SOUTH-WEST UNIVERSITY "NEOFIT RILSKI"

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Dynamics of Inbound Tourism in Greece

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DYNAMICS OF INBOUND TOURISM IN GREECE
ДИНАМИКА НА ВХОДЯЩИЯ ТУРИЗЪМ В ГЪРЦИЯ

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“Dedicated to you who are reading this book with the hope that you will defend peace and never forget for a moment the beauty of this world — of which Greece is a part — its vast sky, the turquoise waters of the Aegean, the sunset of Santorini, the coolness of the verdant forest of Elatia, the smell of roasted chestnuts under the Acropolis, the aroma of freshly roasted coffee in Aristotelous Square, Thessaloniki, the laughter of children playing in the city neighborhood, the joy you feel at the village fair, the beating of the heart when you fall in love, the affection in a mother’s gaze when she embraces her baby, the faith in the blessing of the Pantokrator.”

„Αφιερωμένο σε εσένα που διαβάζεις αυτό το βιβλίο, με την ευχή να υπερασπιστείς την ειρήνη και να μην ξεχάσεις ούτε στιγμή την ομορφιά του κόσμου αυτού – κομμάτι τον οποίου είναι και η Ελλάδα - τον απέραντο ουρανό της, τα γαλαζοπράσινα νερά του Αιγαίου, το ηλιοβασίλεμα της Σαντορίνης, τη δροσιά του καταπράσινου δάσους της Ελατιάς, τη μυρωδιά του ψημένου κάστανου κάτω από την Ακρόπολη, το άρωμα του φρέσκο ψημένου καφέ στην πλατεία Αριστοτέλους, Θεσσαλονίκης, το γέλιο των παιδιών που παίζουν στις γειτονιές της πόλης, τη χαρά που νιώθεις στο πανηγύρι του χωριού, το σκίρτημα της καρδιάς όταν ερωτεύεσαι, τη στοργή στο βλέμμα της μάνας όταν αγκαλιάζει το μωρό της, την πίστη στην ευλογία του Παντοκράτορα.”

مُهْدىً إليك أنت الذي تقرأ هذا الكتاب، مع التمنّي بأن تدافع عن السلام وألّا تنسى ولو للحظة جمال هذا العالم — الذي تُعدّ اليونان جزءًا منه — في سماءه اللامتناهية، ومياه الزرقاء المخضرة في بحر إيجه، وغروب الشمس في سانتوريني، ونسيم غابة إلاتيا الخضراء اليانعة، ورائحة الكستناء المشوية تحت الأكروبوليس، وعبق القهوة الطازجة في ساحة أرسطو في سالونيك، وضحكات الأطفال الذين يلعبون في أحياء المدينة، والفرح الذي تشعر به في مهرجان القرية، وخفقة القلب حين تقع في الحب، والحنان في نظرة الأم وهي تحتضن طفلها، والإيمان ببركة الضابط الكلّ.

„Посветено на теб, който четеш тази книга, с пожеланието да защитаваш мира и да не забравяш нито за миг красотата на този свят – част от който е и Гърция – нейното безкрайно небе, синьо-зелените води на Егейско море, залеза на Санторини, прохладата на зелената гора Елатия, мириса на печени кестени под Акропола, аромата на току-що изпечено кафе на площад Аристотел в Солун, смеха на децата, които играят в квартала на града, радостта, която усещаш на фестивала на село, трепета на сърцето, когато се влюбваш, нежността в погледа на майката, когато прегръща детето си, и вярата в благословията на Всемогъщия.“

TABLE OF CONTENTS

LIST OF TABLES 2

LIST OF FIGURES.. 7

INTRODUCTION.. 13

CHAPTER 1. THEORETICAL FOUNDATIONS OF INBOUND TOURISM.. 17

1.1. Concept, typology and determinants of inbound tourism 17

1.2. Theoretical approaches to tourism 25

1.3. Models and approaches to tourism demand forecasting............... 31

CHAPTER 2. RESEARCH FRAMEWORK AND METHODOLOGY 46

2.1. Research design.. 46

2.2. Time series forecasting framework and the Box-Jenkins method.47

2.3. Data collection and preparation... 64

CHAPTER 3. EMPIRICAL ANALYSIS, RESULTS AND DISCUSSION. 69

3.1. Exploratory analysis of tourism data... 69

3.2. Time series modelling and forecasting... 98

3.3. Discussion 200

Conclusion..206

BIBLIOGRAPHIC REFERENCES 210

LIST OF TABLES

Table 1. Example of model specifications for a model applied to the "Average Expenditure per Night" series (in €), as generated in SPSS 59
Table 2. Results of Augmented Dickey–Fuller (ADF) unit root test............ 67
Table 3. Inbound tourism total arrivals for the period 2010-2024 74
Table 4. Inbound tourism total nights spent for the period 2010-2024 80
Table 5. Inbound tourism total expenditure for the period 2010-2024 85
Table 6. Inbound tourism average per capita expenditure for the period 2010-2024 91
Table 7. Inbound tourism average per night expenditure for the period 2010-2024 96
Table 8. Example of model statistics chart, as generated in SPSS 101
Table 9. Example of ARIMA model parameters chart, as generated in SPSS 101
Table 10. Example of a model's forecast chart, as generated in SPSS........ 102
Table 11. Example of a model fit chart to assess its performance, as generated in SPSS 103
Table 12. Inbound tourism total arrivals forecasting results 104
Table 13. Forecasted total inbound tourism arrivals for Austria 105
Table 14. Forecasted total inbound tourism arrivals for Belgium 106
Table 15. Forecasted total inbound tourism arrivals for France 107
Table 16. Forecasted total inbound tourism arrivals for Spain.................... 108
Table 17. Forecasted total inbound tourism arrivals for Cyprus 109
Table 18. Forecasted total inbound tourism arrivals for the Netherlands.....110
Table 19. Forecasted total inbound tourism arrivals for the UK 111

Table 20. Forecasted total inbound tourism arrivals for the Czech Republic. 112
Table 21. Forecasted total inbound tourism arrivals for Switzerland...........113
Table 22. Forecasted total inbound tourism arrivals for Albania 114
Table 23. Forecasted total inbound tourism arrivals for Canada..................115
Table 24. Forecasted total inbound tourism arrivals for Russia 116
Table 25. Inbound tourism total nights spent forecasting results 119
Table 26. Forecasted total inbound tourism nights for Austria 120
Table 27. Forecasted total inbound tourism nights for France 121
Table 28. Forecasted total inbound tourism nights for Germany 122
Table 29. Forecasted total inbound tourism nights for Spain...................... 123
Table 30. Forecasted total inbound tourism nights for Cyprus 123
Table 31. Forecasted total inbound tourism nights for the Netherlands 124
Table 32. Forecasted total inbound tourism nights for the group "Other Eurozone countries". 125
Table 33. Forecasted total inbound tourism nights for the UK 127
Table 34. Forecasted total inbound tourism nights for Romania................. 128
Table 35. Forecasted total inbound tourism nights for the Czech Republic. 129
Table 36. Forecasted total inbound tourism nights for Albania................... 130
Table 37. Forecasted total inbound tourism nights for Switzerland. 131
Table 38. Forecasted total inbound tourism nights for the group "Other European countries outside the Eurozone".. 132
Table 39. Forecasted total inbound tourism nights for Canada 133
Table 40. Forecasted total inbound tourism nights for Russia 134
Table 41. Forecasted total inbound tourism nights for the group "Other non-European countries". 135
Table 42. Inbound tourism total expenditure forecasting results................. 137

Table 43. Forecasted total inbound tourism expenditure for Austria 138
Table 44. Forecasted total inbound tourism expenditure for Belgium 139
Table 45. Forecasted total inbound tourism expenditure for France 140
Table 46. Forecasted total inbound tourism expenditure for Spain............. 141
Table 47. Forecasted total inbound tourism expenditure for Cyprus 141
Table 48. Forecasted total inbound tourism expenditure for the group "Other Eurozone countries". 142
Table 49. Forecasted total inbound tourism expenditure for Denmark. 143
Table 50. Forecasted total inbound tourism expenditure for Romania 144
Table 51. Forecasted total inbound tourism expenditure for the Czech Republic 145
Table 52. Forecasted total inbound tourism expenditure for Albania 146
Table 53. Forecasted total inbound tourism expenditure for Switzerland. .. 147
Table 54. Forecasted total inbound tourism expenditure for the UK 148
Table 55. Forecasted total inbound tourism expenditure for the group "Other European countries outside the Eurozone"... 149
Table 56. Forecasted total inbound tourism expenditure for Russia 150
Table 57. Forecasted total inbound tourism expenditure for the group "Other non-European countries". 151
Table 58. Inbound tourism per capita expenditure forecasting results 154
Table 59. Forecasted inbound tourism per capita expenditure for Austria .. 155
Table 60. Forecasted inbound tourism per capita expenditure for Belgium. 156
Table 61. Forecasted inbound tourism per capita expenditure for France .. 157
Table 62. Forecasted inbound tourism per capita expenditure for Germany. 158
Table 63. Forecasted inbound tourism per capita expenditure for Spain 158
Table 64. Forecasted inbound tourism per capita expenditure for Italy 159

Table 65. Forecasted inbound tourism per capita expenditure for the Netherlands.. 160
Table 66. Forecasted inbound tourism per capita expenditure for the group "Other Eurozone countries". 161
Table 67. Forecasted inbound tourism per capita expenditure for Denmark. 163
Table 68. Forecasted inbound tourism per capita expenditure for Romania. 163
Table 69. Forecasted inbound tourism per capita expenditure for Sweden. 165
Table 70. Forecasted inbound tourism per capita expenditure for the Czech Republic 166
Table 71. Forecasted inbound tourism per capita expenditure for the group "Other European countries outside the Eurozone"..................................... 167
Table 72. Forecasted inbound tourism per capita expenditure for Albania. 168
Table 73. Forecasted inbound tourism per capita expenditure for Switzerland. 169
Table 74. Forecasted inbound tourism per capita expenditure for the UK.. 170
Table 75. Forecasted inbound tourism per capita expenditure for the USA. 171
Table 76. Forecasted inbound tourism per capita expenditure for Canada. 172
Table 77. Forecasted inbound tourism per capita expenditure for Russia... 173
Table 78. Forecasted inbound tourism per capita expenditure for the group "Other non-European countries". 173
Table 79. Inbound tourism per night expenditure forecasting results 177
Table 80. Forecasted inbound tourism per night expenditure for Austria ... 177
Table 81. Forecasted inbound tourism per night expenditure for Belgium. 178
Table 82. Forecasted inbound tourism per night expenditure for France.... 179

Table 83. Forecasted inbound tourism per night expenditure for Germany. 180
Table 84. Forecasted inbound tourism per night expenditure for Spain...... 181
Table 85. Forecasted inbound tourism per night expenditure for Italy 182
Table 86. Forecasted inbound tourism per night expenditure for Cyprus ... 183
Table 87. Forecasted inbound tourism per night expenditure for the Netherlands.. 184
Table 88. Forecasted inbound tourism per night expenditure for the group “Other Eurozone countries”. 185
Table 89. Forecasted inbound tourism per night expenditure for Denmark. 187
Table 90. Forecasted inbound tourism per night expenditure for Switzerland. 188
Table 91. Forecasted inbound tourism per night expenditure for Romania.188
Table 92. Forecasted inbound tourism per night expenditure for Sweden 189
Table 93. Forecasted inbound tourism per night expenditure for the Czech Republic 190
Table 94. Forecasted inbound tourism per night expenditure for the United Kingdom... 191
Table 95. Forecasted inbound tourism per night expenditure for the group “Other European countries outside the Eurozone”..................................... 192
Table 96. Forecasted inbound tourism per night expenditure for Australia. 194
Table 97. Forecasted inbound tourism per night expenditure for the USA. 195
Table 98. Forecasted inbound tourism per night expenditure for Canada 196
Table 99. Forecasted inbound tourism per night expenditure for Russia 197
Table 100. Forecasted inbound tourism per night expenditure for the group “Other non-European countries”. 197

LIST OF FIGURES

Figure 1. Example of an Autocorrelation Function (ACF) graph 53
Figure 2. Example of a Partial Autocorrelation Function (PACF) graph 54
Figure 3. Example of model fit statistics chart as generated in SPSS 60
Figure 4. Total arrivals from Eurozone countries for the period 2010-2024.70
Figure 5. Total arrivals from EU countries outside the Eurozone for the period 2010-2024 71
Figure 6. Total arrivals from non-European countries for the period 2010-2024 72
Figure 7. Total nights spent from Eurozone countries for the period 2010-2024 75
Figure 8. Total nights spent from EU countries outside the Eurozone for the period 2010-2024 77
Figure 9. Total nights spent from non-European countries for the period 2010-2024... 78
Figure 10. Total expenditure from Eurozone countries for the period 2010-2024... 81
Figure 11. Total expenditure from EU countries outside the Eurozone for the period 2010-2024 82
Figure 12. Total expenditure from non-European countries for the period 2010-2024. 83
Figure 13. Average per capita expenditure from Eurozone countries for the period 2010-2024 87
Figure 14. Average per capita expenditure from EU countries outside the Eurozone for the period 2010-2024. 88
Figure 15. Average per capita expenditure from non-European countries for the period 2010-2024 89

Figure 16. Average per night expenditure from Eurozone countries for the period 2010-2024 92
Figure 17. Average per capita expenditure from EU countries outside the Eurozone for the period 2010-2024. 93
Figure 18. Average per capita expenditure from non-European countries for the period 2010-2024. 94
Figure 19. Model identification using SPSS Time Series Modeler 100
Figure 20. Example of a model's series chart, as generated in SPSS.......... 102
Figure 21. Forecast of inbound tourism total arrivals for Austria 105
Figure 22. Forecast of inbound tourism total arrivals for Belgium 106
Figure 23. Forecast of inbound tourism total arrivals for France................ 107
Figure 24. Forecast of inbound tourism total arrivals for Spain 108
Figure 25. Forecast of inbound tourism total arrivals for Spain 109
Figure 26. Forecast of inbound tourism total arrivals for the Netherlands. 110
Figure 27. Forecast of inbound tourism total arrivals for the UK................112
Figure 28. Forecast of inbound tourism total arrivals for the Czech Republic. 113
Figure 29. Forecast of inbound tourism total arrivals for Switzerland.........114
Figure 30. Forecast of inbound tourism total arrivals for Albania 115
Figure 31. Forecast of inbound tourism total arrivals for Canada................116
Figure 32. Forecast of inbound tourism total arrivals for Russia 117
Figure 33. Forecast of inbound tourism total nights for Austria 120
Figure 34. Forecast of inbound tourism total nights for France 121
Figure 35. Forecast of inbound tourism total nights for Germany 122
Figure 36. Forecast of inbound tourism total nights for Spain.................... 123
Figure 37. Forecast of inbound tourism total nights for Cyprus 124
Figure 38. Forecast of inbound tourism total nights for the Netherlands.... 125

Figure 39. Forecast of inbound tourism total nights for the group "Other Eurozone countries". 126
Figure 40. Forecast of inbound tourism total nights for the UK 127
Figure 41. Forecast of inbound tourism total nights for Romania 128
Figure 42. Forecast of inbound tourism total nights for the Czech Republic. 129
Figure 43. Forecast of inbound tourism total nights for Albania 130
Figure 44. Forecast of inbound tourism total nights for Switzerland. 131
Figure 45. Forecast of inbound tourism total nights for the group "Other European countries outside the Eurozone"... 132
Figure 46. Forecast of inbound tourism total nights for Canada................. 133
Figure 47. Forecast of inbound tourism total nights for Russia 134
Figure 48. Forecast of inbound tourism total nights for the group "Other non-European countries". 135
Figure 49. Forecast of inbound tourism total expenditure for Austria 138
Figure 50. Forecast of inbound tourism total expenditure for Belgium...... 139
Figure 51. Forecast of inbound tourism total expenditure for France......... 140
Figure 52. Forecast of inbound tourism total expenditure for Spain........... 141
Figure 53. Forecast of inbound tourism total expenditure for Cyprus 142
Figure 54. Forecast of inbound tourism total expenditure for the group "Other Eurozone countries". 143
Figure 55. Forecast of inbound tourism total expenditure for Denmark..... 144
Figure 56. Forecast of inbound tourism total expenditure for Romania 145
Figure 57. Forecast of inbound tourism total expenditure for the Czech Republic 146
Figure 58. Forecast of inbound tourism total expenditure for Albania 147
Figure 59. Forecast of inbound tourism total expenditure for Switzerland. 148
Figure 60. Forecast of inbound tourism total expenditure for the UK 149

Figure 61. Forecast of inbound tourism total expenditure for the group "Other European countries outside the Eurozone".. 150
Figure 62. Forecast of inbound tourism total expenditure for Russia 151
Figure 63. Forecast of inbound tourism total expenditure for the group "Other non-European countries"... 152
Figure 64. Forecast of inbound tourism per capita expenditure for Austria. 155
Figure 65. Forecast of inbound tourism per capita expenditure for Belgium. 156
Figure 66. Forecast of inbound tourism per capita expenditure for France.157
Figure 67. Forecast of inbound tourism per capita expenditure for Germany. 158
Figure 68. Forecast of inbound tourism per capita expenditure for Spain .. 159
Figure 69. Forecast of inbound tourism per capita expenditure for Italy.... 160
Figure 70.Forecast of inbound tourism per capita expenditure for the Netherlands.. 161
Figure 71. Forecast of inbound tourism per capita expenditure for the group "Other Eurozone countries". 162
Figure 72. Forecast of inbound tourism per capita expenditure for Denmark. 163
Figure 73. Forecast of inbound tourism per capita expenditure for Romania. 164
Figure 74. Forecast of inbound tourism per capita expenditure for Sweden. 165
Figure 75. Forecast of inbound tourism per capita expenditure for the Czech Republic 166
Figure 76. Forecast of inbound tourism per capita expenditure for the group "Other European countries outside the Eurozone"..................................... 167

Figure 77. Forecast of inbound tourism per capita expenditure for Albania. 168
Figure 78. Forecast of inbound tourism per capita expenditure for Switzerland. 169
Figure 79. Forecast of inbound tourism per capita expenditure for the United Kingdom........ 170
Figure 80. Forecast of inbound tourism per capita expenditure for the USA. 171
Figure 81. Forecast of inbound tourism per capita expenditure for Canada. 172
Figure 82. Forecast of inbound tourism per capita expenditure for Russia. 173
Figure 83. Forecast of inbound tourism per capita expenditure for the group "Other non-European countries". 174
Figure 84. Forecast of inbound tourism per night expenditure for Austria. 178
Figure 85. Forecast of inbound tourism per night expenditure for Belgium. 179
Figure 86. Forecast of inbound tourism per night expenditure for France.. 180
Figure 87. Forecast of inbound tourism per night expenditure for Germany. 181
Figure 88. Forecast of inbound tourism per night expenditure for Spain 182
Figure 89. Forecast of inbound tourism per night expenditure for Italy 183
Figure 90. Forecast of inbound tourism per night expenditure for Cyprus. 184
Figure 91. Forecast of inbound tourism per night expenditure for the Netherlands........ 185
Figure 92. Forecast of inbound tourism per night expenditure for the group "Other Eurozone countries". 186
Figure 93. Forecast of inbound tourism per night expenditure for Denmark. 187

Figure 94. Forecast of inbound tourism per night expenditure for Switzerland. 188
Figure 95. Forecast of inbound tourism per night expenditure for Romania. 189
Figure 96. Forecast of inbound tourism per night expenditure for Sweden. 190
Figure 97. Forecast of inbound tourism per night expenditure for the Czech Republic 191
Figure 98. Forecast of inbound tourism per night expenditure for the United Kingdom... 192
Figure 99. Forecast of inbound tourism per night expenditure for the group "Other European countries outside the Eurozone"..................................... 193
Figure 100. Forecast of inbound tourism per night expenditure for Australia. 194
Figure 101. Forecast of inbound tourism per night expenditure for the USA. 195
Figure 102. Forecast of inbound tourism per night expenditure for Canada. 196
Figure 103. Forecast of inbound tourism per night expenditure for Russia. 197
Figure 104. Forecast of inbound tourism per night expenditure for the group "Other non-European countries". 198

INTRODUCTION

In the modern age of mobility and service economy, tourism statistics have developed as a vital component to understand, manage, and predict tourist activity. Like business statistics, systematic collection, analysis, and interpretation of tourism facts facilitate intelligent decision-making, policy making, strategic planning, and long-term sustainable management (Berenson, Levine, Szabat & Krehbiel, 2020; Snee, 2015). Not with standing that tourism has been for decades ago identified as a driving sector underpinning economy, systematic study of it through the use of hard statistical methods has trailed behind other sectors more often. Therefore, it seems imperative to fill the gap between theoretical statistical potential and existing application of tourism in order to underpin sector competitiveness and resilience (Song & Li, 2008).

Internationally, tourist arrivals in Greece have increased exponentially over the past twenty years, with arrivals reaching record numbers and receipts. After the low point during the pandemic year 2020, when arrivals had dropped to 7.4 million, the country has experienced a consistent recovery in subsequent years. By 2022, 27.8 million foreign visitors had arrived, which further rose to 32.7 million in 2023. In 2024, inbound tourism also broke a new record with 40.7 million tourists generating tourism revenue of €21.6 billion, 14.7% higher than in 2019 and 9.8% higher than in 2023. Overnight stays (excluding cruises) also reached an all-time high of 227.9 million in 2023, which was a rise of 5.1% from 2022 (INSETE, 2025). Strong demand from the markets of Europe and growing interest among developing economies such as India and China have consolidated Greece's position as one of the top five destinations in Europe (Hellenic Ministry of Tourism, 2025).

Greece, with its rich culture, varied landscape, and extensive coastline, is one of the world's favorite holiday destinations. The sector began to develop on a massive scale in the 1960s and has since become one of the cornerstones of the Greek economy. Charter flights, package vacations, and the emergence of travel deregulation made mass tourism a reality in the second half of the 20th century, and Greece became an old and very competitive tourist destination (Mitropoulou, 2025).

Tourism is also a major contributor to Greece's Gross Domestic Product (GDP) to the tune of directly about 10-15% of it coming in and a further 25-30% contributing indirectly to other related sectors (UNWTO; Bank of Greece). It has over 30 million tourists per annum and an annual revenue of between €15–20 billion. In addition to macroeconomic impacts, tourism also promotes local development, particularly of island and peripheral areas, through stimulating local economies, promoting investment in infrastructure, and generating employment.

Tourism in Greece is both macro and micro significant. Macro-wise, it influences GDP, trade balance, employment, consumption, and investment, while region-wise, it supports regional economies and averts depopulation. Its activities generate direct employment in transportation, food and beverage, and accommodation, and indirect employment in related services and value chains. Tourism further generates fiscal revenues in the form of value-added taxes, income taxes, and accommodation charges (Mitropoulou, 2025).

