or geopolitical crises. Extending the analysis to include threshold models or regime-switching methods would provide deeper insight into how tourism systems respond and adapt under extreme conditions.

Despite these limitations, this study makes a significant contribution to the literature on international and multi-destination tourism by emphasizing the importance of regional cooperation, adaptive policy-making, and sustainability-oriented development strategies. As the tourism sector in the Asia-Pacific region continues to evolve, a collaborative and forward-looking approach will be essential to ensuring resilience, competitiveness, and shared prosperity.

## CRedit authorship contribution statement

**Chanakan Thongma:** Writing – original draft, Software, Formal analysis, Data curation, Conceptualization. **Chia-Lin Chang:** Writing – review & editing, Supervision, Software, Methodology, Formal analysis, Conceptualization.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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