Tourism is a multi-disciplinary activity that crosses economic, social, cultural, and environmental domains. (Gee, Choy & Makens, 1997). Social and culturally, tourism promotes cross-cultural learning and knowledge transfer. Tourists carry economic buying power and values and traditions along with them, which have the capability to redefine local tradition as well as enhance intercultural understanding. Being an economically and culturally dual-purpose activity, tourism thus proves to be a strategic sustainable development and social integration instrument (Sotiriadis & Varvaressos, 2015).

As crucial as it is to the country's economy, the Greek tourism sector is inherently problematic and challenging, as it is characterized by high seasonality, geographical specialization of activity, environmental deterioration, and ongoing upgrading of service quality requirements. The COVID-19 pandemic left the sector at the mercy of external shocks, with catastrophic consequences to employment, investment, and local well-being (Sigala, 2020). According to Todorov, Angelova and Aleksandrov the COVID-19 pandemic was one of the black swan events having a massive impact on the economies of the European Union member states. However, the pandemic accelerated digitalization and sustainable tourism development more rapidly, and new policy measures and new business models emerged (Deirmentzoglou, Anastasopoulou & Vlassi, 2025).

Investment needs continue to be keen, driven by domestic and overseas capital for resort and hotel infrastructure, city plans, and urban development initiatives. There needs to be balancing of development with sustainability on the social and environmental fronts. Encouragement for solving issues such as overtourism, destination diversification, and human capital development is central to long-term building resilience (Sotiriadis & Varvaressos, 2015).

Tourism is reportedly an indeterminate industry in the sense that it depends on many dynamic factors including economic performance, geopolitical stability, weather patterns, and public health. Forecasting, however, is a much-needed component of tourism planning which enables decision-makers to be offered a very useful set of demand forecast, best provision of facilities, and best marketing and investment policy. Arrivals, tourist receipts, accommodation demand, and expenditure pattern are forecasted by models, yielding private-sector planning and government policy.

Here, the advanced time series models like the Autoregressive Integrated Moving Average (ARIMA) can help scholars, researchers, and policy makers understand complex patterns of tourist figures and help in managing shocks or form breaks (Chatfield, 2000). Form specifications and dummy variables, as witnessed in the COVID-19 pandemic, can enhance the forecasting power and can be utilized for strategic purposes. Most importantly, the use of forecasting tourism movement enhances competitiveness, sustainability, and information-based decision-making in the tourism sector (Witt & Witt, 1995).

With the importance of the tourism sector to Greece and the application of forecasting tourism data, this research applies advanced statistical methods to forecast the inbound tourism demand and expenditures of Greece for 22 source countries, using annual data from 2010 to 2024. With the theoretical framework of tourism statistics and time series forecasting, this research applies key performance indicators incorporating structural shocks such as the COVID-19 pandemic using dummy variables. This research applies the current context of record-breaking tourist arrivals and expenditures in 2024, reflecting Greece's successful recovery from the pandemic and the gradual diversification of source countries (Bozhkova, 2022).

Shortly before the publication of this monograph, an additional exogenous factor emerged – the war in Iran, which began in February 2026 and like other external events, can seriously affect tourism dynamics and change the global tourism conjuncture.

CHAPTER 1. THEORETICAL FOUNDATIONS OF INBOUND TOURISM

1.1. Concept, typology and determinants of inbound tourism

Inbound tourism is a crucial element of international tourist flows and a significant factor in the economic development of countries that attract tourists. The World Tourism Organization of the United Nations (UNWTO) describes inbound tourism as the activities of non-resident tourists who travel to a country outside their usual environment for less than one year and not for employment purposes in the country (UNWTO, 2008). The transnational nature of the movement, the transient nature of the stay, and the non-remunerative aim of travel are the three main components that this description highlights.

Analytical distinctions between domestic and outbound travel and inbound travel are necessary. Inbound tourism captures the external demand for a destination's tourist goods and services-tourists come from abroad to visit a destination in a country, whereas outbound tourism refers to citizens of a country visiting another country and domestic tourism entails residents traveling within their own nation. Inbound tourism is especially significant from a macroeconomic standpoint, since it is an export of services that generates foreign exchange revenues and improves the balance of payments (Fletcher *et al*., 2018).

A number of distinctive characteristics set inbound tourism apart from other types of travel. First, it is extremely susceptible to external economic factors, including international price competitiveness, currency rate volatility, and income levels in the nations of origin (Song & Li, 2008). Second, non-economic factors such as political stability, perceptions of safety, cultural appeal, and destination image affect demand for inbound tourism (Echtner &

Ritchie, 2003). Due to these factors, inbound travel is intrinsically unstable and prone to abrupt shifts over time. According to Kirov (2019) the future challenges of destinations will be oriented on how to provide a heterogeneous product when tourism becomes more homogeneous.

The multifaceted effects of inbound tourism on host economies are another distinctive feature. Inbound tourism has an impact on infrastructural development, regional expansion, and cross-cultural exchange in addition to direct economic consequences like job creation and income production (Sharpley, 2006). However, it may also result in negative externalities, such as social conflicts, seasonal overpopulation, and environmental pressure, especially in places with a large concentration of tourists.

Statistically speaking, measures like foreign visitor arrivals, overnight stays, tourism receipts, and average duration of stay are commonly used to quantify inbound tourism. These metrics offer complementary information about the amount and economic importance of incoming tourism flows (OECD, 2020).

According to worldwide statistics standards, one of the most popular categories of inbound tourism is based on the reason for the visit (UNWTO, 2008). Visiting friends and family (VFR), business travel, pleasure travel, and other particular uses are the primary categories.

The most common type of inbound travel worldwide is leisure and vacation travel. It includes travel driven by leisure, entertainment, cultural discovery, and relaxation. This category is especially important for places like Mediterranean countries that have historical, cultural, or ecological attractions (Buhalis & Costa, 2006).

Travel for professional events, conferences, exhibits, and meetings is referred to as business tourism. Business travelers often generate higher per-capita expenditure and help to reduce seasonality in inbound tourism flows, even though they frequently make up a lower portion of total arrivals (Davidson & Cope, 2003).

Tourism research is paying more and more attention to visiting friends and relatives (VFR) travel. This type of inbound travel is more resilient during economic downturns and is closely associated with migration patterns and diaspora populations (Backer, 2007).

Education, health and medical tourism, religious tourism, and transit travel are additional reasons for visiting. Due to changes in the population, improvements in technology, and greater mobility, these specialized types of inbound tourism have grown in recent years.

Additionally, inbound tourism can be categorized according to the length of stay, differentiating between tourists who remain for at least one night and same-day visits (excursionists). Because overnight visitors usually have far greater economic benefits than excursionists, this distinction is important for statistical study (UNWTO, 2008).

Another significant typology is connected with travel organization and divides into individual travel and package tourism. Package tourism is characterized by pre-arranged travel elements, such as accommodation and transportation, which are sometimes provided by tour operators. On the other hand, independent travelers organize their trip by themselves, and this trend has become more popular with the development of digital technology and the internet booking system (Buhalis & Law, 2008).

Spatial patterns, such as coastal, urban, rural, or island tourism, can be used to further subdivide inbound tourism. As they affect the development of infrastructure, investment policies, and results of regional development, spatial patterns are of great importance for countries with different geographical features (Williams & Baláž, 2015).

An essential theoretical basis for empirical analysis is thus guaranteed through the conceptual and typological classification of inbound tourism. It becomes possible to evaluate statistical information more accurately and to determine structural changes in tourist demand by differentiating between various types, purposes, and patterns of inbound tourism. Furthermore, typological analysis improves the explanatory power of econometric and statistical approaches used in tourist research and enables a more accurate modeling of tourism phenomena (Song, Witt & Li, 2010).

With respect to the factors influencing inbound tourism, one of the most important **elements influencing the volume of inbound tourism** is the **economy**. As tourism is viewed as discretionary expenditure, the demand for tourism is extremely responsive to changes in income, prices, and exchange rates (Song & Li, 2008). The demand for outbound tourism is affected by the level of income in the countries of origin of tourists. People tend to spend more on leisure activities like international tourism as their disposable income increases. Tourism is a normal good because empirical evidence has shown a positive relationship between income increases and demand (Lim, 1997; Song et al., 2010).

Furthermore, consumer confidence is boosted by economic development, which further stimulates tourism. However, due to the reduction in non-essential spending by households during economic downturns, the amount of inbound tourism decreases. The global financial crisis of 2008 and the economic depression caused by the COVID-19 pandemic in 2020 and 2021 showed the sensitivity of tourism demand to macroeconomic shocks (Sigala, 2020; UNWTO, 2021).

Exchange rates have a major impact on tourism competitiveness since they measure the cost differential that foreign tourists have to pay. A fall in the destination country's currency makes goods and services cheaper for foreign tourists, increasing the demand for inbound tourism (Crouch, 1994). However, a rise in the value of the currency increases travel costs and may discourage people from visiting some destinations.

Destination selection is further influenced by **relative costs,** which include lodging, transportation, meals, and taxes associated with tourism. Modern types of tourism developing in non-urban environments are one of the relatively reliable tools for achieving regional economic growth (Statev V., 2021). Travelers frequently switch between locations with comparable attractions when comparing trips based on perceived value for money (Dwyer & Forsyth, 2006).

The cost of transportation, especially airfares, accounts for a sizable amount of the overall amount spent on trip. Travel expenses may rise due to inflation and rising gasoline prices, which would reduce demand. If destination country inflation is higher than that of rival destinations, it also reduces price competitiveness (Lim, 1997).

Travel behavior is influenced by **sociodemographic traits** through restrictions, motives, and preferences. Over time, shifts in lifestyles, education, and demographic composition have altered travel patterns worldwide.. Because older people frequently have more free time and reliable sources of income, such as pensions, the demand for leisure travel has increased in many industrialized economies due to population aging (Patterson, 2006). Older tourists tend to favor destinations that are easily accessible, secure, have medical facilities, and provide cultural experiences. The travel behavior of the younger generation, such as millennials and

Generation Z, is marked by distinctive trends that include budget travel, shorter stays, and experience tourism (UNWTO, 2018). The nature of travel destinations and tourism products that appeal to foreign visitors is influenced by demographic changes. Growing interest in cultural sharing and global mobility is linked to growing **levels of education** (Richards, 2018). Tourists with higher levels of education are more likely to pursue cultural, historical, and natural experiences, which can be beneficial for destinations with diverse cultural resources. Travel behavior is also shaped by **social values** and **cultural norms**. Although traveling abroad is primarily considered a recreational or educational pursuit in some cultures, it is associated with social status in other cultures. Travel frequency, group size, and destination choice are all affected by these cultural differences. Urbanization encourages travel lifestyle behavior, enhances connectivity to transportation nodes, and enhances familiarity with global cultures, all of which contribute to the growth of tourism. Urban residents are more likely to travel abroad because they have better access to travel information and tourism services (Sharpley, 2006).

Tourism movements are influenced by **political** and **institutional factors**, which affect accessibility, safety, and attractiveness. Among the largest institutional barriers to tourism is the requirement for a visa. Inbound tourism is facilitated by simplified visa requirements, visa waivers, and e-visas, which reduce travel costs and risks (Neumayer, 2010). Conversely, strict visa requirements discourage potential visitors and reduce competitiveness. Political stability is required for the development of tourism.. Travelers are more likely to visit places with stable governments, efficient institutions, and minimal levels of corruption (Saha & Yap, 2014). Uncertainty is caused by political upheaval, demonstrations, or sudden policy changes, which harm a destination's reputation. Through bilateral agreements, air service treaties, and cultural exchange initiatives, diplomatic connections between nations have an impact on tourism. For example, open skies agreements increase inbound travel flows by improving airline connectivity and lowering rates (Forsyth, 2006). Long-term tourism planning, infrastructure investment, and environmental protection are all made possible by effective governance, and they all contribute to the expansion of sustainable tourism.

The ease of entry and navigation for tourists is determined by the quality of the **infrastructure.** Both tourist happiness and destination competitiveness are directly impacted. The most common way to travel internationally is by air. Inbound tourism flows are greatly increased by well-connected airports, frequent flights, and affordable airfares (Graham & Shaw, 2008). Particularly for long-haul markets, destinations with poor air connectivity have structural disadvantages. Roads, railroads, and public transportation systems are examples of ground transportation infrastructure that promotes intra-destination movement and encourages travelers to visit several locations. Important factors influencing tourism demand include lodging capacity, the caliber of attractions, hospitality services, and auxiliary facilities including dining options and entertainment venues. According to Cooper *et al*. (2008), destinations that provide a wide range of services can accommodate various market segments and increase the duration of visitors' stays. Digital services, mobile connectivity, and dependable internet access are now crucial parts of the infrastructure for tourism. Digital readiness is a crucial component of competitiveness since travelers are depending more and more on digital resources for booking, navigation, and information sharing (Buhalis & Law, 2008).

Travelers are extremely aware of the hazards associated with their **health**, **safety**, and **geopolitical instability.** Because they increase perceived danger, high crime rates, terrorism, and social upheaval have a detrimental impact on tourism demand (Pizam & Mansfeld, 2006). Due to widespread media coverage and travel advisories, even isolated occurrences might cause significant drops in visitor numbers. Pandemics and other health emergencies have a significant impact on incoming travel. Due of border closures and health concerns, the COVID-19 pandemic caused previously unheard-of drops in international tourism (UNWTO, 2021). Safe tourism is essential for tourism stakeholders (Kirov, 2022). Tourism flows are disrupted by wars, sanctions, and regional crises because they hinder accessibility and increase uncertainty. Even if they are not directly participating, destinations close to conflict zones frequently see spillover effects (Hall, 2010).

The supply, demand, and destination management of tourism have all changed as a result of **technological developments.** The market is now more transparent and competitive due to online travel agents, booking sites, and metasearch engines. These sites enable destinations to reach a global audience and influence travel decisions through pricing, ratings, and availability (Xiang, Magnini, & Fesenmaier, 2015). Travel inspiration and location perception are greatly influenced by social media and user-generated content. Travel blogs, internet reviews, and influencers can quickly change people's opinions and increase demand for travel (Yoo *et al*., 2008). New technologies like virtual reality, big data analytics, and artificial intelligence improve destination management and customize visitor experiences. Long-term tourism growth is supported by smart tourism initiatives that increase visitor enjoyment, sustainability, and efficiency (Buhalis & Amaranggana, 2014).

A complex interplay of economic, social, political, infrastructure, safety-related, and technical elements determines inbound tourism flows. Sociodemographic factors affect travel preferences, whereas economic factors and cost determine the affordability of travel. The appeal of a destination is affected by political stability, the quality of the infrastructure, and perceptions of safety, whereas technological advancements are increasingly shaping the management and consumption of tourism. Effective tourism regulation design and ensuring sustainable tourism development in a globally interconnected world demand an understanding of these factors.

1.2. Theoretical approaches to tourism

A fundamental concept in tourism economics, tourism demand is the foundation for forecasting arrivals, analyzing visitor streams, and assessing the economic impacts of tourism on destination countries. The amount of tourist-related goods and services that customers are willing and able to buy at a particular location, at a particular price point, and within a given time frame is reflected in tourism demand, according to theory. (Song *et al.*, 2010). Demand for tourism is more difficult to assess empirically and theoretically due to its intangibility, perishability, and high sensitivity to both economic and non-economic factors than demand for traditional goods.

Classical and neoclassical microeconomic theory, which treats tourism as a consumption commodity subject to price and income limits, is the foundation of the earliest theoretical approaches to tourism demand. According to this theory, travelers are thought to act as logical consumers who divide their earnings between tourism and other products in order to maximize utility (Varian, 2014). Therefore, under budgetary constraints, tourism demand is determined from utility maximization.

According to this method, relative pricing, exchange rates, and income Factors such as levels in the nation of origin are the key determinants of tourism demand. Tourism can be considered a luxury product, and it is expected that income elasticity will be greater than one, particularly in the context of international tourism (Lim, 1997). Demand is very sensitive to relative prices, which include the price of accommodation, transportation, and overall prices at the destination compared to other destinations. Exchange rate changes have a major influence on the flow of tourism and the price of destinations (Crouch, 1994).

The neoclassical model has some limitations despite its simplicity. It may not be an accurate reflection of the real world of tourism decision-making because it assumes perfect knowledge, stable preferences, and rational behavior. Moreover, it usually ignores the institutional, social, and psychological aspects of tourist behavior (Cooper *et al.*, 2008).

The **push-pull theory**, which views the tourism demand as a result of the combination of push and pull forces in the origin and destination countries, is one of the most significant theories in tourism research (Dann, 1977). The pull forces are associated with the characteristics of the destination, while the push forces are associated with the tourist’s country of origin and act as a motivation for tourists to visit other countries.

The psychological and social forces of tourism such as the need for leisure, escape, adventure, prestige, and social interaction are some of the push forces. On the other hand, the pull forces are associated with the destination’s characteristics, which include the climate, infrastructure, accessibility, natural and cultural resources, and hospitality services (Crompton, 1979).

The push-pull theory is especially important in the study of inbound tourism because it enables the researcher to distinguish between the characteristics of competitiveness and the demand drivers of income growth and demographic change (Buhalis, 2000).

Aggregate demand models are frequently used to describe tourism demand at the macroeconomic level. Inbound tourism flows are explained by a set of economic variables that represent origin and destination characteristics. Income in the nations of origin, relative pricing, exchange rates, transportation expenses, and replacement destination prices are frequently included in these models (Song & Li, 2008).

Because macroeconomic tourism demand models work well with time-series and panel data methods, they are frequently employed in empirical research. They offer a helpful framework for examining cyclical variations and long-term patterns in the demand for inbound travel. Nevertheless, these models could miss institutional influences and micro-level behavioral aspects that are hard to measure statistically.

A fundamental element of **the theory of tourism demand** is elasticity analysis. The sensitivity of tourism demand to shifts in the economy is revealed by income elasticity, price elasticity, and cross-price elasticity. The demand for international travel is regularly found to be highly income elastic, which increases its susceptibility to economic cycles in the nations of origin (Song, Haiyan & Li, Gang, 2008).

Travel destinations and market segments have different price elasticity of demand. Generally, business tourism tends to be less elastic in terms of price than pleasure tourism, which is often sensitive to price. Cross-price elasticity measures the competitive character of international tourism markets by focusing on substitution between competing destinations (Song *et al*., 2010). As these measures affect pricing strategies, taxation policies, and investments in tourism infrastructure, elasticities-based approaches are particularly helpful in policy analysis.

The **dynamic character of tourism demand** is emphasized in more recent theoretical developments, which recognize that past behavior, expectations, and habit formation affect current demand. According to intertemporal choice models, tourists allocate their spending over time, taking into account their past experiences and future income prospects (Dritsakis, 2004).

Moreover, dynamic models also take into consideration other concepts like loyalty, learning effects, and repeat business, which are particularly important for developed countries. The models have a more robust theoretical basis for making predictions about international tourism arrivals and time series analysis.

Examples of theoretical models of tourism demand include traditional economic models and a multi-disciplinary approach that combines psychology, sociology, and marketing. Each method, on its own, has limitations but is also very informative. A multi-disciplinary theoretical approach is necessary for empirical work on the dynamics of incoming tourism.

The explanatory power of statistical models and the understanding of the development of tourism demand can be improved by combining economic principles with behavioral and motivational factors. In the context of Greece, where the elements influencing inbound tourism include origin market economic conditions, competitiveness of the destination, seasonality, and external influences, the relevance of such integration is very high.

Theories of tourism demand have assisted in the determination of factors that influence tourist behavior and provide a foundation for understanding the patterns that arise as a consequence of tourism dynamics, which is the study of the development of tourism systems over time in response to both internal and external factors. The tourism sector is a dynamic system that involves a wide range of stakeholders, including corporations, governments, host communities, tourists, and the environment (Baggio, 2008).

The dynamic nature of tourism arises from continuous developments in the reasons and preferences of tourists, economic conditions and levels of income, accessibility and transportation technology, safety and political stability, climate change and environmental conditions, lifestyle practices and social trends (Hall & Page, 2014).

Whereas the supply of tourism can be developed through investment, the demand for tourism fluctuates as tourists respond to changing conditions. Feedback loops are created by these dynamics: development is driven by increasing demand, which can attract more visitors but also create congestion or pollution problems, which in turn could make the destination less desirable (Butler, 2008).

Temporal and spatial dimensions are also a part of tourism dynamics. The popularity of destinations fluctuates, markets grow or shrink, and travel trends change with the seasons and the years. As a result, tourist dynamics offer a framework for comprehending the industry as a dynamic system influenced by both short-term shocks like pandemics, economic crises, and geopolitical conflicts as well as long-term trends (UNWTO, 2020).

Due to the uneven distribution of tourism activities over time, the time dimension is essential to tourism study. On a **daily, weekly, seasonal,** and **annual basis,** there are variations in the number of visitors, overnight stays, spending, and employment levels. Incomplete and deceptive conclusions would result from ignoring time in tourism studies (Lundtorp, 2001).

The demand for tourism fluctuates daily and weekly in the **short term**. Demand peaks are frequently caused by significant events, public holidays, and weekend travel. Short-term temporal patterns have a special impact on domestic travel and urban tourism (Page & Connell, 2020).

Seasonality, which represents regular and predictable variations within a year, is mostly linked to the **medium-term temporal dimension**. For instance, although ski resorts draw visitors in the winter, coastal locations have their highest demand in the summer. These trends, which are impacted by institutional factors like school holidays and the climate, frequently recur every year (Corluka, 2019).

Over time, tourism undergoes cycles of development and structural adjustments. Over decades, destinations either expand, stagnate, or decline. Trends included in **long-term analysis** include: shifts in travel markets, innovation in technology, effects of climate change, transitions to alternate and sustainable kinds of tourism (Butler, 2008)

Businesses and tourism planners can estimate demand, manage capacity, improve pricing strategies, and lessen the negative consequences of demand fluctuation by using the time dimension (Koenig-Lewis & Bischoff, 2005).

Due to its significant impact on destination management and economic performance, seasonality is one of the most researched phenomena in tourism (Higham & Hinch, 2002). A mix of institutional and environmental factors. Climate and environmental circumstances are the main factors that contribute to natural causes. Travel dates are heavily influenced by the weather, particularly for outdoor and nature-based tourism. In many places, the demand for tourism is influenced by factors including temperature, precipitation, snowfall, and daylight hours. For instance, while winter tourism necessitates cold temperatures and snow, beach tourist is highly dependent on warm, sunny weather (Gössling *et al*., 2012).

School holidays, public vacation times, and work schedules are examples of institutional factors that limit people’s travel opportunities. The schedule of travel is also influenced by social and cultural customs, such as national holidays and religious festivals. It is challenging to alter seasonality since these reasons are sometimes more inflexible than natural ones (Commons & Page, 2001).

Tourist dynamics are key ideas in comprehending the operation and development of tourism systems. While seasonality continues to be one of the most difficult structural aspects of the tourism sector, the temporal dimension is crucial in determining both supply and demand. Although seasonality creates economic inefficiencies and social challenges, it also offers opportunities for innovation and diversification (UNWTO, 2020).

1.3. Models and approaches to tourism demand forecasting

Quantitative methods play a crucial role in tourism demand and economic trend analysis, and they offer empirical information to researchers and policymakers. In tourism, quantitative methods are used to measure the impact of various variables on tourist arrivals, seasonality, and spending habits. Economic modeling, forecasting methods, time series, and regression analysis provide the information necessary to support strategic planning, policy-making, and operational management (Mittelhammer & Mittelhammer, 2013).

Time series analysis examines historical data in order to establish trends, cycles, and patterns, all of which are needed in order to predict tourist flows in the future. Regression analysis establishes the relationship between tourist demand and variables such as the level of income, exchange rates, expenditure on travel, or overseas events. Quantification of policy intervention, advertising strategies, or exogenous shocks such as pandemics or regional war impacts on tourism is established with econometric models.

These techniques improve the ability to forecast, and thus, they allow for scenario planning and risk analysis, which are crucial to both the private and public sectors in tourism. Quantitative analysis, which converts raw data into decision-making knowledge, strengthens policy-making, supports resource planning, and enhances competitiveness (Mittelhammer & Mittelhammer, 2013).

Tourism statistics are an essential component of economic and social measurement in the sector, as they aim to analyze the size, composition, and changing patterns of travel flows. They both capture visitor numbers and behavior patterns, expenditure, and performance of destinations. International and domestic visitor arrivals, nights, duration of stay, overall and per capita expenditure, tourism industry employment, patterns of seasonality, and levels of visitor satisfaction are some of the key indicators. These indicators are drawn from systematic surveys, administrative data, border data, accommodation data, and observation methods aggregated under international statistical standards such as those of the United Nations World Tourism Organization (UNWTO) (Recchini, 2023). These provide the empirical foundation for quantitative modeling such that it becomes feasible to spot trends in the long run, cycles over a fluctuation, and structural change over space and time (Box, Jenkins & Reinsel, 2016).

The development of the statistics of tourism in the past reflects the general trend of applied statistics. First, statistical data were limited counts of border crossings or hotel registrations for primarily fiscal or administrative reasons. Over the years, the practice has evolved into a complex system of measurement incorporated within official statistical frameworks such as the *International Recommendations for Tourism Statistics (IRTS)* and the *Tourism Satellite Account (TSA)* (Antolini & Grassini, 2020). These tools, developed jointly by the UNWTO, United Nations Statistics Division (UNSD), OECD, and Eurostat, have the objective of achieving a harmonization of definitions, classifications, and methods in order to make it feasible to compare data across countries, thus enabling the integration of tourism statistics into a larger set of national accounts (Volo, 2018; Recchini, 2023).

The *International Recommendations for Tourism Statistics - IRTS* (UNWTO, 2008) provides the conceptual framework employed for quantifying tourism activity. It establishes standard meanings for key concepts such as visitor, tourist, and same-day visitor, and categorizes tourism flows into domestic, inbound, and outbound ones. It also classifies the consumption forms of tourism and their resultant production of goods and services in the tourism industry. The TSA supplements this framework by incorporating a satellite accounting framework that links tourism-related transactions to the central national accounts. It makes it possible to estimate tourism's contribution to GDP, employment, and investment, and provide information on interlinkages of the sector with transport, accommodation, culture, and other industries. Although a TSA has been adopted in the majority of European nations, Greece hasn't developed yet a fully operational Tourism Satellite Account; a fact that still prevents tourism statistics from being integrated into the broader framework of national economic measurement (OECD, 2025).

Tourism indicators serve different purposes in business and policymaking environments. They quantify trends in demand, optimize the use of resources, monitor the effectiveness of promotional efforts, and monitor the economic and social impacts of tourist consumption (Volo, 2020). Managerially, they inform the three fundamental statistical functions of planning, standardization, and control. Planning involves forecasting future demand for tourists and coordinating investments in infrastructure with the expected flow. Standard setting (or standardization) sets standards based on average rate of occupancy, length of stay, or expense per visitor and offers a basis for performance measurement. Control is comparative actual performance versus targets and deviations to be addressed, normally by variance analysis or forecasting technique (Hyndman & Athanasopoulos, 2018; Box *et al*., 2016).

The use of time series forecasting has reached the core of tourism studies. ARIMA models, exponential smoothing, and decomposition methods are all in common use to forecast arrivals, revenues, and occupancy, as evidence for policy and investment decisions (Chatfield, 2000; Song, Witt, Wong & Wu, 2009). The validity of these models depends on the frequency and accuracy of the data, the treatment of seasonality, and the capacity to handle breaks in the model. The effects of outside shocks such as the COVID-19 crisis or the war in Ukraine reveal the responsiveness of tourism demand to health and geopolitics crises, which have a tendency to require intervention or the addition of dummy variables to capture their effects (Dickey & Fuller, 1979; Falk & Hagsten, 2023).

The latest developments in data science have further made tourism statistics more analytical. Big data sources such as online reservation websites and mobile geolocation data along with social media use have enriched and strengthened data available to researchers and policymakers. Big data streams complement rather than replace traditional statistical practice because statistical intuition, from regression modeling to hypothesis testing to sampling design, is still required in attempting to offer analytical validity (Hyndman & Athanasopoulos, 2018). Reliable measurement scale interpretation is similarly high on the agenda: continuous ratio-scale measures like average expenditure per tourist can be applied to regression or forecasting models, but nominal measures like reason for trip or visited country must be analyzed categorically (Athanasopoulos, Hyndman, Song & Wu, 2011).

However, the statistics of tourism are still a challenging area both conceptually and methodologically. It is very difficult to measure intangible notions such as perceived authenticity, visitor satisfaction, and cultural contributions. The dynamic and service-oriented nature of tourism activity also makes it difficult to define the causality relationship between tourism and overall economic and social effects. In addition, the differences in the process of data collection from one location to another and from one time period to another also make it difficult to compare and reduce the validity of predictive models over time (Neumayer, 2004). Furthermore, the misinterpretation of statistical results in the absence of theoretical frameworks may lead to inefficient or ineffective policy actions (Song & Li, 2008).

The statistics of tourism, therefore, are technical and strategic areas of research. They strike a balance between the gravity of statistical science and the dynamic and complex nature of tourism. The need to keep them conceptually at the forefront of science, methodologically rigorous, and institutionally consistent in a world tourism environment that is becoming increasingly *"stormy"* in order to support informed decision-making, long-term sustainable destination management, and evidence-based forecasting.

Forecasting is a systematic prediction of future events or values on the basis of past data and the understanding of the driving forces. Forecasting is an important tool for decision-making in business, economics, and tourism management, as it enables organizations and policymakers to predict future circumstances, make intelligent resource allocation decisions, and minimize risk (Montgomery, Jennings & Kulahci, 2015). Forecasts are divided by time horizon: short-term forecasts typically cover days to weeks and are of paramount importance for operating decisions such as staffing, pricing, and inventory management; medium-term forecasts typically cover months or a few years and allow for budgeting, marketing, and investment planning; long-term forecasts go many years and are applied in strategic objectives such as infrastructure building or sustainability strategy (Montgomery *et al*., 2015).

The level of complexity of prediction is extremely variable depending on the stability of the environment and on whether there is credible data. The probability of successful forecasting primarily rests in three variables: the level of knowledge of the factors driving the target variable, the quality and quantity of historic data, and the back effects that forecasts themselves might exert on the outcome being predicted. These variables are particularly relevant in tourism, as demand is responsive to a combination of economic, psychological, climatic, and geopolitical influences. It is thus a necessary first step in any forecasting exercise to determine the aim of the forecasting, arrivals, expenditure, or overnight stays (Hyndman & Athanasopoulos, 2018).

In most forecasting tasks, time series data is used, which is a representation of a series of observations made at fixed time intervals (daily, monthly, or yearly). The data can be discrete, like the number of tourists per month, cumulative, like annual earnings from tourism, or average, like per capita expenditure. Because tourism data are typically characterized by the occurrence of strong seasonality, cyclical variation, and occasional shocks, accurate forecasting necessitates the application of specialized time series models (Song & Li, 2008; Box *et al*., 2016).

There are two categories of forecasting methods: qualitative and quantitative. The choice between the two depends on data availability and the type of decision.

If sufficient historical information is not available, for instance, a new product or destination case, qualitative methods provide official, expert opinion-based predictions. Techniques like the Delphi method, market surveys, or analogy thinking are common under such circumstances (Aivazidou, 2015). These are human opinion-based techniques and are suitable for finding out possible scenarios and not precise numerical predictions.

Quantitative methods, on the other hand, are based on numerical data and the assumption that trends which have emerged in the past will persist, at least to some extent, into the future. They are generally classified as causal and time series models.

Causal models, such as regression analysis, define the dependent variable based on one or more independent variables (such as tourism expenditure defined by income and exchange rate). Time series models, such as Autoregressive Integrated Moving Average (ARIMA) or Exponential Smoothing, focus more on internal dynamics of the variable itself and seek patterns in its past history (Montgomery *et al.*, 2015).

ARIMA models are some of the most commonly used models in the field of tourism forecasting because of their flexibility in handling trend, seasonality, and random shocks (Witt & Witt, 1995; Song & Li, 2008). Exponential smoothing models are also commonly used for short-term forecasting because of their adaptive weight update of the latest data, which helps them react to the latest demand change.

The official forecasting procedure should comprise five major steps:

(1) ***Problem definition***. It includes specifying the purpose and use of the forecast, specifying decision-makers, specifying the time scale and the geographic scope of analysis. An example in the context of tourism could be

the forecasting of monthly arrivals to a particular destination or forecasting yearly inbound tourism expenditure from a major source market. A correct definition of the problem ensures that the model employed for forecasting is aligned with the management objectives.

(2) ***Gathering appropriate data***. The accuracy of forecasting is dependent on the quality and appropriateness of the data. Statistical data, such as arrivals, expenditure, or overnight stays, is often combined with expert analysis. Historical data may not be available or may be outdated in some cases due to structural changes, such as new travel restrictions or tensions between states. In cases where statistical data is not available, qualitative forecasting methods can be used as additional information.

(3) ***Data exploration or exploratory data analysis***. The data needs to be statistically investigated and analyzed before estimating the model to determine the presence of trends, seasonality, or outliers. This will help in determining the underlying structure of the data and assist in selecting the appropriate model. Tools such as SPSS, EViews, and R are commonly used for visualization, tests for stationarity, and correlation analysis, all of which are necessary before the process of modeling.

(4) ***Model selection***. The choice of the model depends on the type of data and the application purpose. If it is to forecast seasonally adjusted arrival data, an ARIMA or SARIMA model would be suitable. Exponential smoothing may be applied for short-term operational forecasts. In each case, model parameters must be estimated from historical data and their statistical significance should be verified through diagnostic tests (Montgomery *et al*., 2015; Hyndman & Athanasopoulos, 2018).

(5) ***Model application and checking***. After estimation, the model is used to make predictions into the future. Performance of the model is

measured with respect to error metrics such as the *Stationary R-squared* (R^2), the *Mean Absolute Percentage Error (MAPE)*, *Root Mean Squared Error (RMSE)*, or *Theil's U-statistic*. Comparative evaluation of alternative models is a general practice to identify the best-performing method with respect to a given dataset. In tourism forecasting, ongoing monitoring is particularly required due to frequent structural breaks, e.g., pandemics, wars, or exchange rate shocks, which can alter the underlying data-generating process (Hyndman & Athanasopoulos, 2018).

There are some specific methodological issues in the forecasting of tourism, which are not faced in other areas of the economy. The demand for tourism is influenced by a variety of factors, which may be economic, psychological, climatic, and political, and which may interact with each other in complex ways, possibly exhibiting nonlinear behavior in time series data (Goh & Law, 2002). Furthermore, tourism demand is highly seasonal, with sudden trend changes and discontinuities. Thus, the models should not only be statistically valid but also sensitive to the context.

ARIMA models, to take a specific example, have been used extremely successfully for the prediction of arrivals and revenues in both mature and emerging economies, provided that the necessary adjustments for structural changes and seasonality are made (Song & Li, 2008). Slightly more complex models, such as ARIMAX (which permit the inclusion of explanatory variables), or the combination of ARIMA with machine learning approaches, have also been demonstrated to have the capability to handle complex tourism data (Falk & Hagsten, 2023). However, the effectiveness is dependent on good data and the knowledge of the tourism system dynamics by the forecaster.

Forecasting was at the heart of tourism economics for decades and quantitative underpinning of planning, policy assessment, and investment choices. Since the pioneering works of Song and Witt (2000) and Song and Li (2008), forecasting has evolved from trend-based extrapolation and econometric regression to more complex time series modeling and hybrid approaches that integrate statistical accuracy with behaviorally informed and macro-economic insights. In the tourism industry, the natural uncertainties of demand associated with seasonality, geopolitical events, and unexpected global or regional shocks have motivated scholars to develop more refined models that can deliver greater accuracy and reliability. In the dynamic research environment, scholars who have studied Greece and other Mediterranean nations have made significant empirical contributions to the performance of alternative forecasting approaches under dynamic economic and structural conditions.

Previous quantitative studies on Greek tourism demand also had the tendency to focus on macroeconomic variables in the source countries as important determinants of tourism demand. Gounopoulos, Petmezas, and Santamaria (2012) also made a valuable contribution to the field by using the application of autoregressive integrated moving average (ARIMA) models and impulse response analysis to examine the effects of macroeconomic shocks in the home countries of tourists on the arrival of Greece. Their results showed that ARIMA(1,1,1) models effectively captured short-run directional patterns but failed to be as accurate in point forecasting, evidence of the challenges of forecasting in environments where high external uncertainty is prevalent. Their approach to impulse response led them to find that unemployment and cost of living shocks in source markets had a weak and transitory effect on Greek tourism, with little influence from consumer confidence shocks. This outcome indicates the degree of partial resilience of the retailing Greek tourism industry against the macroeconomic instability, despite its susceptibility to structural adjustment shocks like crises and pandemics. The emphasis of this research on short-term forecasting and impulse response functions has influenced subsequent research that has sought to discriminate the effects of exogenous shocks from autonomous forces in the market (Gounopoulos *et al*., 2012).

In their research, Saltsidou and Drakaki (2021) extended empirical estimation of Greek tourism forecasting to subnational tourism flows and the consideration of seasonality. Using monthly time series data for the Ionian Islands, covering the years 2010 to 2018, they compared several forecasting models, namely naïve, seasonal naïve, and seasonal ARIMA (SARIMA) methods, to identify the model with the lowest mean absolute percentage error (MAPE). Their results verified that SARIMA(1,0,3)(0,1,1)$_{12}$ and seasonal naïve models produced adequate levels of accuracy, with MAPE values of around 22% and 19%, respectively. Unexpectedly, the authors put model fit irregularities in 2015 [during Greek banking restrictions (capital controls because of dept crisis) and increased refugee flows] into context to demonstrate how external events might introduce structural breaks into tourist time series. By recognizing such exogenous interruptions and taking them into account as outlier years, the study assisted in making models more reliable for less volatile future forecasting horizons. Saltsidou and Drakaki’s (2021) research thus reaffirmed the importance of integrating contextual knowledge into time series analysis, especially for destinations with cyclical but shock-sensitive tourism patterns.

Based on this Greek literature, Anastasiou, Drakos, and Kapopoulos (2022) introduced the inclusion of sentiment-based predictors in tourism demand forecasting. Employing monthly series data from 2002 to 2021, they developed a sector-specific business expectations index and examined its performance as a forecasting variable in a vector autoregressive (VAR) model. Sector-specific expectations measure proved to be a reliable leading indicator of Greek international tourist arrivals. By filling the gap between quantitative and behavioral forecasting models, this research provided the completion of quantifying business sentiment and tourism demand. The results were best applicable during a post-pandemic scenario, where confidence, perception, and expectation factors have emerged in the forefront as indicators of travel plans. Methodologically, the current research showed that fusion with leading business indicators had the potential to improve short-term forecast accuracy over conventional ARIMA models (Anastasiou *et al*., 2022).

Parallel to these Greece-specific studies, global literature on tourism forecasting has also evolved to counter the new threats created by structural shocks such as the COVID-19 pandemic. Arshad *et al*. (2023) analyzed the impact of the pandemic on India's tourism sector using seasonal ARIMA (SARIMA) and Holt-Winters exponential smoothing models to forecast the expected loss in foreign tourist arrivals. The authors registered a sharp short-term decline, estimating cumulative losses of more than seven million arrivals in three quarters of 2020. Their findings emphasized the strong capability of SARIMA in dealing with highly seasonal and shock-probable data, thus reiterating its relevance in the context of forecasting during times of crises. This methodological note is beneficial in terms of its comparative nature, thanks to its echo of the crisis that Greece and other Mediterranean countries were experiencing at the time. The crisis has underscored the weakness and strength of traditional time series models, which are basically the inability of these models to forecast structural breaks without intervention variables or dummy corrections. Thus, research such as Arshad *et al*. (2023) underscores the relevance of hybrid or scenario models that are supportive of uncertainty in the context of post-crisis tourism forecasting.

Recent advancements have also been influenced by the convergence of big data and analytics. Wu, Zhong, Wu, and Song (2025) presented one of the finest systematic reviews on tourism and hospitality forecasting using big data. The researchers took evidence from a vast body of research to establish five key methodological issues: the weak theory foundation of big data applications, the growing need for high-frequency data forecasting, the inability to exploit unstructured data (e.g., text and visual data), the requirement for dynamic data analysis, and the requirement for cloud-based demand information systems. Their study categorized five prominent types of big data for use in tourism forecasting, (a) web-based volume data, (b) social media data, (c) text data, (d) photo data, and (e) video data, and how these sources can augment conventional econometric and time series models. Interestingly, Wu *et al*. (2025) pointed out that while machine and deep learning algorithms, such as LSTM networks and cluster algorithms, have been discovered to have strong predictive performance, they remain rooted on the principles of classical statistical inference on model robustness and validation. The literature review also recorded the evolution of scenario forecasting and probabilistic forecasting models as a response to global crises such as the COVID-19 pandemic, from a deterministic approach to adaptive data-driven forecasting models.

The intersection of the conventional orthodox econometric model and the new data-driven approach represents a monumental achievement in the area of tourism forecasting literature. While ARIMA and VAR models remain at the pinnacle due to their simplicity and ease of comprehension, the forecasting accuracy remains largely limited by linear models and ignorance of nonlinear events. The rising tide of real-time and unstructured data creates new challenges to enhance the responsiveness of the models to unexpected events in the market. However, the integration of methodologies is to be accomplished at a subtle balance between model fit and computational tractability, as suggested by Wu *et al*. (2025). In the case of countries such as Greece, where the official statistical system (such as the Tourism Satellite Account) is still in the process of being established, the current time series complementarity could make a significant difference to the current accuracy and relevance of the forecasting model.

The following can be noted from synthesizing the literature. To begin with, ARIMA family models remain the most widely used models utilized in tourism forecasting due to their flexibility, interpretability, and capacity to explain autoregressive and moving average patterns. Studies done by Gounopoulos *et al*. (2012) and Saltsidou and Drakaki (2021) affirm its high usage in both national and regional forecasting contexts. Second, VAR models, as described by Anastasiou *et al*. (2022), are helpful in understanding interdependencies between tourism demand and macroeconomic or sentiment variables but require big data for a reliable estimation. Third, dummy variables and seasonal adjustment usage are central to the offset of shocks such as economic crises, refugee influxes, or pandemics, as attested by both Greek and international literature. Fourth, there is clear methodological momentum for finding common ground between big data and hybrid models, merging fundamental statistical models with machine learning methods and high-frequency behavior data sources.

Despite all this progress, there remain serious gaps. Much of the work remains short- or regional-term predictions with longer destination-level predictions getting less attention. In addition, most of the literature used in forecasting tends to emphasize measures such as MAPE or RMSE with insufficient regard to the interpretability of the prediction or its policy usefulness. According to Wu *et al*. (2025), *"no grand theory emerges to integrate big data analytics and tourism economics, which reduces the generalizability of the results"*. In the case of Greece, where tourism accounts for a significant percentage of the GDP and is a matter of high policy priority, the need for multi-layered forecasting models that combine the precision of science with the wisdom of experience is pressing.

Overall, literature considered here indicates the shift of tourism forecasting from traditional econometric model construction to dynamic rich data systems with the capacity for dealing with uncertainty and structural change. Empirical research in Greece provided additional qualitative evidence regarding model performance and regarding the impacts of macroeconomic and behavior indicators.

In this regard, the current study applies an ARIMA-based model in full with the inclusion of COVID-19 dummy variables and examination of long-term inbound tourism demand to Greece. This is aligned with best practice cited within the literature and seeks to build upon this through the use of longitudinal, cross-country investigations to enable data-informed decision-making for one of the European continent's most vibrant tourism economies.

For Greece, whose tourism remains a pillar of economic performance, development of destination-specific forecasting models is both an analytic necessity and a strategic necessity. The subsequent section demonstrates empirical application of the concepts through a time series forecasting exercise with ARIMA models incorporating intervention controls based on annual data for a number of European and long-haul source markets from 2010 to 2024.

CHAPTER 2. RESEARCH FRAMEWORK AND METHODOLOGY

2.1. Research design

The objective of the present research is to generate reliable medium-term forecasts for key tourism indicators using advanced time series models from classical statistical methods. The research focuses on Greek international tourism demand, studying arrivals trends, overnight stays (nights), overall expenditure, average per capita expenditure, and average per night expenditure. The projections are for the years 2025 to 2029 and are expected to assist in strategic planning and evidence-based policy-making in the tourism sector of Greece. The period during the COVID-19 pandemic was a determining structural shock for the world and regional tourism systems, which affected the patterns of demand as well as the resilience of businesses (Kiryakova-Dineva & Bozhkova, 2021). Therefore, the methodological framework has some changes to incorporate the effects of the above-mentioned factors in the process of statistical modeling.

The data used is collected from the Institute of the Greek Tourism Confederation (INSETE), which provides official annual tourist statistics for 22 major source markets from 2010 to 2024 (INSETE, 2025). The data used include quantitative indicators of inbound tourism performance, such as total arrivals and total overnight stays, and economic indicators such as total receipts from tourism and expenditure indicators derived from tourism. All the data were brought together at the national level and rigorously controlled for temporal consistency over the period of time in question.

2.2. Time series forecasting framework and the Box-Jenkins method

By the term time series we usually mean a sequence $\{x_t: t = 0,1,2,\ldots\}$ where each x expresses the state of a system (at a certain t moment) that evolves in time in a generally random manner (stochastic system). Time series can concern either discrete quantities or continuous quantities in discrete or continuous time (Hamilton, 2020).

Thus, a time series is a family of random variables x_t, $t \varepsilon T$, where T is a time period or a subset of space. If T is continuous then the time series is called continuous while if T is discrete then the time series is called discrete. The time series that interest us in this study are discrete. Thus, if we have N consecutive values, then we have a time series x_1, $x_2, \ldots,$ X_N, where x_t is the observation at time t. Therefore, a time series is the series of values that a variable takes in consecutive time periods. The time that elapses between two consecutive observations in most cases is of constant duration (Hamilton, 2020).

A time series expresses the evolution of a stochastic system, that is, a system with random behavior, in contrast to that of a deterministic system, which is usually described by a system of differential equations. According to the Theory of Stochastic Evolutions, the evolution of a stochastic system can be described theoretically through a stochastic evolution of one or more dimensions, that is, a sequence of random variables or, more generally, a family of random variables defined over a probability space (Rozovskii, 2012).

The purposes of the longitudinal analysis of a variable are (Hamilton, 2020):

a. The description of its historical evolution
b. The prediction of its future behavior

A time series can be characterized by *linearity* or *nonlinearity*. The linearity of the system means that the variables of the system interact linearly, that is, if we were to express the system in analytical form, all terms would be linear with respect to the variables of the system. Otherwise, the system is nonlinear. For the time series, this means that for a linear system, we define the evolution of the time series as a linear combination of the previous observations of the time series (Hamilton, 2020).

It is a common phenomenon in time series for their average value to show an increasing or decreasing *trend* and/or to have alternations between increasing and decreasing phases, that is, to show a cyclically repeated structure in successive time intervals or periods. Also, from the graphical representation of a time series it is possible to determine if there are “special” values (*outliers*), that is, values that are in obvious deviation from the rest. These values may create serious problems in the modeling of a time series and therefore need special treatment after first determining the reason that caused them (Hamilton, 2020).

By the term *stationarity* we mean that the fluctuations of the values of the time series do not vary with time. A non-stationary time series may have trends, i.e. changes in its average value over time, and may also exhibit *periodicity*, which when referred to specific periods related to natural seasons of the year (month, quarter, four months) is also called *seasonality* (Hamilton, 2020).

Time series values exhibit some characteristics called components. These are (Hamilton, 2020):

a. The *trend* of a time series represents its long-term, smooth, and systematic movement over the period under study. The trend can be upward, downward or compound. When the time series moves in a straight line parallel to the time axis, i.e. if it does not show a tendency for increase, decrease or compound course, then the trend is considered non-existent. The trend is considered a component of particular importance. Due to its long-term nature, the trend cannot be clearly distinguished if the available data does not cover a relatively long period (usually 10 years or more).

b. *Cyclicality* refers to the systematic fluctuations that occur around the trend and repeat at intervals longer than one year, with varying degrees of regularity. When this repetition is perfectly uniform and symmetrical, the movement is described as a genuine cycle. A typical cyclical oscillation is characterized by two lower turning points (troughs) and one upper turning point (peak), which occurs between the two troughs. The upward movement between a trough and the subsequent peak is known as the expansion or upward phase, while the following downward movement from the peak to the next trough is referred to as the contraction or downward phase. The difference between any two consecutive troughs or crests will specify the length or duration of the oscillatory cycle.

c. Seasonal variation, or *seasonality*, is a brief periodic movement which takes place and is fully completed within one year, repeating persistently within all yearly periods upon which the time series is observed. The seasonal component has a period of one year, within which it reflects both its upward and downward cycles. Clearly, seasonality can only be identified in time series that include at least two observations within each year.

d. The *random fluctuation* represents the irregular component of a time series, which occurs independently of time. This component, often referred to as the irregular or random factor, reflects unpredictable variations that do not follow a systematic pattern. The irregular factor is present in all time series, since, in addition to random influences, the observed values also include measurement errors, which are practically unavoidable.

In addition to the above basic components, there are additional factors that affect the behavior of a time series. There are unusual and significant events that do not repeat at regular intervals but affect the values of the time series. Examples of such events are monetary and fiscal changes (such as the devaluation of a national currency against others, tax changes), revolutions, wars, earthquakes and natural disasters in general, special celebrations, and of course, pandemics like COVID-19. The effects of these events may last a short time or may persist for years. Such effects are not included in the trend component, as they are unpredictable, abrupt and sporadic. They are also not included in the cyclical and seasonal fluctuations, as they are temporally irregular. Finally, because they are due to known causes and do not exist in every time series, they cannot be included in the category of irregular factor either (Hamilton, 2020).

The statistical analysis of time series aims at the quantitative measurement and separation of the components that make it up. For the study of the time series, the separation of the components is necessary as some must be removed or studied separately. The removal of the trend is necessary when the behavior of the time series must be studied without it. The cyclical component is of particular importance especially when it comes to economic activity and is usually studied independently. The removal of seasonality facilitates the comparison of values of a time series (e.g. monthly observations). The study of components contributes to the study of the past of the time series, to the investigation of future prospects, as well as to the regression to its unknown past. In this way, we can predict the behavior of a time series and these quantities as they will be formed in the future (Hamilton, 2020).

The analysis of time series consists of the identification and evaluation of each component of the time series and the utilization of the conclusions that arise from their study. The procedure followed consists of the following steps (Hamilton, 2020):

1. Identifying long-term trend
2. Identifying seasonality
3. Removing seasonal fluctuations
4. Removing trend
5. Identifying cyclical fluctuations
6. Removing cyclical fluctuations

The steps followed in analyzing a time series and obtaining a forecast are (Hamilton, 2020):

1. Ensuring that the time series has a stable behavior (stationarity of the series)
2. Ensuring that there is no periodicity
3. Ensuring that an appropriate model is fitted to the data
4. Estimation of the unknown parameters of the model
5. The model is used for forecasting

As mentioned above, the purpose of the longitudinal analysis of a variable is to describe its historical evolution and to predict its future behavior. The length of the interval between the time point at which the forecast is made and the time point to which the forecast refers is called the time frame of the forecast. The longer the time frame, the more difficult it becomes to obtain a forecast in terms of the accuracy of the predictive ability. Depending on their length, the time frames can be: immediate with a length of less than a month, short-term with a length of 1-3 months, medium-term with a length of 3 months to 2 years, and long-term with a length of more than 2 years. Time series forecasting methods are most effective when the environment remains stable, as they are based on the assumption that the future will resemble the past, which is why they are usually used for short-term forecasts (Chatfield, 2000).

The autocorrelation coefficient is a statistical indicator used in time series analysis to determine whether or not the time series is random. The autocorrelation coefficient *rk* shows the correlation of the time series with itself. The autocorrelation coefficient r_1 shows how successive observations of the time series are related, the autocorrelation coefficient r_2 shows how observations of the time series that are two time periods apart are related, and so on. The graph of the autocorrelation coefficients is called the autocorrelation function (ACF). By calculating the autocorrelation coefficients, for various time lags of a time series, we can check whether the data are random, whether the time series is stable and if not, what its trend is, whether there is seasonality, etc. A random time series is considered a time series for which each observation is independent of any other observation in the time series. In a random time series, 95% of the autocorrelation coefficients lie in the interval defined by the values $\pm 1.96/\sqrt{n}$, where n is the number of observations in the time series. If there are autocorrelation coefficients whose values lie outside the above limits (i.e. they are statistically different from zero), then there is a correlation between observations in the time series and the time series cannot be considered random (Box *et al*., 2016).

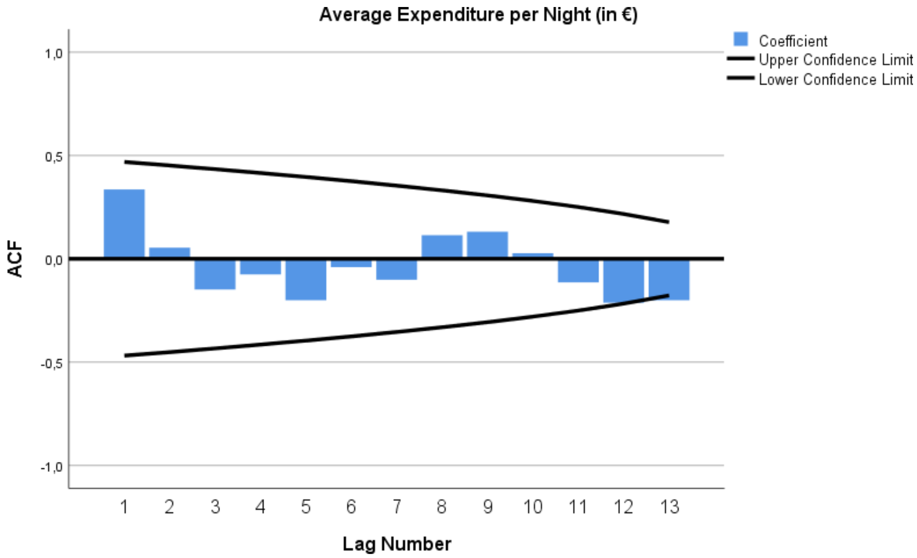

Figure 1. Example of an Autocorrelation Function (ACF) graph.

The partial autocorrelation coefficients measure the degree of relationship between y_t and y_{t-k} when the effects of all other time lags 1, 2, 3,... , *k-1* have been removed. The partial autocorrelation coefficient of order *k* is denoted by αk and can be calculated by applying the method of multiple linear regression with dependent variable y_t and independent variables y_{t-1}, … , y_{t-k}. (Box *et al.*, 2016).

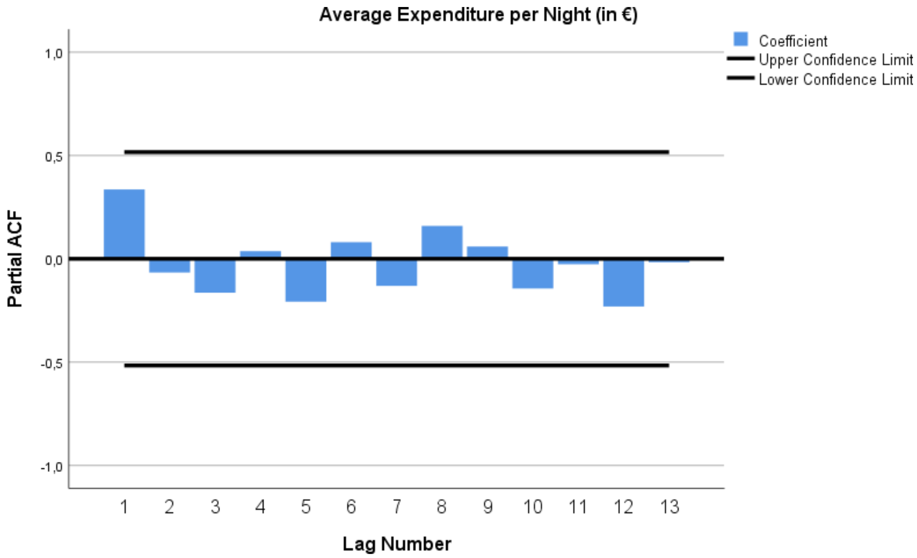

Figure 2. Example of a Partial Autocorrelation Function (PACF) graph.

Considering successive elements of the time series as random variables, the time series is said to consist of *independent and identically distributed* (*iid*) random variables when the random variables have the same distribution and are independent of each other. An *iid* time series is completely random and contains no autocorrelations (linear or nonlinear), that is, correlations between elements of the time series. An *iid* time series is also called white noise. If the elements of the white noise time series follow a normal (Gaussian) distribution, then the time series is called *Gaussian white noise* (Chatfield, 2000; Hamilton, 2020).

A random walk is a non-stationary time series, where each element is obtained from the previous one by adding a random value, that is, the time series is a random walk if $x_t = x_{t-1} + \varepsilon_t$, where ε_t is a white noise time series (Chatfield, 2000; Hamilton, 2020).

The name suggests that the time series is generated by someone moving along a straight line (in IR), who at each time instant takes a random step forward or backward ε_t from the point located at x_{t-1} to the next point located at x_t. The random walk time series is non-stationary. Taking the first differences, the stationary time series of white noise is obtained (Chatfield, 2000; Hamilton, 2020).

The Box-Jenkins (B-J) approach to time series analysis is concerned with identifying a particular statistical model that can be fitted to a given time series. The identification of the specific model is based on careful observation of the autocorrelation and partial autocorrelation functions of the time series. Then, effective estimation of the values of the relevant parameters is made and finally, verification tests are performed to determine whether the specific model is satisfactory or not. These tests also indicate how the model should be modified in case it does not fit satisfactorily. The process of selecting a model is a *trial and error process* (Box *et al*., 2016).

The method was developed in the 1960s, and its name came from professors Box and Jenkins, who published it in their book *"Time Series Analysis, Forecasting and Control"*. After this, many scholars became interested in empirical practice and implementation as well as generalization of the method to multivariate models.

The need for models with readily observable patterns of autocorrelation brought forth three stationary stochastic processes that are extremely useful with time series from a mix of theoretical and empirical work. These are the *Autoregressive* (*AR*), the *Moving Average* (*MA*) approach, and the mixed process *ARMA* (Box *et al*., 2016).

Additionally, as the majority of time series are not stationary, there is a class of non-stationary processes that may be transformed to stationary processes through a filter that is not time-dependent. These processes are called *Autoregressive Integrated Moving Average* (ARIMA) processes. The Box-Jenkins ARIMA technique models the most general form of a discrete time series as a function of autoregressive terms, a moving average, and a constant. It includes both a seasonal and a non-seasonal factor type in the estimated model and its general form is denoted as:

$$\text{ARIMA}(p, d, q)(P, D, Q)s,$$

Where:

- p: is the autoregressive order of the non-seasonal factor
- d: is the backward difference order of the non-seasonal factor
- q: is the moving average order of the non-seasonal factor
- P: is the autoregressive order of the seasonal factor
- D: is the backward difference order of the seasonal factor
- Q: is the moving average order of the seasonal factor
- s: is the seasonality of the time series

An ARMA(p,q) model applied to an integrated (non-stationary) order series is called an autoregressive integrated moving average order model and is denoted as ARIMA(p,d,q). Specifically, the three forms of the parameters of this model are:

- the p parameters of the autoregressive model, or the autoregressive order of the non-seasonal factor.
- the number d of differences required to make the series stationary or the backward order of differences of the non-seasonal factor (stationary processes are characterized as those in which the mean, variance and autovariances do not depend on time, that is, the mean and variance remain constant).

- and the q parameters of the moving average model or the moving average order of the non-seasonal factor.

ARIMA models combine the properties of three different sub-models (sub-systems):

1. Autoregression
2. Integration
3. Moving average smoothing

As mentioned previously, they are represented by 3 coefficients, each of which describes the sub-models that reported:

p: autoregressive parameter (AR),

d: degree of differential transformation (I),

q: moving average order (MA)

The Box-Jenkins approach to time series analysis is a method of finding an ARIMA model that satisfactorily represents the stochastic process from which the data came, i.e. the sample. This method includes three stages, identification, estimation, and diagnostic checking.

1st stage: Identification

At this stage, a test model is selected to determine whether the time series exhibits fundamental characteristics such as trend and seasonality. A graphical representation of the time series variable is constructed, along with representations of the correlation functions: *Autocorrelation Function* (ACF) and *Partial Autocorrelation Function* (PACF). During the identification stage, an ARIMA model is specified based on the information obtained from the sample. The values of p, d, and q are determined, where d represents the number of differences required to render the series stationary if it is not already, p is the order of the autoregressive component, and q is the order of the moving average component.

To test for stationarity in each of the time series, the researcher should check the sample autocorrelation function of the series. If the autocorrelations decay quickly to zero, then the series is likely to be stationary. If the autocorrelations decay slowly, then it is a sign of non-stationarity, and the series needs to be made stationary. A time series with a trend exhibits changing mean, and potentially changing variance, over time. To eliminate non-stationarity, first-order, second-order, or higher-order differences can be applied. This differencing method removes the trend by creating a new series from the differences between successive observations. For a linear trend, a single differenced series typically eliminates the trend, whereas for a polynomial trend, differencing is repeated until the trend is fully removed. Once stationarity is achieved, the ARIMA model order is determined, specifically the values of p and q, based on the patterns observed in the sample's autocorrelation and partial autocorrelation functions.

2nd stage: Estimation

In this stage, the parameters of the model are estimated after fitting it to the data. The significance of the parameters is checked, the part of the time series used for this purpose is predicted and the model is accepted or rejected. This is followed by the estimation of the p parameters $\alpha_1, \alpha_2, \ldots, \alpha_p$ of the autoregressive process and the q parameters $\theta_1, \theta_2, \ldots, \theta_q$ of the moving average process.

Model Description

Model Name		MOD_66
Series Name	1	Average Expenditure per Night (in €)
Transformation		None
Non-Seasonal Differencing		0
Seasonal Differencing		0
Length of Seasonal Period		No periodicity
Maximum Number of Lags		16
Process Assumed for Calculating the Standard Errors of the Autocorrelations		Independence(white noise)[a]
Display and Plot		All lags

Applying the model specifications from MOD_66

Table 1. Example of model specifications for a model applied to the "Average Expenditure per Night" series (in €), as generated in SPSS.

3rd stage: Diagnostic check

This stage refers to the diagnosis which includes the assessment of the quality of the model (residuals and estimation errors), its cross-check with new data, as well as its final acceptance or rejection. At this stage, a goodness-of-fit test of the model is performed. That is, it is checked how well the model fits the data, as another ARIMA model may fit better. Statistical tests are applied for the significance of the parameters and the behavior of the residuals and the order of the model. This stage includes the procedures for calculating confidence intervals in the forecasting procedures, the calculation of the standard error and other statistical quantities in order to quantitatively assess the significance of the model coefficients, and the control of the normality of the residuals.

Model Fit												
					Percentile							
Fit Statistic	Mean	SE	Minimum	Maximum	5	10	25	50	75	90	95
Stationary R-squared	,832	.	,832	,832	,832	,832	,832	,832	,832	,832	,832
R-squared	,794	.	,794	,794	,794	,794	,794	,794	,794	,794	,794
RMSE	5,146	.	5,146	5,146	5,146	5,146	5,146	5,146	5,146	5,146	5,146
MAPE	3,569	.	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569
MaxAPE	7,233	.	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233	7,233
MAE	3,017	.	3,017	3,017	3,017	3,017	3,017	3,017	3,017	3,017	3,017
MaxAE	6,158	.	6,158	6,158	6,158	6,158	6,158	6,158	6,158	6,158	6,158
Normalized BIC	4,596	.	4,596	4,596	4,596	4,596	4,596	4,596	4,596	4,596	4,596

Figure 3. Example of model fit statistics chart as generated in SPSS.

There are various criteria for evaluating the predictive ability of the model. The main ones are:

Root Mean Square Error:

$$\text{RMSE} = \sqrt{\frac{\sum_{t=1}^{M}\left(y_t^f - y_t^a\right)^2}{M}}$$

Where:

y_t^f: are the predicted values

y_t^a: are the observed values

M: is the number of time periods

Mean Absolute Error:

$$\text{MAE} = \frac{1}{M}\sum_{t=1}^{M}\left|y_t^f - y_t^a\right|$$

Mean Absolute Percentage Error:

$$\text{MAPE} = \frac{1}{M}\sum_{t=1}^{M}\left|\frac{y_t^f - y_t^a}{y_t^a}\right|$$

The above indexes of the predictive accuracy of the model result from the comparison of the initial values and the predicted values of the time series and are used to examine how reliably the evolution of the time series is described by the various forecasting techniques. The smaller the values of the above indicators, the better the forecast is considered.

There are some criteria that are used to select the appropriate model. We observe that if we increase the order of the model by adding lags for either the autoregressive part or the moving average part, the sum of squares of the residuals will decrease, but at the same time the degrees of freedom will also decrease since more parameters are estimated.

One of the criteria used is the Akaike Information Criterion (AIC).

$$\mathrm{AIC} = \ln \frac{\sum \hat{\varepsilon}_t^2}{T} + \frac{2k}{T}$$

Where:

$\sum \hat{\varepsilon}_t^2$:	is the sum of squares of the residuals
T:	is the number of observations
k:	is the number of parameters estimated

To reduce the sum of squares of the residuals, a penalty is imposed, which is achieved by adding lags.

Another important criterion for selecting an appropriate model is the Bayesian Information Criterion (BIC), which, similar to the AIC, combines the measure of goodness of fit with a penalty for model complexity. The BIC is defined as:

$$BIC = \ln \left(\frac{\sum \hat{\varepsilon}_t^2}{T}\right) + \frac{k \ln(T)}{T}$$

Where:

$\sum \hat{\varepsilon}_t^2$: is the sum of squares of the residuals

T: is the number of observations

k: is the number of parameters estimated

In contrast to the AIC, the BIC applies a stronger penalty for more complex models, as it includes the $\ln(T)$ term, which increases with sample size. Thus, BIC will naturally prefer simpler models, particularly if the size of the data is large.

The model with the lowest BIC will be deemed the best model, as long as other fit conditions are also met. In practice, the BIC is used alongside the AIC to compare alternative ARIMA specifications, offering a more conservative approach to identifying the optimal time-series model.

If the estimated model is the best fit to the data, then the residuals should not to be autocorrelated. The study of the autocorrelations of the residuals can show that there is an insufficient adjustment of the model, as well as it can also show the form of the necessary modifications that we must make so that the model is appropriate.

This check is done by a process called overfitting. According to this process, the suitability of the estimated model is checked by comparing it with another model of a higher order. If the estimated model is ultimately the most appropriate for the data we have, that is, if it describes the process by which the data have been produced, the additional coefficients in the larger models should not be statistically different from zero. If these coefficients are not zero, then there will be another model that is more appropriate for the data we have, than the estimated one.

2.2.15. Forecast validity and error

Based on the estimated model and the existing information up to the time period *T*, a prediction can be made of the value of the variable *Y* for some future value, for the period *T+h*. For the prediction to be valid, the following conditions must be met:

- The data collection interval must be similar to the forecast interval, that is, the conditions that affect the values of the variable must not differ. In particular, the oldest data to be used must be in conditions similar to the interval for which the prediction will be made.
- The prediction must be finite in number of elements, as the further we move from the last observation, the uncertainty increases and the predicted confidence interval grows. Usually, the prediction to be considered valid corresponds in size to 10% of the size of the data sample.
- The data must be sufficient in number. If the data sample is too small the validity of the forecast is questioned.
- The data must be compatible with each other.
- The model must be appropriate for the data and give predictions close to the actual values. Validity is ensured by minimizing the error, through checks of the deviations of the forecasts with actual values for intervals where there are known data.

As the cost of forecasting increases, the losses associated with uncertainty tend to decrease. However, since the forecasting process can never completely eliminate risk, it is essential to account for the inherent uncertainty involved when producing forecasts. The actual value of a variable is conceptually related to the forecast according to the following formula:

Actual value = Forecast value (given that it is correct) + Forecast error

2.3. Data collection and preparation

As mentioned above, the present analysis focuses on inbound tourism to Greece from twenty-two international source markets over the period 2010–2024. Each nation is one time series that produces a balanced panel of annual observations, allowing for cross-sectional and time interpretation. The selected variables encapsulate the numeric and economic dimensions of tourism demand and were obtained from official datasets of the Institute of the Greek Tourism Confederation (INSETE, 2025).

a. ***Total arrivals***: This is the total number of tourist arrivals from a given source market to Greece in a given year. This is the key international tourism demand indicator and the basis of all forecasts for travel flows to a given market.

b. ***Total nights stayed***: It is the aggregate of overnight stays of tourists by every country-source market. It complements arrivals by showing the length-of-stay dimension, which is necessary to estimate accommodation capacity usage and tourist behavior.

c. ***Total expenditure***: It is defined as the total expenditure of tourists from a given source market in current euros. It captures the economic contribution of foreign tourism and is used as the basis of measuring revenue performance of tourism.

d. ***Average per capita expenditure***: It is the proportion of total expenditure to total arrivals. It is the average expenditure of each tourist and is widely used as a proxy for market profitability and quality of visitors.

e. ***Average per night expenditure***: It is proportion of total expenditure to total nights spent. It reflects average expenditure per day by visitors and reflects consumption habits as well as the structure of prices of tourism products.

All monetary variables were input into the model in their nominal form, as given by INSETE, since the primary purpose of this study is to estimate comparative growth patterns and not to conduct deflated, real-price analysis.

Since the dataset in the present is in annual observations, it does not reflect the seasonality because seasonality is typical in datasets whose frequency is of a monthly or quarterly nature (Box *et al.*, 2016). Hence, the Box–Jenkins method is used for non-seasonal ARIMA models without addressing the seasonality aspect, only the trend and stochastic parts of each time series.

A significant change introduced in the modelling process is concerned with the COVID-19 pandemic, which caused a colossal and unexpected effect on global travel flows between 2020 and 2021. In order to capture this atypical effect, a dummy variable was added to the forecasting equations. The dummy variable is given the value 1 for the 2020–2021 period and 0 elsewhere, which allows the model to interpret the structural break in the pandemic-induced time series due to the extraordinary impact of the pandemic on global mobility and tourism demand. This approach allows for more precise estimation of the underlying trend as well as autoregressive dynamics by removing the temporary shock induced by the pandemic. Thus, the introduction of the COVID dummy variable enhances the stability as well as the interpretability of the forecast results for the post-pandemic era (2022–2029).

Before model estimation, statistical properties of every series were examined to verify their suitability for ARIMA modelling. Stationarity of the time series, i.e., mean and variance do not alter with time and autocovariances depend only on lag length and not on the time index, is an essential requirement of the Box–Jenkins method. Non-stationary series can create spurious regression results and useless forecasts and thus this phase is very significant (Box *et al*., 2016).

Stationarity was tested using the Augmented Dickey–Fuller (ADF) unit root test (Dickey & Fuller, 1979). The ADF test null hypothesis is that the series is non-stationary (has a unit root), and the alternative is stationarity. A constant, a deterministic trend, or neither were added, based on graphical observations of each country series and on theoretical considerations on the nature of the underlying process for tourism.

For most of the variables, level series exhibited trend-like behavior as per long-run growth in demand for inbound tourism. First differencing was done upon rejection of non-stationarity null hypothesis. Stochastic trends were removed and the mean was made stationary. ADF test was then performed on the differenced series. A p-value below the 5% significance level was used as strong evidence of stationarity.

Where stationarity was not possible even after the first differencing, the corresponding series was excluded from the forecasting process to prevent spurious parameter estimation, in accordance with standard best practices in applied time series analysis (Hyndman & Athanasopoulos, 2018).

Table 2 presents the results of ADF tests for every single one of the 22 source markets and five of the most significant tourism indicators (total arrivals, total nights, total expenditure, average per capita expenditure, and average per night expenditure. Asterisks (*) indicate series that were made stationary following first differencing, while those series marked in red color are the ones that were excluded from the forecasting analysis for not becoming stationary even after first differencing. The results confirm that nearly all variables satisfied the requirement of stationarity after transformation and could thus be progressed further to ARIMA modeling.

Such an approach is designed to make sure that resulting ARIMA parameters reflect the actual dynamic behavior of each destination's tourism demand and not the temporary effect of foreign crises.

Augmented Dickey-Fuller test p-value					
Country	**Arrivals**	**Nights**	**Total Expenditure**	**Average Per Capita Expenditure**	**Average Expenditure per Night**
Austria	0,0092*	0,0300*	0,0269*	0,0024*	0,0002*
Belgium	0,0437*	0,0532*	0,0011*	0,0000*	0,0000
France	0,0129*	0,0187*	0,0014*	0,0070*	0,0000*
Germany	0,0945*	0,0269*	0,0598*	0,0213*	0,0000
Spain	0,0056*	0,0053*	0,0111*	0,0036	0,0021*
Italy	0,1374*	0,0932*	0,0598*	0,0072*	0,0000*
Cyprus	0,0105*	0,0018	0,0079	0,1515*	0,0182*
Netherlands	0,0092	0,0277	0,1133*	0,0015	0,0000*
Other Eurozone Countries	0,0801*	0,0274*	0,0039*	0,0000*	0,0000*
Denmark	0,1387*	0,0753*	0,0083*	0,0000*	0,0000*
Romania	0,0691*	0,0333*	0,0211*	0,0003*	0,0399
Sweden	0,1295*	0,0988*	0,0677*	0,0013*	0,0001*
Czech Republic	0,0213*	0,0133*	0,0073*	0,0318*	0,0086*
Other European countries outside the Eurozone	0,0747*	0,0280*	0,0105*	0,0077*	0,0000*
Albania	0,0331	0,0008	0,0003	0,0183*	0,1166*
Australia	0,1045*	0,1047*	0,0636*	0,1943*	0,0088*
Switzerland	0,0017*	0,0004*	0,0001*	0,0136*	0,0000*
United Kingdom	0,0173*	0,0078*	0,0302*	0,0187	0,0006
USA	0,0703*	0,0546*	0,0541*	0,0145	0,0104
Canada	0,0172	0,0141	0,0506	0,0253*	0,0051*
Russia	0,0387*	0,0421*	0,0462	0,0232*	0,0027*
Other Countries	0,0681*	0,0048*	0,0146*	0,0118*	0,0001*

Table 2. Results of Augmented Dickey–Fuller (ADF) unit root test

All estimation and ARIMA model forecasting statistical analysis was performed using *IBM SPSS Statistics* (version 26), a common and popular software package capable of performing time series modeling in a reliable manner. Stationarity tests, including the Dickey–Fuller test, were performed by utilizing free-access software *Gretl* in order to identify unit roots and correct specification of the model (Adkins, 2018). Summary of the data and compilation of summary tables were done utilizing *Microsoft Excel* software in a manner to allow organized input for future statistical analysis.

CHAPTER 3. EMPIRICAL ANALYSIS, RESULTS AND DISCUSSION

3.1. Exploratory analysis of tourism data

Before moving to the modelling phase, it is essential to examine the empirical characteristics of the tourism statistics and identify the leading trends that have affected inbound tourism to Greece during the period between 2010–2024. Through this chapter, an explanatory definition of the five most significant variables applied in the forecasting analysis is offered, i.e., tourist arrivals, nights stayed, total spend, per capita average spend, and per night average spend. The purpose of this exercise is to outline the historical development of each indicator, highlight turning points, and point out major external shocks such as the COVID-19 pandemic and the resulting geopolitical turmoil from the Ukraine war. It is from this narrative analysis that the analysis hopes to arrive at a clear understanding of the dynamics of each source market before embarking on the model estimation and forecasting exercise.

Analysis of data in Table 3 shows that between 2010 and 2024, the total number of international visitors to Greece has steadily increased from 15.0 million to 35.9 million, indicating a steady growth of international visitors to Greece over the fifteen-year period. This has not been a steady growth process but has had phases of acceleration and stabilization. After moderate growth between 2011–2013, arrivals rose sharply from 17.9 million in 2013 to over 31 million in 2019, a virtual doubling in six years. Pandemic years 2020–2021 saw an instant contraction as total arrivals dropped to 7.4 million in 2020, but the recovery began in 2021 (14.7 million) and was resumed in 2022 when arrivals were at 27.8 million. By 2024, overall tourist visits had reached all-time record levels (35.9 million visitors), exceeding the pre-pandemic 2019 high.

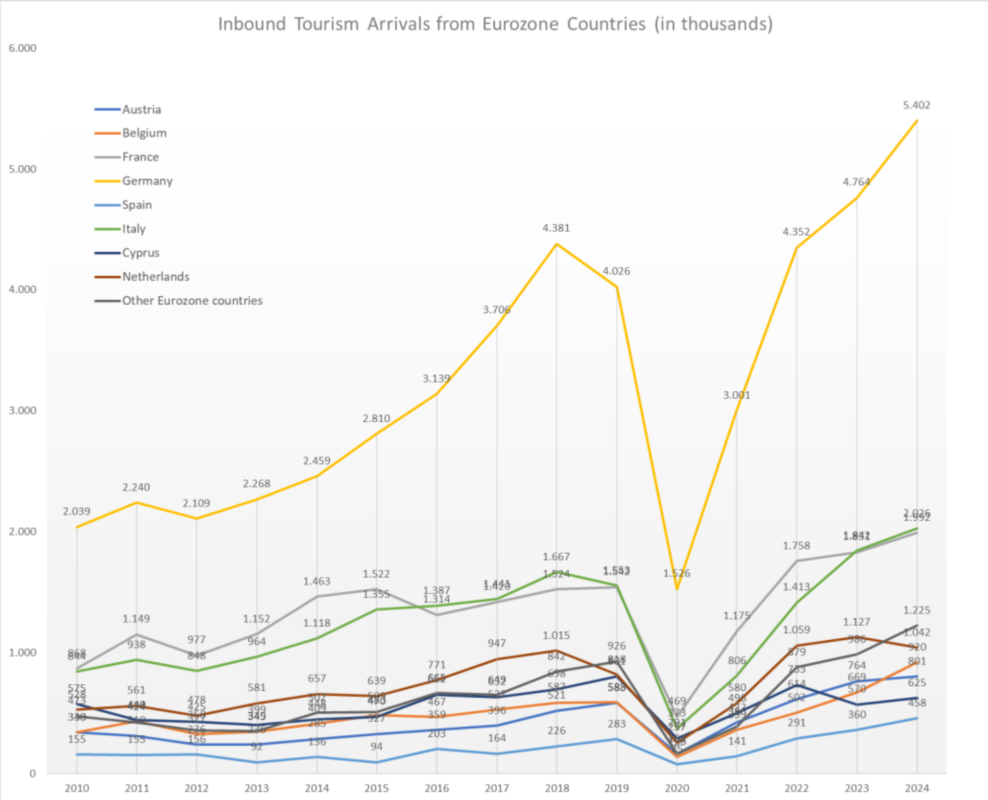

Figure 4. Total arrivals from Eurozone countries for the period 2010-2024

Arrivals from Eurozone markets were showing a clear upward trend in the period under consideration (Figure 4). In 2010, these markets accounted for 6.16 million arrivals, increasing to 11.46 million by 2018 and then remaining constant at 11.1 million in 2019. The pandemic led to an abrupt fall to 3.45 million in 2020, gradual recovery to 7.37 million in 2021, and a strong recovery subsequently, to 14.49 million by 2024.

Within the Eurozone group, Germany has always been the dominant source market, and arrivals grew from 2.04 million in 2010 to over 5.4 million in 2024. Italy, France, and the Netherlands were later dominant contributors, each reporting steady growth since 2021. Austria and Belgium had modest but consistent growth as smaller markets, with a less steady pattern of arrivals for

Cyprus and Spain. Overall, Eurozone tourism growth emphasizes its dominant role in the source base of Greece, as the most developed and stable cluster of origin countries (Darvidou & Siskos, 2024).

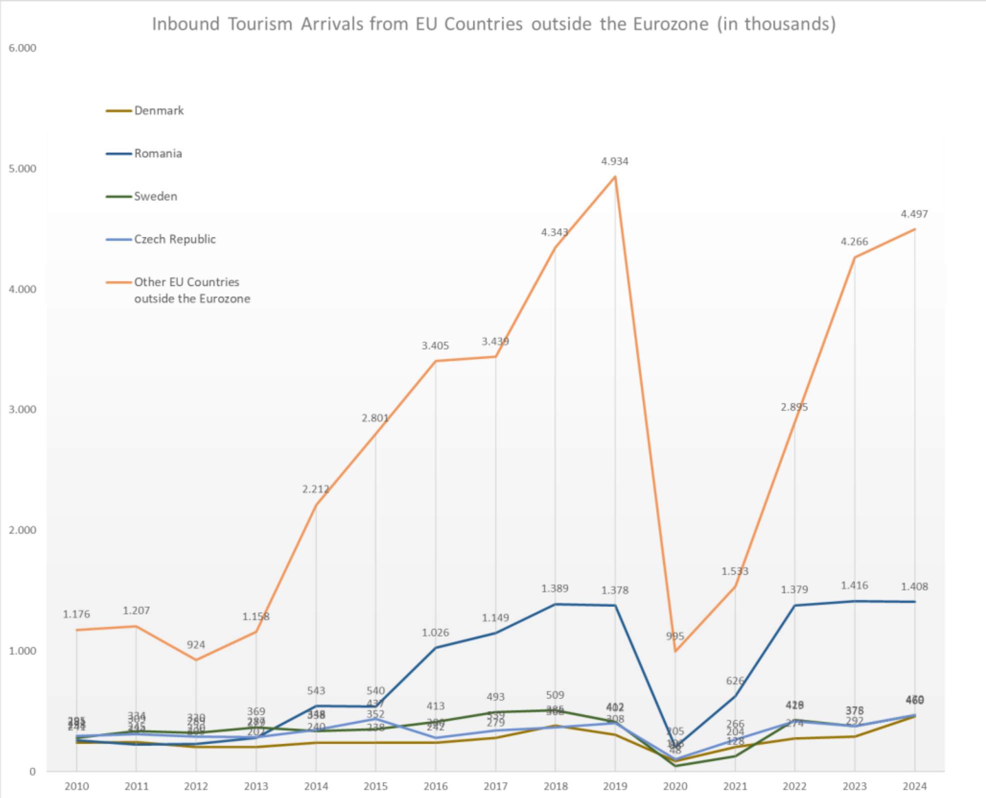

Figure 5. Total arrivals from EU countries outside the Eurozone for the period 2010-2024

Arrivals from other EU states, though not part of the Eurozone, also exhibited a comparable positive long-term trend, growing from 2.25 million in 2010 to 7.30 million in 2024 (Figure 5). The pace of growth accelerated after 2014, when arrivals grew nearly in half between 2015 and 2017, to 5.7 million. The pandemic induced a sudden downturn to 1.44 million in 2020, but by 2023 arrivals had returned to pre-pandemic levels at 6.73 million.

In this category, Romania also recorded strong performance, exceeding one million arrivals since 2016, with high performance all over the recovery cycle. The Czech Republic and Sweden recorded a stronger but more stable flow, while Denmark recorded moderate performance after the year 2021. This category generally indicates the increasing importance of Greek tourism, as it reflects the gradual revival of Central and Eastern European markets.

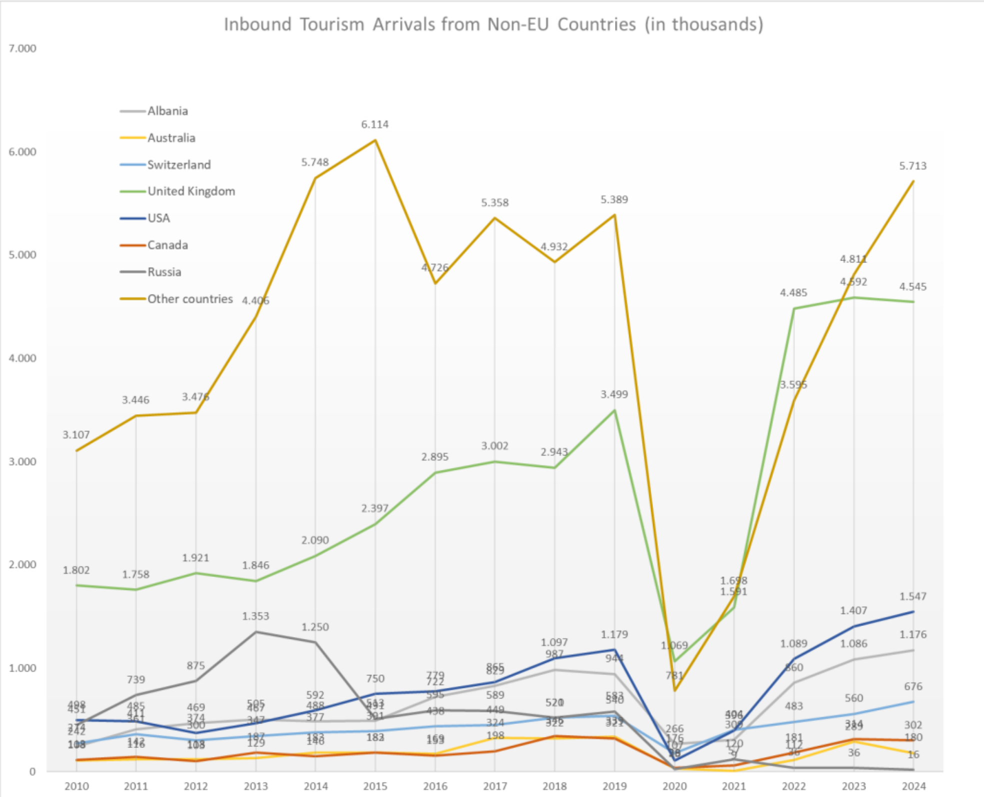

Figure 6. Total arrivals from non-European countries for the period 2010-2024

The non-European markets group is marked by a trend of higher complexity, integrating the long-haul and regional sources (Figure 6). The cumulative number of arrivals from these countries grew from 6.6 million in 2010 to 14.16 million in 2024. The group reached its peak of 12.8 million in 2019, then collapsed to 2.48 million in 2020, as a result of the crisis, and only fully recovered after 2022.

The United Kingdom was the leading market in this category throughout the period, increasing from 1.8 million in 2010 to 4.5 million in 2024. The United States also performed well, breaking the one million mark after 2018 and bouncing back to 1.55 million in 2024. Canada and Switzerland recorded steady but slow growth, while Albania proved to be a stable regional market, breaking the one million mark after 2022. The number of Russian tourist arrivals recorded a totally different trend. After a long period of growth, peaking at 1.35 million in 2013, the Russian market collapsed from 2015, partly due to the geopolitical tensions created by the annexation of Crimea and the subsequent European sanctions imposed on Russia (Ivanov, Idzhylova & Webster, 2016). The decline gained momentum after 2019, with tourists falling from 583 thousand in that year to a low of 26 thousand in 2020 and still registering low levels (16 thousand) by the year 2024. This prolonged decline coincides with the war and the associated measures, which have substantially restricted travel between Russia and European destinations (Khanenko & Bobko, 2024).

Inbound Tourism Arrivals (in thousands)															
Countries	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Austria	338	310	236	236	285	327	359	396	521	583	161	422	614	764	801
Belgium	340	433	327	345	409	483	467	527	587	588	136	359	502	669	920
France	868	1.149	977	1.152	1.463	1.522	1.314	1.420	1.524	1.542	469	1.175	1.758	1.831	1.992
Germany	2.039	2.240	2.109	2.268	2.459	2.810	3.139	3.706	4.381	4.026	1.526	3.001	4.352	4.764	5.402
Spain	155	155	156	92	136	94	203	164	226	283	75	141	291	360	458
Italy	844	938	848	964	1.118	1.355	1.387	1.441	1.667	1.553	373	806	1.413	1.842	2.026
Cyprus	575	440	425	399	448	470	652	632	698	801	291	496	733	570	625
Netherlands	528	561	478	581	657	639	771	947	1.015	818	257	580	1.059	1.127	1.042
Other Eurozone countries	473	424	358	349	502	509	665	649	842	926	163	386	879	986	1.225
Denmark	241	245	205	202	240	238	242	279	385	308	88	204	274	292	460
Romania	258	224	230	279	543	540	1.026	1.149	1.389	1.378	205	626	1.379	1.416	1.408
Sweden	281	334	320	369	338	352	413	493	509	412	48	128	428	375	470
Czech Republic	295	309	289	287	348	437	280	339	368	402	103	266	419	378	469
Other European countries outside the Eurozone	1.176	1.207	924	1.158	2.212	2.801	3.405	3.439	4.343	4.934	995	1.533	2.895	4.266	4.497
Albania	242	411	469	505	488	491	722	829	987	944	266	309	860	1.086	1.176
Australia	108	116	118	129	183	183	169	324	322	339	29	9	112	289	180
Switzerland	274	361	300	347	377	391	438	449	521	540	176	404	483	560	676
United Kingdom	1.802	1.758	1.921	1.846	2.090	2.397	2.895	3.002	2.943	3.499	1.069	1.591	4.485	4.592	4.545
USA	498	485	374	467	592	750	779	865	1.097	1.179	107	396	1.089	1.407	1.547
Canada	113	142	103	187	146	182	153	198	346	321	33	57	181	314	302
Russia	451	739	875	1.353	1.250	513	595	589	520	583	26	120	36	36	16
Other countries	3.107	3.446	3.476	4.406	5.748	6.114	4.726	5.358	4.932	5.389	781	1.698	3.595	4.811	5.713

Table 3. Inbound tourism total arrivals for the period 2010-2024

As shown in Table 4 below, the total nights spent by foreign visitors in Greece had a generally rising trend over the 2010–2024 period, reflective of the increasing tourism capacity of Greece and source market diversification. However, this longer-term rising trend was disrupted by major disturbances, in particular the COVID-19 pandemic (2020–2021) and geopolitical upheaval in some markets.

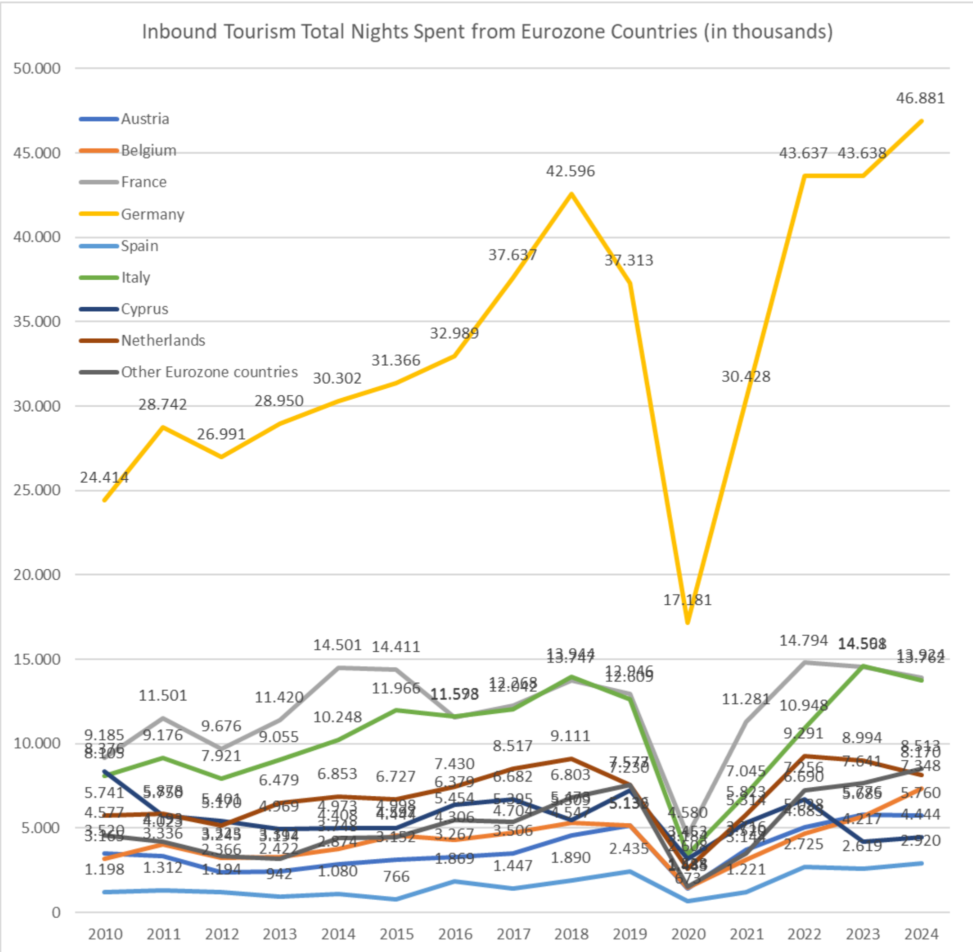

Figure 7. Total nights spent from Eurozone countries for the period 2010-2024

The Eurozone countries remained the main source of arrivals in Greece (Figure 7). Germany was always leading during the time span, continuously registering over 35 million nights in a few years prior to the pandemic, before facing a sharp decline in 2020 due to lockdowns in international travel. Recovery was relatively swift, with German overnight stays nearly up to pre-pandemic levels by 2023, illustrating the maturity of European demand and the prompt revival of intra-EU travel corridors. Inbound tourism arrivals from France and Italy also developed well before the pandemic, driven by growing connectivity and cultural tourism, but both experienced a slower post-COVID recovery trajectory, with 2023–2024 levels only marginally short of 2019 levels. The Benelux economies (Belgium and the Netherlands) showed moderate growth trends until 2019, being highly sensitive to the restrictions imposed by the pandemic but also recovering relatively quickly because of the short/medium-haul holiday patterns and the popularity of island destinations (Ansarinasab & Saghaian, 2023).

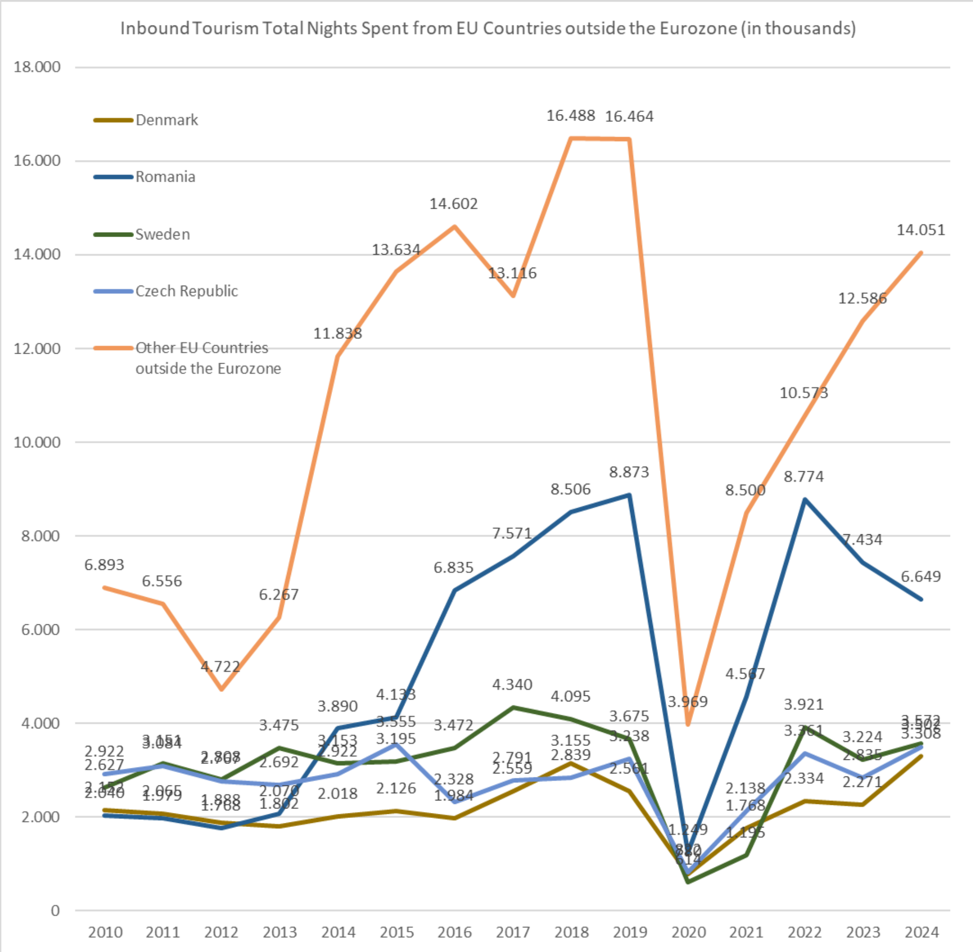

Figure 8. Total nights spent from EU countries outside the Eurozone for the period 2010-2024.

European countries outside the Eurozone also played a significant role (Figure 8). The United Kingdom's pattern was not dissimilar to the main Eurozone countries, with progressive growth until 2019, a sharp downturn in 2020, and a gradual recovery in 2022-2024, although at a less rapid rate because of the limitations imposed by air travel and inflationary pressures. The Nordic countries (Sweden and Denmark) were characterized by a constant, low-level contribution to the overall volume of tourism, with low-level pre-pandemic growth and rapid post-pandemic recovery. The emerging Central and Eastern European markets (Romania, the Czech Republic, and other

European non-Eurozone countries) were distinguished by highly dynamic patterns of growth, with breathtaking increases in nights spent between 2014 and 2019 as travel costs and accessibility improved. Their post-pandemic recovery was one of the fastest recorded in the data of the present research; indicative of their growing importance for Greece's tourism industry.

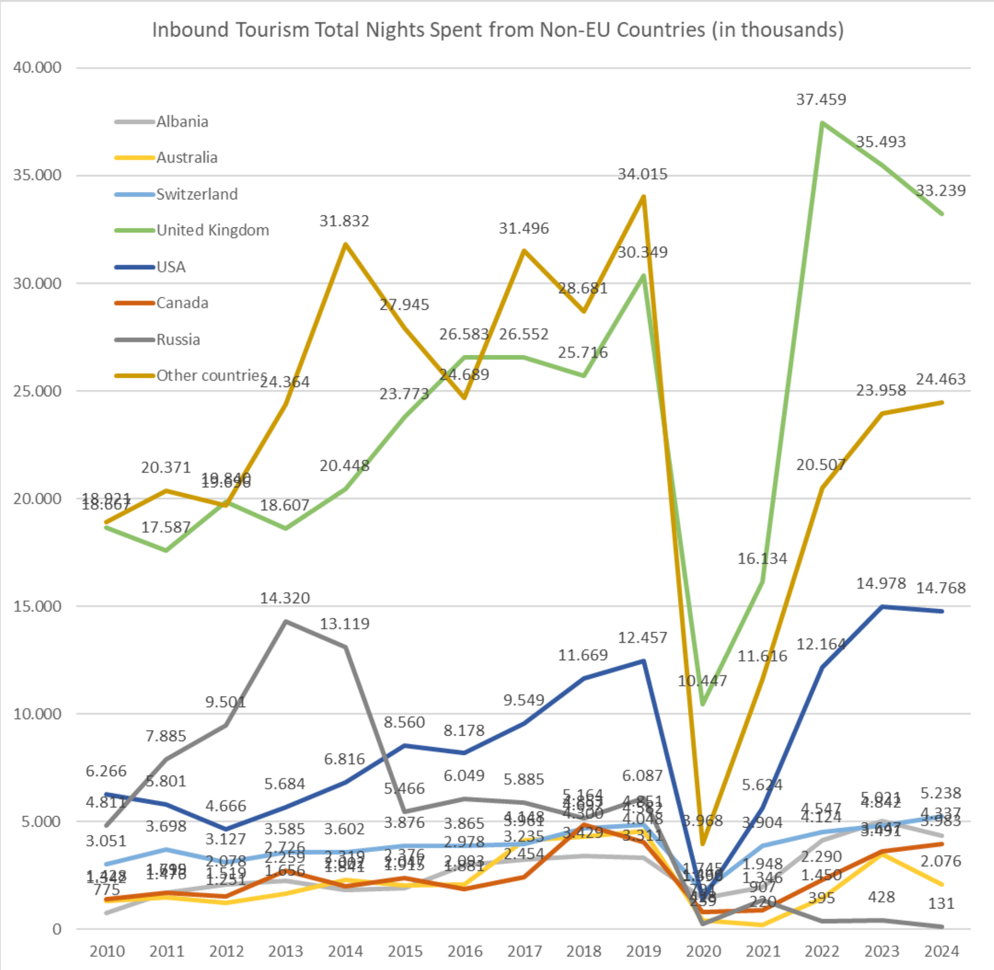

Figure 9. Total nights spent from non-European countries for the period 2010-2024.

Among non-European markets (Figure 9), Russia showed a distinctive and volatile trend. After strong growth between 2010 and 2019, the mixed effects of the COVID-19 pandemic disruption and the war conflict in Ukraine

(2022) resulted in a steep and persistent drop in Russian tourists' nights spent in Greece. EU sanctions and air bans effectively closed Russian mass tourism flows to Greece after 2021, one of the most severe and long-standing contractions of all markets (Khanenko & Bobko, 2024). Long-haul markets like the United States, Canada, and Australia have shown stable growth prior to 2020, driven by high-spending segments and long stays, as expected for long-haul trips. However, these markets were also the most affected by the restrictions caused by the pandemic, with the lowest recovery rates in 2023-2024. The "Other countries" group comprises smaller but ever more diversified markets in Latin America, the Middle East, and Asia. Although a modest share of total nights, this segment showed higher growth rates later in the period of consideration, especially in 2023-2024, as Greece continued with efforts to expand its tourism sources systematically beyond traditional European markets (Terkenli & Coccossis, 2024).

Inbound Tourism Total Nights Spent (in thousands)															
Countries	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Austria	3.520	3.336	2.366	2.422	2.874	3.152	3.267	3.506	4.547	5.132	1.445	3.716	5.028	5.776	5.760
Belgium	3.165	4.023	3.245	3.312	3.748	4.597	4.306	4.704	5.309	5.136	1.484	3.144	4.683	5.685	7.348
France	9.185	11.501	9.676	11.420	14.501	14.411	11.573	12.268	13.747	12.946	4.580	11.281	14.794	14.568	13.924
Germany	24.414	28.742	26.991	28.950	30.302	31.366	32.989	37.637	42.596	37.313	17.181	30.428	43.637	43.638	46.881
Spain	1.198	1.312	1.194	942	1.080	766	1.869	1.447	1.890	2.435	673	1.221	2.725	2.619	2.920
Italy	8.105	9.176	7.921	9.055	10.248	11.966	11.598	12.042	13.944	12.609	3.453	7.045	10.948	14.591	13.762
Cyprus	8.376	5.750	5.401	4.969	4.973	4.998	6.379	6.682	5.473	7.230	3.184	5.314	6.690	4.217	4.444
Netherlands	5.741	5.878	5.170	6.479	6.853	6.727	7.430	8.517	9.111	7.573	2.608	5.823	9.291	8.994	8.170
Other Eurozone countries	4.577	4.193	3.323	3.194	4.408	4.444	5.454	5.395	6.803	7.577	1.538	3.520	7.256	7.641	8.513
Denmark	2.152	2.065	1.888	1.802	2.018	2.126	1.984	2.559	3.155	2.561	780	1.768	2.334	2.271	3.308
Romania	2.040	1.979	1.768	2.070	3.890	4.133	6.835	7.571	8.506	8.873	1.249	4.567	8.774	7.434	6.649
Sweden	2.627	3.151	2.808	3.475	3.153	3.195	3.472	4.340	4.095	3.675	614	1.195	3.921	3.224	3.572
Czech Republic	2.922	3.084	2.767	2.692	2.922	3.555	2.328	2.791	2.839	3.238	822	2.138	3.361	2.835	3.502
Other European countries outside the Eurozone	6.893	6.556	4.722	6.267	11.838	13.634	14.602	13.116	16.488	16.464	3.969	8.500	10.573	12.586	14.051
Albania	775	1.719	2.078	2.259	1.841	1.915	2.978	3.235	3.429	3.311	1.460	1.948	4.124	5.021	4.337
Australia	1.342	1.476	1.251	1.656	2.319	2.047	2.093	4.148	4.300	4.582	428	220	1.450	3.491	2.076
Switzerland	3.051	3.698	3.127	3.585	3.602	3.876	3.865	3.961	4.697	4.851	1.745	3.904	4.547	4.842	5.238
United Kingdom	18.667	17.587	19.840	18.607	20.448	23.773	26.583	26.552	25.716	30.349	10.447	16.134	37.459	35.493	33.239
USA	6.266	5.801	4.666	5.684	6.816	8.560	8.178	9.549	11.669	12.457	1.396	5.624	12.164	14.978	14.768
Canada	1.428	1.695	1.519	2.726	2.002	2.376	1.881	2.454	4.853	4.048	791	907	2.290	3.647	3.983
Russia	4.811	7.885	9.501	14.320	13.119	5.466	6.049	5.885	5.164	6.087	239	1.346	395	428	131
Other countries	18.921	20.371	19.696	24.364	31.832	27.945	24.689	31.496	28.681	34.015	3.968	11.616	20.507	23.958	24.463
Total nights spent	**140.176**	**150.978**	**140.919**	**160.251**	**184.789**	**185.027**	**190.402**	**209.855**	**227.012**	**232.464**	**64.053**	**131.357**	**216.949**	**227.938**	**231.038**

Table 4. Inbound tourism total nights spent for the period 2010-2024

Inbound tourism total expenditure in Greece posted a significant upward movement over the period 2010–2024, both due to qualitative tourism demand upgrading and the increased competitiveness of the Greek tourism product (Table 5). Total expenditure expanded from €9.6 billion in 2010 to €20.6 billion in 2024, more than doubling within fourteen years even after huge interruptions caused by the economic crisis, the COVID-19 pandemic, and following geopolitics tensions.

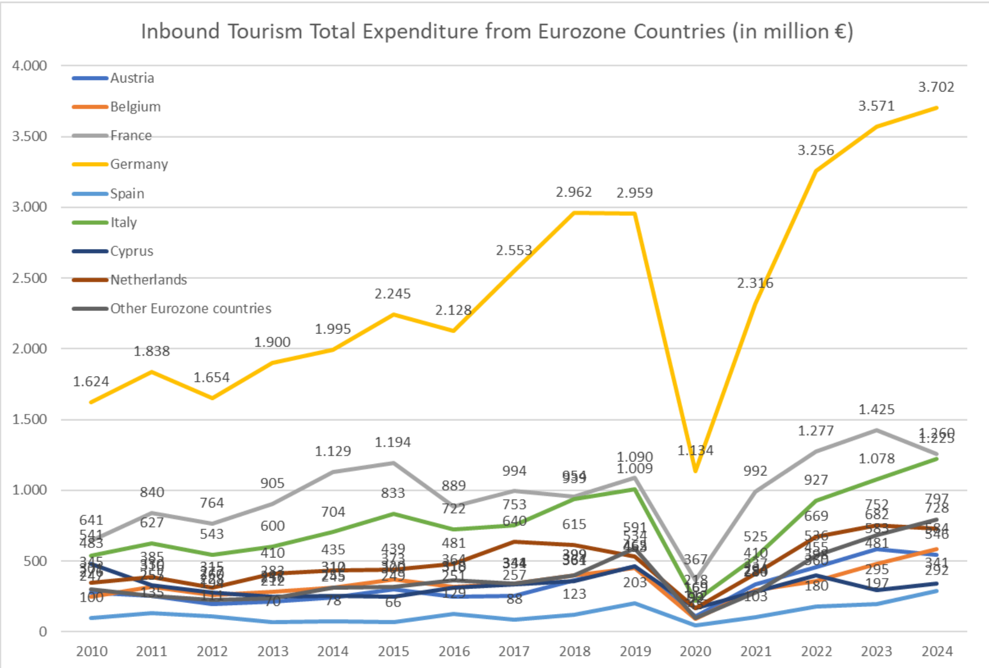

Figure 10. Total expenditure from Eurozone countries for the period 2010-2024

Eurozone markets formed the foundation of total expenditure on tourism throughout (Figure 10). Germany was always the leading market, standing at over €3.7 billion in 2024 after a steady post-2016 expansion, which was interrupted briefly by the pandemic. France and Italy followed similar rising trajectories, peaking in 2023–2024, which reflects revamping in high-value segments of tourism and restoration of popularity for Mediterranean destinations (Ansarinasab & Saghaian, 2023). The Netherlands and Belgium provided moderate but consistent expenditure, with high per-capita spending and strong destination loyalty that assisted in providing stability to overall expenditure, particularly during the early post-COVID period (2021–2022) (Ansarinasab & Saghaian, 2023).

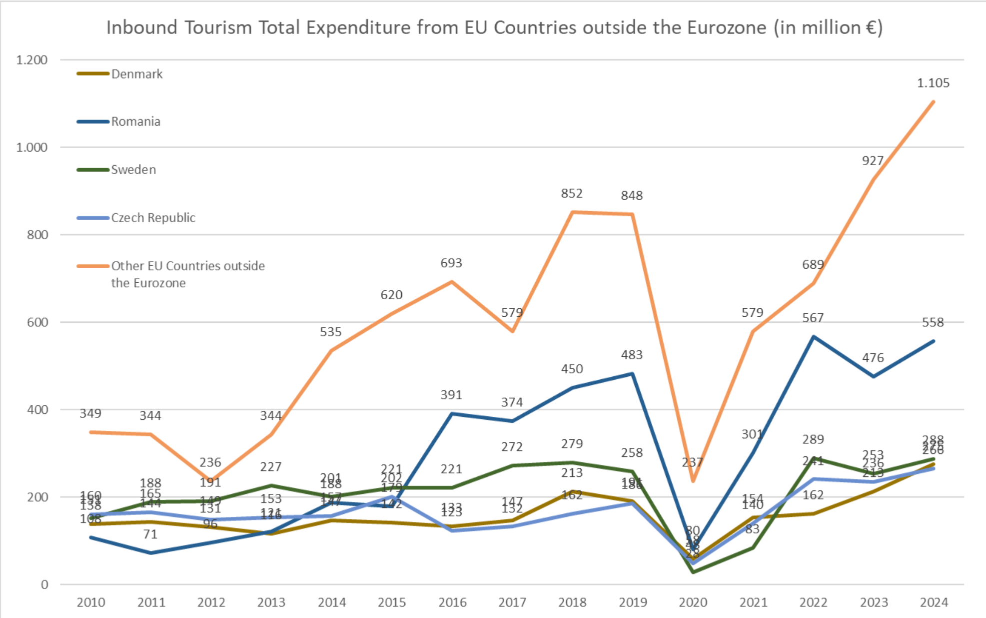

Figure 11. Total expenditure from EU countries outside the Eurozone for the period 2010-2024

Of the European countries outside the Eurozone (Figure 11), the United Kingdom was one of the top producers of revenue from international tourist arrivals, posting a consistent long-term increase and again peaking in 2023–2024. The Nordic countries (Sweden and Denmark) showed solid but steady growth patterns, backed by high-expenditure quality travelers with a taste for sustainable and experiential tourism (Mitropoulou, 2025). Central and Eastern European emerging markets, such as Romania, the Czech Republic, and other EU member countries not in the eurozone, were very active in growth after 2014. For instance, Romanian expenditure increased from €108 million in 2010 to over €550 million in 2024, an indication of rising intra-European mobility as well as the attractiveness of Greece as a value destination for mid-income tourists (Mitropoulou, 2025).

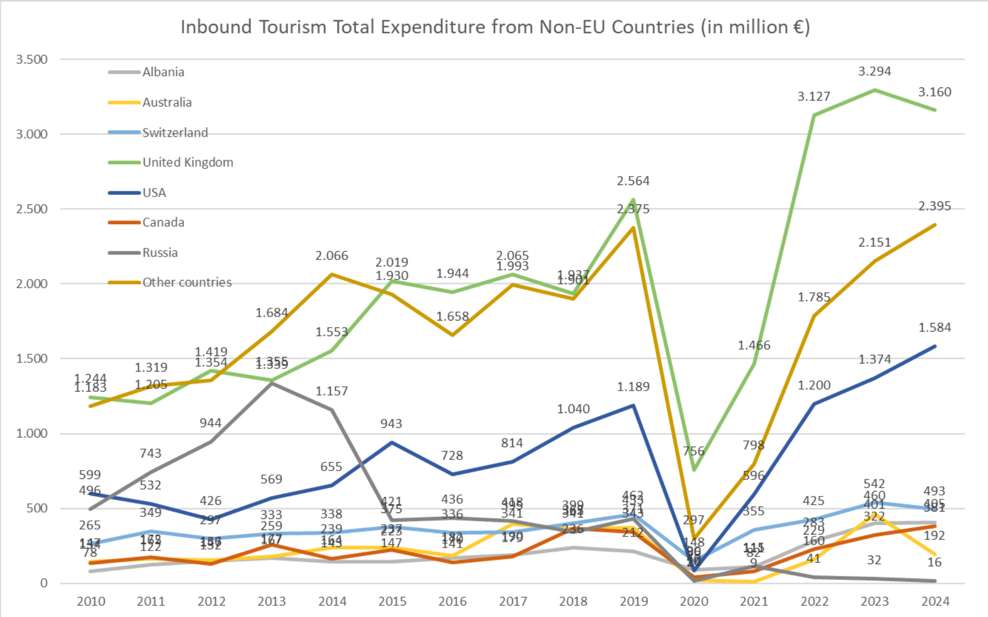

Figure 12. Total expenditure from non-European countries for the period 2010-2024.

Shifting to non-European economies (Figure 12), Russia saw strong growth until 2013, peaking at €1.3 billion, before declining sharply and continuously from 2015. This decline initially reflected EU sanctions on the occupation of Crimea, followed again by further deterioration due to the Russia–Ukraine war (since 2022), which severely restricted visits and expenditure (Khanenko & Bobko, 2024). Russian tourism expenditure had fallen to just €16 million by 2024, one of the worst post-pandemic market losses for Greece. Of long-haul markets, the United States was the largest value-generating source of tourist expenditure with up to €1.6 billion being spent in 2024, more than twice the pre-pandemic levels. This is due to the increase in direct flights and the rising appeal of Greece as a destination for luxury and thematic tourism (Tsekeris, 2023). Australia and Canada also recorded growth in expenditure after 2022 but with smaller absolute values. Lastly, the "Other countries" group also recorded remarkable growth, particularly from 2021 onwards, which represents the diversification of demand from the Middle East, Asia, and Latin America to Greece. This trend confirms the success of recent policies in diversifying the tourism offerings of Greece beyond its conventional European focus (Deirmentzoglou *et al*., 2025).

Inbound Tourism Total Expenditure (in million €)															
Countries	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Austria	276	255	194	212	245	300	251	257	364	462	112	337	455	583	546
Belgium	247	316	260	283	312	373	318	341	399	453	92	294	360	481	584
France	641	840	764	905	1.129	1.194	889	994	954	1.090	367	992	1.277	1.425	1.260
Germany	1.624	1.838	1.654	1.900	1.995	2.245	2.128	2.553	2.962	2.959	1.134	2.316	3.256	3.571	3.702
Spain	100	135	111	70	78	66	129	88	123	203	45	103	180	197	292
Italy	541	627	543	600	704	833	722	753	939	1.009	218	525	927	1.078	1.225
Cyprus	483	330	277	247	255	249	310	334	361	465	169	284	398	295	341
Netherlands	345	385	315	410	435	439	481	640	615	534	169	410	669	752	728
Other Eurozone countries	301	257	228	236	310	320	364	344	399	591	99	280	536	682	797
Denmark	138	144	131	116	147	142	133	147	213	191	58	154	162	213	275
Romania	108	71	96	121	188	179	391	374	450	483	80	301	567	476	558
Sweden	151	188	191	227	201	221	221	272	279	258	28	83	289	253	288
Czech Republic	160	165	149	153	157	202	123	132	162	186	48	140	241	236	266
Other European countries outside the Eurozone	349	344	236	344	535	620	693	579	852	848	237	579	689	927	1.105
Albania	78	122	147	167	143	147	170	190	236	212	90	111	283	401	405
Australia	147	165	156	177	239	237	182	395	362	371	20	9	160	460	192
Switzerland	265	349	297	333	338	375	336	341	399	462	148	355	425	542	493
United Kingdom	1.244	1.205	1.419	1.355	1.553	2.019	1.944	2.065	1.937	2.564	756	1.466	3.127	3.294	3.160
USA	599	532	426	569	655	943	728	814	1.040	1.189	86	596	1.200	1.374	1.584
Canada	134	172	132	259	164	223	141	179	365	343	40	82	229	322	381
Russia	496	743	944	1.339	1.157	421	436	418	341	433	14	115	41	32	16
Other countries	1.183	1.319	1.354	1.684	2.066	1.930	1.658	1.993	1.901	2.375	297	798	1.785	2.151	2.395
Total Expenditure	**9.611**	**10.505**	**10.025**	**11.707**	**13.005**	**13.679**	**12.749**	**14.202**	**15.653**	**17.680**	**4.310**	**10.328**	**17.257**	**19.746**	**20.592**

Table 5. Inbound tourism total expenditure for the period 2010-2024.

The trend of average per capita spending of international tourists in Greece during the years 2010-2024 shows huge fluctuations in relation to the varying travel habits, purchasing powers, and structural changes in the composition of international tourists (Table 6). In total, the indicator reveals a mild downward trend in the long term from €640 in 2010 to €573 in 2024, with various short-run fluctuations related to large external shocks and trends in specific markets. In the first few years (2010–2014), per-capita expenditure remained relatively stable at around €640–€650, before declining sharply in 2015–2016, reflecting domestic economic restructuring, including the 2015 capital controls and IMF-supported fiscal adjustment programs, and a shift toward more budget-conscious travel. The pandemic years (2020–2021) saw an unprecedented growth in per capita expenditure, going as high as €702 in 2021, mainly due to the fewer number of tourists made up of higher-expenditure travelers and luxury sections (Darvidou & Siskos, 2024). Following the resumption of mass tourism after 2022, the index reverted to its long-term average, stabilizing at approximately €600.

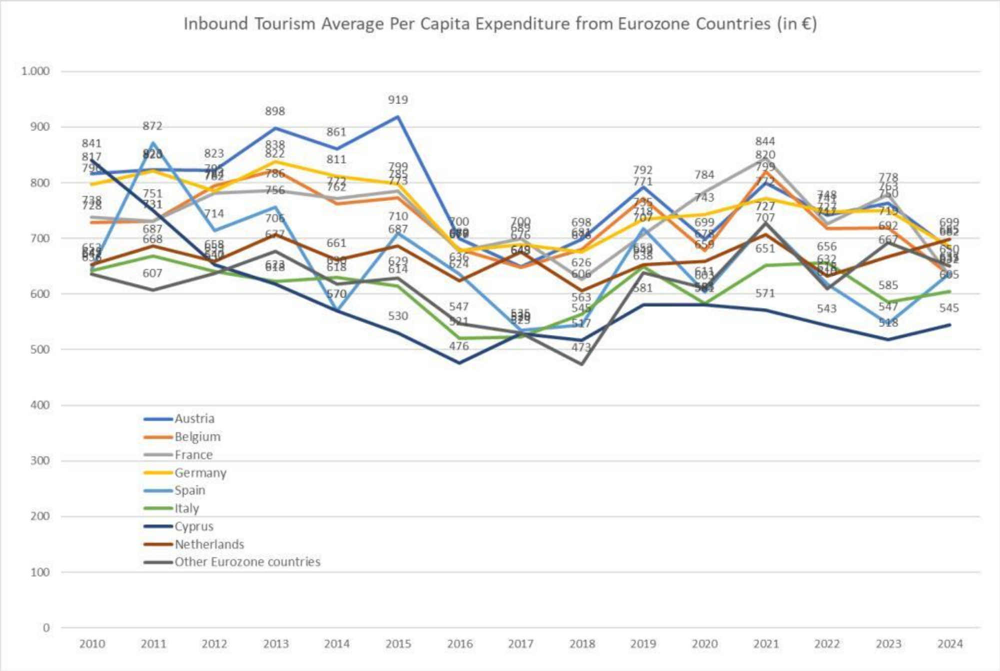

Figure 13. Average per capita expenditure from Eurozone countries for the period 2010-2024

Eurozone economies displayed stable but persistent volatility (Figure 13). Austria and Belgium recorded relatively high average expenditure levels (around €700–€800 per visitor), in line with higher-expenditure tourist populations and a preference for longer stays (Mitropoulou, 2025). France and Germany were also well above the European average, with steady expenditure patterns amidst short-run pandemic-related volatility. The Southern Eurozone countries, for example, Italy and Spain, mostly recorded lower mean values of around €550 to €650 in the post-COVID period, which aligns with shorter stays and the preference for low-cost accommodations (Mitropoulou, 2025). The weaker Eurozone economies, for example, Cyprus and the Netherlands, also contributed to overall expenditure but not significantly. However, their per-capita expenditure converged to €600–€700 by 2024, corresponding to pre-crisis expenditure levels.

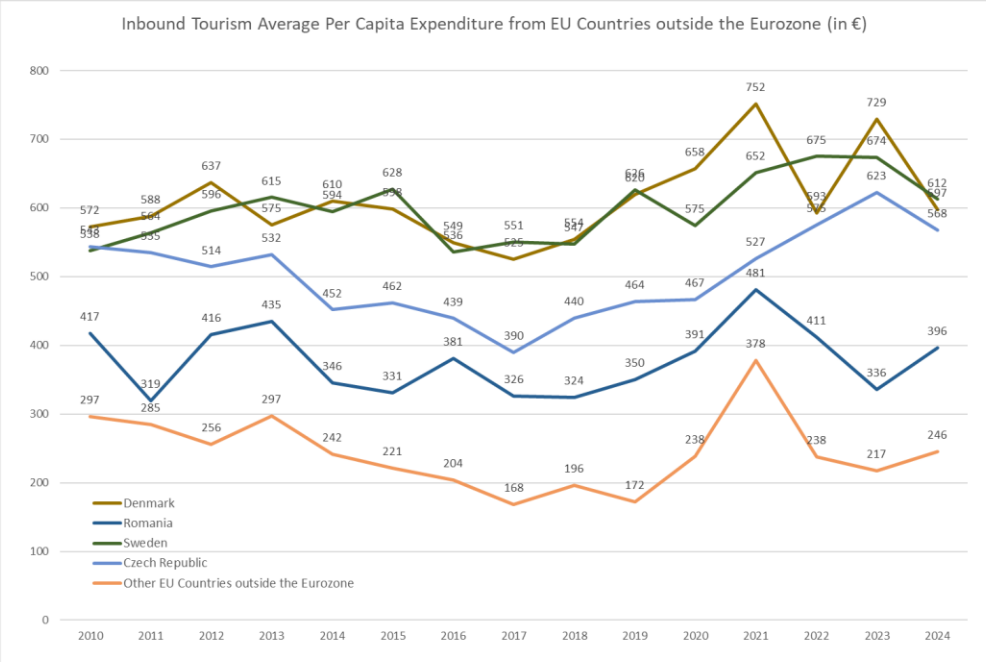

Figure 14. Average per capita expenditure from EU countries outside the Eurozone for the period 2010-2024.

Among European, non-Eurozone countries (Figure 14), the Nordic economies (Sweden and Denmark) maintained above-average expenditure levels over the period, which reflects high expenditure and longer average lengths of stay. The markets of Central and Eastern Europe were more mixed, with the Czech Republic and Romania having relatively low levels of expenditure, often below €400-€500, although both have been steadily improving over the past few years. Albania was always at the lower end (around €300-€350), which is representative of short stays and high cross-border flow behavior and not average leisure tourism (Ansarinasab & Saghaian, 2023).

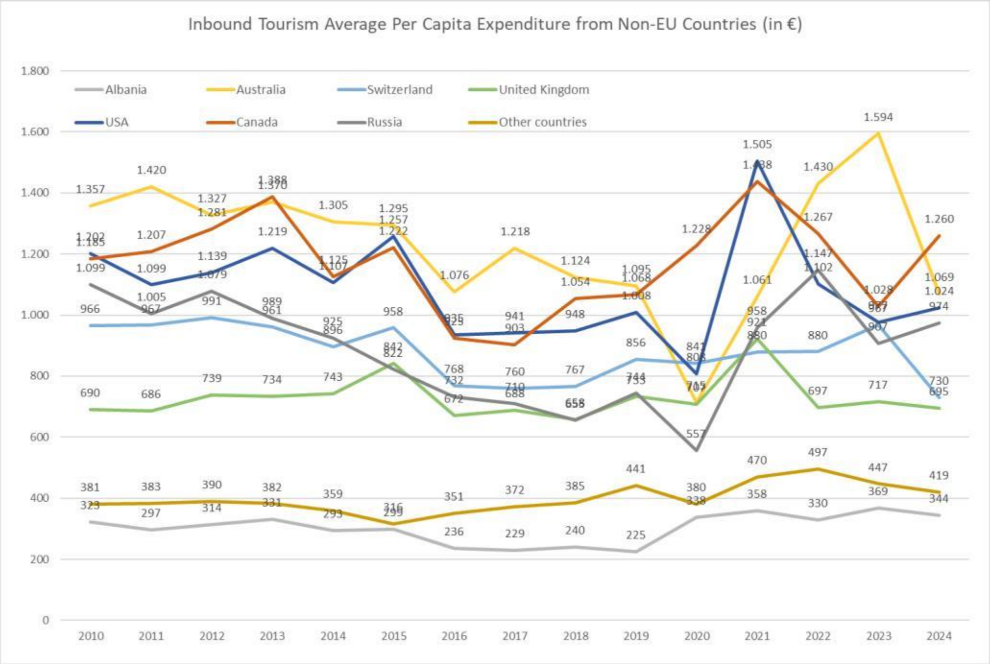

Figure 15. Average per capita expenditure from non-European countries for the period 2010-2024

On the other hand, the non-European markets showed much higher per capita spending, taking into consideration their significant contribution to the tourism revenue profile of Greece (Figure 15). The United States and Canada continued to display the highest levels of expenditure, often surpassing €1,000 per capita, with their respective peaks in 2021 at €1,505 and €1,438. This performance is linked to the post-pandemic recovery of transatlantic tourism, the launch of direct flight routes to Athens, and the rising demand for high-quality tourist services (Tsekeris, 2024). Australia showed similar orders of magnitude (in the range of €1,300–€1,500), consistent with long-distance journey costs and high-expenditure visitor profiles. Russia is once again a totally different case, as after relatively high values in 2010–2014 (in the range of €1,000), per capita expenditure dropped noticeably in subsequent years. This decline is associated with the sharp decreases observed in both arrivals and the value of the ruble (Khanenko & Bobko, 2024). Though recovering to some degree in 2022–2023, the Russia–Ukraine conflict brought in new volatility, maintaining per capita expenditure well below its previous highs. Finally, the overall group of *"Other countries"* indicates a steady recovery after 2016, from €351 to €419 in 2024, as testimony to the ongoing diversification of Greece's welcoming tourism base to new foreign markets (Deirmentzoglou *et al*., 2025).

Inbound Tourism Average Per Capita Expenditure (in €)															
Countries	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Austria	817	823	823	898	861	919	700	649	698	792	699	799	741	763	682
Belgium	728	731	795	822	762	773	680	648	681	771	678	820	717	719	635
France	738	731	782	786	772	785	677	700	626	707	784	844	727	778	632
Germany	796	820	784	838	811	799	678	689	676	735	743	772	748	750	685
Spain	645	872	714	756	570	710	636	535	545	718	603	727	618	547	637
Italy	642	668	640	623	630	614	521	523	563	649	583	651	656	585	605
Cyprus	841	751	653	618	570	530	476	528	517	581	581	571	543	518	545
Netherlands	653	687	658	706	661	687	624	676	606	653	659	707	632	667	699
Other Eurozone countries	636	607	637	677	618	629	547	530	473	638	611	727	610	692	650
Denmark	572	588	637	575	610	598	549	525	554	620	658	752	593	729	597
Romania	417	319	416	435	346	331	381	326	324	350	391	481	411	336	396
Sweden	538	564	596	615	594	628	536	551	547	626	575	652	675	674	612
Czech Republic	543	535	514	532	452	462	439	390	440	464	467	527	575	623	568
Other European countries outside the Eurozone	297	285	256	297	242	221	204	168	196	172	238	378	238	217	246
Albania	323	297	314	331	293	299	236	229	240	225	338	358	330	369	344
Australia	1.357	1.420	1.327	1.370	1.305	1.295	1.076	1.218	1.124	1.095	715	1.061	1.430	1.594	1.069
Switzerland	966	967	991	961	896	958	768	760	767	856	841	880	880	967	730
United Kingdom	690	686	739	734	743	842	672	688	658	733	707	921	697	717	695
USA	1.202	1.099	1.139	1.219	1.107	1.257	935	941	948	1.008	808	1.505	1.102	977	1.024
Canada	1.185	1.207	1.281	1.388	1.125	1.222	925	903	1.054	1.068	1.228	1.438	1.267	1.028	1.260
Russia	1.099	1.005	1.079	989	925	822	732	710	655	744	557	958	1.147	907	974
Other countries	381	383	390	382	359	316	351	372	385	441	380	470	497	447	419
Total	**640**	**639**	**646**	**653**	**590**	**580**	**514**	**522**	**520**	**564**	**584**	**702**	**620**	**603**	**573**

Table 6. Inbound tourism average per capita expenditure for the period 2010-2024

International tourists' daily average expenditure in Greece for the period 2010-2024 provides a clear picture of shifting expenditure patterns and accommodation trends per origin markets (Table 7). The overall pattern shows a consistent increase in the average expenditure per night, from €69 in 2010 to €89 in 2024, which corresponds to a long-term price revision upwards of tourist services and a shift to higher-value segments following pandemic recovery. During the first half of the period (2010–2015), expenditure levels were relatively stable, fluctuating within the range of €70–€74 per night. A temporary dip in 2016–2018 (circa €67–€69) coincided with increased price competition in accommodation and the growing popularity of short-stay, low-budget trips (Darvidou & Siskos, 2024). The recovery that started in 2019 strengthened after 2021, as the indicator climbed from €79 in 2021 to €87 in 2023, peaking at €89 per night in 2024.

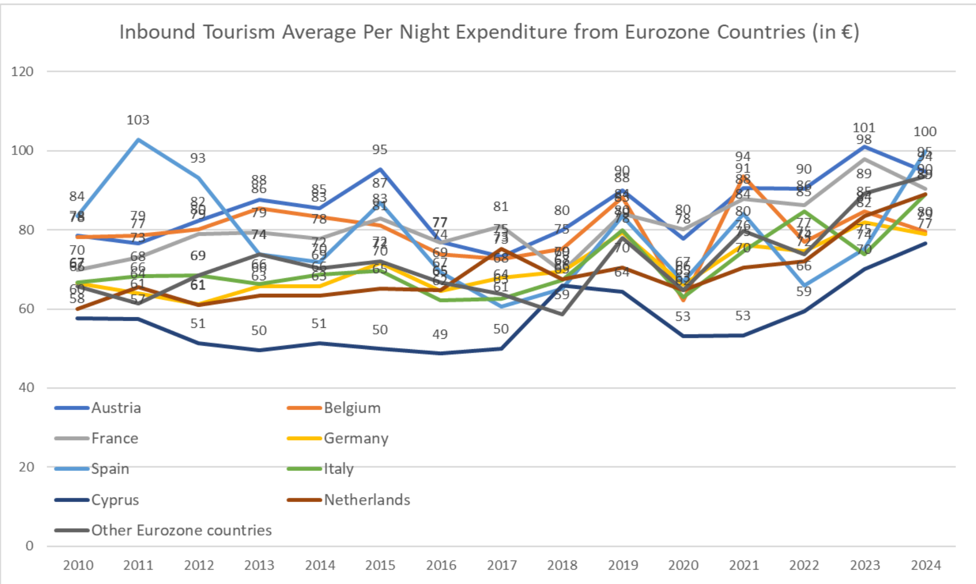

Figure 16. Average per night expenditure from Eurozone countries for the period 2010-2024.

In the Eurozone markets (Figure 16), consumer spending habits were quite similar, despite some variation between individual countries. Austria and

Belgium showed systematically higher-than-average spending levels (around €80-95 per night in the relatively more recent years), which can be attributed to the purchasing power of tourists arriving from these countries, as well as the affinity for mid to high-end accommodations (Gavurova, Suhanyi & Rigelský, 2020). France and Germany showed more moderate but steady growth, reaching a maximum of €90 and €79 in 2024. The Southern European countries, such as Italy and Spain, had a similar trend, with expenditure ranging between €80 and €100 in recent years, in line with the post-COVID correction of prices and the revival of demand for classic resort destinations. The smaller Eurozone economies, such as Cyprus, the Netherlands, and other Eurozone countries, had a relatively lower level of expenditure, ranging between €60 and €90. However, since 2021, most of these countries have shown a definite positive trend, with the Netherlands reaching €89 and the aggregate of *"Other Eurozone countries"* reaching €94 in 2024.

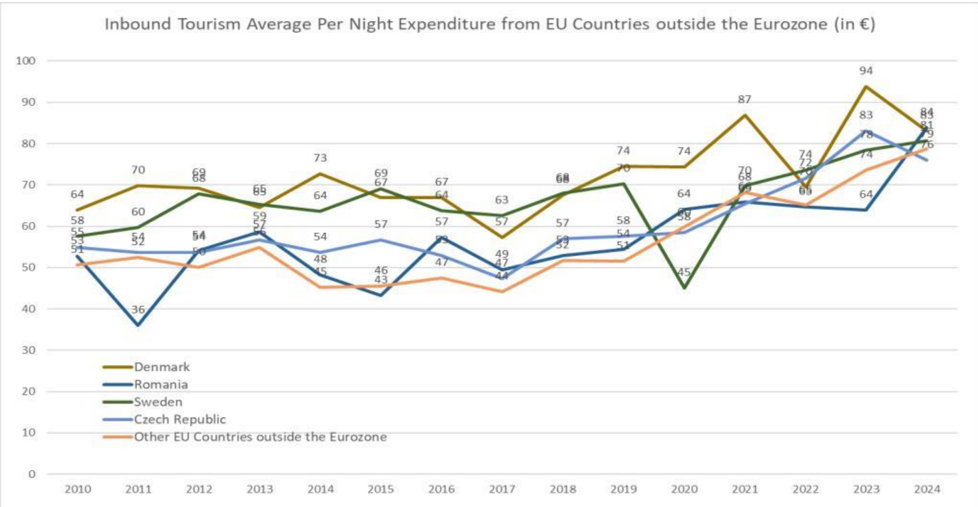

Figure 17. Average per capita expenditure from EU countries outside the Eurozone for the period 2010-2024.

As for the European markets outside the Eurozone generally, the expenditure growth was more variable (Figure 17). Both Denmark and Sweden had relatively robust levels of spend (of approximately €80–€83 per night in 2024), while Central and Eastern European nations like Romania and the Czech Republic had weaker but increasingly better performances at €84 and €76 respectively in 2024.

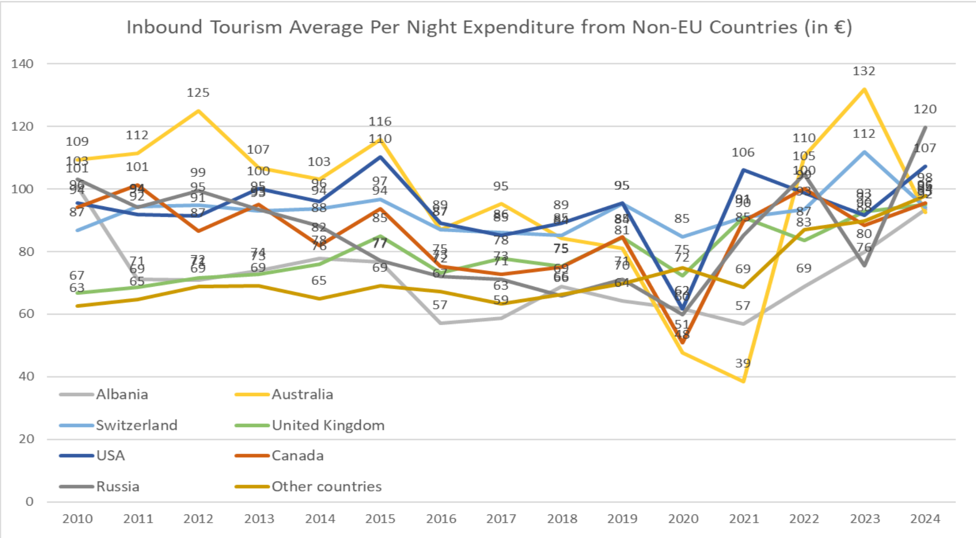

Figure 18. Average per capita expenditure from non-European countries for the period 2010-2024.

Turning to non-EU markets (Figure 18), Albania is an exceptional case, where per-night spend rose considerably from €71 in 2011 to €93 in 2024, indicating the shift towards more diversified holiday travel rather than cross-border short-stay trips (Deirmentzoglou *et al.*, 2025). For long-haul markets, per-night spend was significantly higher. The USA and Canada spent the most per night in 2024 (€107 and €96 respectively), followed by Switzerland (€94) and Australia (€92). These are the trends of higher purchasing power among longer distance tourists as well as their longer stay. Russian expenditure behavior again appears for its extreme volatility. Having peaked in the beginning of the 2010s (approximately €100 per night), it fell dramatically after 2015 and again because of the Russia–Ukraine war that had disrupted outbound stream of tourists (Khanenko & Bobko, 2024). Even though recovery did happen for some time in 2023–2024, with expenditure increasing to €120 per night, this is anticipated to be for a leaner, wealthier tourist segment and not a complete market recovery. Finally, the *"Other countries"* group depicts stable and equal development from €63 in 2010 to €98 in 2024, which represents the increasing proportion of other non-European markets with stronger expenditure ability.

Inbound Tourism Average Per Night Expenditure (in €)															
Countries	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Austria	78	77	82	88	85	95	77	73	80	90	78	91	90	101	95
Belgium	78	79	80	86	83	81	74	73	75	88	62	94	77	85	80
France	70	73	79	79	78	83	77	81	69	84	80	88	86	98	90
Germany	67	64	61	66	66	72	65	68	70	79	66	76	75	82	79
Spain	84	103	93	74	72	87	69	61	65	83	67	84	66	75	100
Italy	67	68	69	66	69	70	62	63	67	80	63	75	85	74	89
Cyprus	58	57	51	50	51	50	49	50	66	64	53	53	59	70	77
Netherlands	60	66	61	63	63	65	65	75	68	70	65	70	72	84	89
Other Eurozone countries	66	61	69	74	70	72	67	64	59	78	65	80	74	89	94
Denmark	64	70	69	65	73	67	67	57	68	74	74	87	70	94	83
Romania	53	36	54	59	48	43	57	49	53	54	64	66	65	64	84
Sweden	58	60	68	65	64	69	64	63	68	70	45	70	74	78	81
Czech Republic	55	54	54	57	54	57	53	47	57	58	58	65	72	83	76
Other European countries outside the Eurozone	51	52	50	55	45	46	47	44	52	51	60	68	65	74	79
Albania	101	71	71	74	78	77	57	59	69	64	62	57	69	80	93
Australia	109	112	125	107	103	116	87	95	84	81	48	39	110	132	92
Switzerland	87	94	95	93	94	97	87	86	85	95	85	91	93	112	94
United Kingdom	67	69	72	73	76	85	73	78	75	84	72	91	83	93	95
USA	96	92	91	100	96	110	89	85	89	95	62	106	99	92	107
Canada	94	101	87	95	82	94	75	73	75	85	51	90	100	88	96
Russia	103	94	99	93	88	77	72	71	66	71	60	85	105	76	120
Other countries	63	65	69	69	65	69	67	63	66	70	75	69	87	90	98
Total	**69**	**70**	**71**	**73**	**70**	**74**	**67**	**68**	**69**	**76**	**67**	**79**	**80**	**87**	**89**

Table 7. Inbound tourism average per night expenditure for the period 2010-2024

The research of Greek incoming tourism data for 2010–2024 employs an exploratory methodology and provides a clear understanding of the market framework and structural development of the sector. The indicators under investigation (total arrivals, total nights, total and per capita spending, and spending on nights) collectively describe an extension of tourism which is long-term in duration but is subjected to episodic and temporary interruption.

The research validates that inbound tourism in Greece developed geometrically in terms of both quantity and quality (Gounopoulos *et al*., 2012; Saltsidou & Drakaki, 2021; Anastasiou *et al*., 2022; Darvidou & Siskos, 2024, Tsekeris, 2024; Deirmentzoglou *et al*., 2025). Most European destinations, particularly the members of the Eurozone, registered stable growth trends underpinned by improved accessibility, destination competitiveness, and continued consumer confidence in Greece as a safe and accessible nation to travel to (Mitropoulou, 2025). Non-Eurozone European countries recorded more varied trends, with the economies of Central and Eastern Europe recording robust growth following 2014, whereas the United Kingdom recorded a steadier trend of recovery during the post-pandemic era.

Long-haul tourism of the United States, Canada, and Australia seemed to be more dominant, making a disproportionate contribution to total tourism revenue for their relatively lower arrivals. Their higher per-night and per-capita spending indicate ongoing trade-up to higher-value tourism segments. Russia was the sole exception, showing a huge and protracted decline after 2022 due to the war in Ukraine and the associated travel bans by the European Union.

Globally, the period under study reveals a turbulent but stable growth of Greece's tourism sector, reflecting successive moments of growth perturbations and persistent recovery driven by external shocks and adaptive market adjustment. The resiliency which has been shown in the wake of such monumental crises - especially the COVID-19 pandemic - speaks volumes about the industry's ability to react promptly to shifting global realities and the acceptance of novel opportunities emerging out of current as well as rising markets (Bozhkova, 2022).

From the methodological standpoint, non-seasonality of the annual datas*et al*lows long-run trends to be interpreted with ease without the distortion effect of short-run cyclical behavior. This provides an even playing ground for the subsequent time series analysis, which will encompass identification of underlying trends, describing the persistence in their behavior, and building medium-term forecasts of incoming tourism flows and expenditure (Hyndman & Athanasopoulos, 2018).

3.2. Time series modelling and forecasting

Time series modelling methodology was used to forecast the tourism demand of Greece for the years 2010–2024 and obtain accurate forecasts for the years 2025–2029 by describing the underlying dynamic of tourist flows and expenditures. Time series method was used because it is capable of modelling the time dependencies and grasping the structural patterns that control the development of tourist flows (Chatfield, 2000). As the data set has yearly observations, the focus of the analysis was put on discovering long-term tendencies and stochastic trends, and disregarding seasonals that at this frequency do not occur.

The empirical process involved standard Box–Jenkins practice, comprising model identification, estimation, diagnostic checking, and forecasting (Box *et al*., 2016). Autoregressive Integrated Moving Average (ARIMA) models were fitted to each origin market, with a general framework that had the ability to encapsulate both the deterministic and stochastic features of the data. There was a dummy variable also added for the years 2020 and 2021 to account for the unprecedented shock owing to the COVID-19 pandemic so that the model would be able to distinguish between the short- term shock and the long-term trend.

The forecasting was carried out following the usual Box–Jenkins approach (Box *et al*., 2016), with the use of *IBM SPSS Statistics*. Each country's time series was examined separately in an effort to identify the most appropriate ARIMA specification, after assumptions of stationarity and white-noise residuals. The steps taken were as follows: model identification, estimation, diagnostic checking, and forecasting.

Step 1: Model identification. Each stationary series was examined to identify its potential autoregressive and moving average components. The autocorrelation function (ACF) and partial autocorrelation function (PACF) plots were inspected to determine appropriate *AR* (*p*) and *MA* (*q*) orders. When necessary, first differences were taken to achieve stationarity, as confirmed by the Augmented Dickey–Fuller (ADF) tests presented in Table 2.

The *SPSS's Time Series Modeler* function was employed to generate automatic ARIMA model suggestions, using the Expert Modeler option (Figure 19). This algorithm tests various ARIMA models of the form (p, d, q) and chooses the model that has the lowest Bayesian Information Criterion (BIC). The dummy variable for COVID-19 was added as an external regressor (independent variable) in the model formulation to capture the structural shock that occurred in 2020-2021.

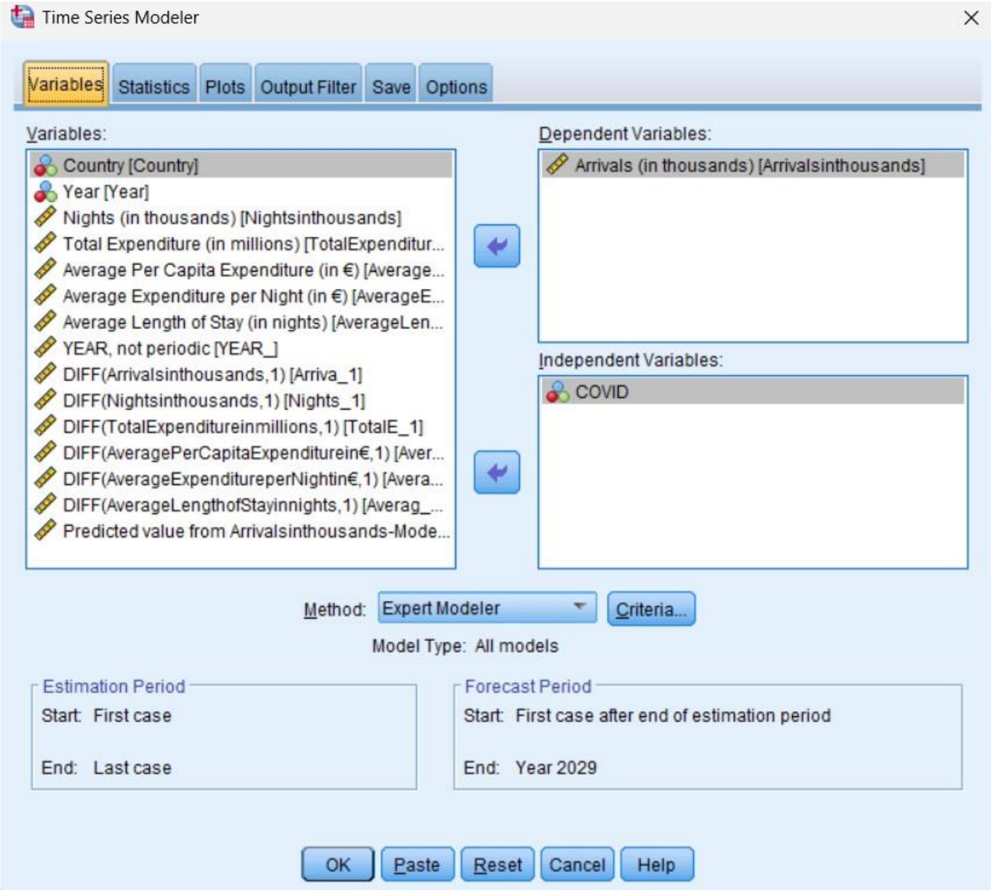

Figure 19. Model identification using SPSS Time Series Modeler.

Step 2: Parameter estimation. After the possible ARIMA model was determined, the parameters were estimated using the *Maximum Likelihood* (ML) estimation method. The SPSS software calculates the estimates of the coefficients, their standard errors, t-values, and significance levels, so that the significance of the parameters can be assessed. Only parameters with p-values < 0.05 were considered, and the non-significant parameters were successively eliminated to reduce the model without compromising its predictive ability.

Model Statistics[a]

Model	Number of Predictors	Model Fit statistics: Stationary R-squared	Model Fit statistics: MaxAPE	Model Fit statistics: Normalized BIC	Ljung-Box Q(18): Statistics	Ljung-Box Q(18): DF	Ljung-Box Q(18): Sig.	Number of Outliers
Arrivals-Model_1	1	,813	53,266	9,180	.	0	.	1

a. Best-Fitting Models according to Stationary R-squared (larger values indicate better fit).

Table 8. Example of model statistics chart, as generated in SPSS.

ARIMA Model Parameters[a]

					Estimate	SE	t	Sig.
Arrivals-Model_1	Arrivals (in thousands)	No Transformation	Constant		51,990	21,426	2,427	,034
			Difference		1			
	COVID	No Transformation	Numerator	Lag 0	-132,660	56,688	-2,340	,039

a. Best-Fitting Models according to Stationary R-squared (larger values indicate better fit).

Table 9. Example of ARIMA model parameters chart, as generated in SPSS

Step 3: Diagnostic checking. The adequacy of each estimated model was checked by residual diagnostic testing. The Ljung-Box Q-statistic (Ljung & Box, 1978) was employed to check for autocorrelation up to lag 12 on the residuals. The non-significant Q-statistic (p-value > 0.05) indicates residuals as white noise, hence checking the adequacy of the model. Other checks, such as residual ACF testing and normality tests, were also conducted to ensure that the residual series did not contain systematic patterns. Models that failed these tests were re-specified by changing the orders of AR and MA terms or differencing.

Step 4: Forecasting. Once validated, each ARIMA model was used to generate forecasts for the period 2025-2029. The forecasts were generated in SPSS using the Forecast procedure, which generated the predicted values and 95% confidence intervals based on the model parameters estimated. *The Series Chart* produced allowed for the display of the forecast.

Forecast[a]

Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	807,18	849,05	872,02	902,37	930,52
	UCL	1026,85	1081,78	1143,32	1198,4	1251,27
	LCL	587,51	616,32	600,72	606,34	609,78

a. Best-Fitting Models according to Stationary R-squared (larger values indicate better fit).

Table 10. Example of a model's forecast chart, as generated in SPSS.

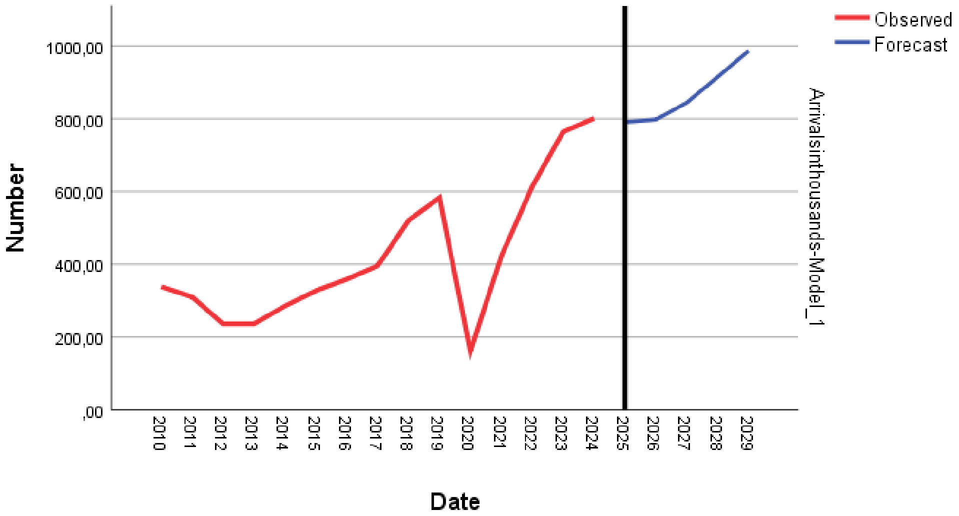

Figure 20. Example of a model's series chart, as generated in SPSS.

Step 5: Model evaluation and comparison. The performance of the models was evaluated using general measures of accuracy of forecasting offered by SPSS, which included *Mean Absolute Percentage Error*, *Root Mean Squared Error*, and *Stationary* R^2. Models with minimum MAPE and maximum Stationary R-squared values were selected as the final model specifications. In cases where a couple of models performed equally well, the most parsimonious model was selected.

Model Fit

Fit Statistic	Mean	SE	Minimum	Maximum	Percentile 5	10	25	50	75	90	95
Stationary R-squared	,813	.	,813	,813	,813	,813	,813	,813	,813	,813	,813
R-squared	,882	.	,882	,882	,882	,882	,882	,882	,882	,882	,882
RMSE	74,222	.	74,222	74,222	74,222	74,222	74,222	74,222	74,222	74,222	74,222
MAPE	11,996	.	11,996	11,996	11,996	11,996	11,996	11,996	11,996	11,996	11,996
MaxAPE	53,266	.	53,266	53,266	53,266	53,266	53,266	53,266	53,266	53,266	53,266
MAE	45,912	.	45,912	45,912	45,912	45,912	45,912	45,912	45,912	45,912	45,912
MaxAE	139,902	.	139,902	139,902	139,902	139,902	139,902	139,902	139,902	139,902	139,902
Normalized BIC	9,180	.	9,180	9,180	9,180	9,180	9,180	9,180	9,180	9,180	9,180

Table 11. Example of a model fit chart to assess its performance, as generated in SPSS.

Step 6: Aggregation and interpretation. Projections of the country as a whole for all variables were then aggregated further by market grouping (Eurozone, EU but not in Eurozone, and non-European) to create regional trends. Aggregated forecasts were used in order to provide comment on the projected development of inbound tourist flows and expenditure.

The modelling framework allows for a rigorous assessment of Greece's tourism outlook by integrating quantitative forecasts with the interpretative data gathered from the initial exploratory analysis and aligned with the international best practice in forecasting tourism (Hyndman & Athanasopoulos, 2018).

Subsequent sections present the modelling results, including model identification, specification, estimation, diagnostic testing, and forecast interpretation.

Inbound tourist arrivals to Greece during 2025–2029 were forecasted by using ARIMA models based on annual observations from 2010–2024. A dummy variable for the COVID-19 years 2020 and 2021 was included to truncate the exceptional shock without altering long-run dynamics. Table 12 presents the ARIMA models identified as the best fit for each country, together with the forecasted values for the arrivals figures, which will form the basis of the discussion for each country.

Arrivals (in thousands)									
					Forecasting				
Country	Model Type	Fit Statistic	Mean	*Year*	*2025*	*2026*	*2027*	*2028*	*2029*
Austria*	ARIMA (2,1,0)	Stationary R^2	0,883	*Forecast*	790,56	797,70	843,98	914,77	986,48
				UCL	927,54	1086,28	1248,84	1390,45	1504,53
				LCL	653,58	509,11	439,12	439,08	468,43
Belgium*	ARIMA (0,1,1)	Stationary R^2	0,694	*Forecast*	767,33	797,55	827,77	857,98	888,2
				UCL	998,73	1028,99	1059,2	1089,37	1119,52
				LCL	535,94	566,11	596,34	626,6	656,88
France*	ARIMA (0,1,1)	Stationary R^2	0,818	*Forecast*	2036,33	2098,27	2160,21	2222,16	2284,1
				UCL	2457,49	2519,51	2581,43	2643,3	2705,12
				LCL	1615,16	1677,03	1738,99	1801,02	1863,08
Spain*	ARIMA (1,1,0)	Stationary R^2	0,689	*Forecast*	442,3	480,34	493,17	517,92	537,03
				UCL	570,32	625,06	666,89	710,26	748,95
				LCL	314,29	335,63	319,45	325,57	325,1
Cyprus*	ARIMA (1,1,1)	Stationary R^2	0,666	*Forecast*	664,71	692,43	713,16	729,74	743,87
				UCL	952,87	1035,01	1076,73	1102,39	1120,64
				LCL	376,56	349,86	349,58	357,09	367,1
Netherlands	ARIMA (2,1,0)	Stationary R^2	0,787	*Forecast*	1094,82	1166,53	1181,02	1204,53	1247,09
				UCL	1395,98	1537,36	1572,86	1637,36	1724,57
				LCL	793,67	795,71	789,18	771,69	769,6
Czech Republic*	ARIMA (1,1,0)	Stationary R^2	0,680	*Forecast*	430,08	458,35	452,03	463,63	465,94
				UCL	603,54	650,91	684,45	719,1	747,57
				LCL	256,63	265,79	219,61	208,15	184,31
Albania	ARIMA (1,1,1)	Stationary R^2	0,907	*Forecast*	1214,78	1280,53	1354,97	1432,17	1510,23
				UCL	1422,41	1502	1578,78	1656,42	1734,48
				LCL	1007,16	1059,06	1131,16	1207,92	1285,99
Switzerland*	ARIMA (1,1,1)	Stationary R^2	0,853	*Forecast*	586,83	676,46	664,57	710,46	723,47
				UCL	712,06	816,35	811,17	857,97	871,9
				LCL	461,6	536,57	517,98	562,95	575,03
United Kingdom*	ARIMA (1,1,0)	Stationary R^2	0,967	*Forecast*	4745,44	4894,21	5053,63	5210,83	5368,49
				UCL	5239,08	5523,93	5806,33	6066,94	6317,2
				LCL	4251,81	4264,5	4300,93	4354,71	4419,77
Canada	ARIMA (2,0,1)	Stationary R^2	0,948	*Forecast*	319,62	308,90	322,34	311,08	322,76
				UCL	382,83	373,77	392,01	380,85	394,01
				LCL	256,41	244,04	252,67	241,31	251,51
Russia*	ARIMA (0,1,1)	Stationary R^2	0,966	*Forecast*	-36,18	-76,28	-116,39	-156,49	-196,59
				UCL	141,48	283,75	360,78	414,25	454,42
				LCL	-213,84	-436,31	-593,55	-727,23	-847,6

Table 12. Inbound tourism total arrivals forecasting results.

The Eurozone markets as a whole demonstrate positive growth in the number of arrivals, which indicates the maturity, stability, and power of these experienced source markets in Europe. The countries included in the analysis are Austria, Belgium, France, Spain, Cyprus, and the Netherlands.

Austria is expected to demonstrate growth from 790 thousand in 2025 to 986 thousand in 2029. The ARIMA(2,1,0) model used for this series demonstrates a good fit, as evidenced by the Stationary R^2 of 0.734, which indicates that the model is explaining a large part of the variation in the series after differencing. The Upper Confidence Limits (UCL) are between 927 thousand and 1,504 thousand, and the Lower Confidence Limits (LCL) are between 439 thousand and 653 thousand. The positive trend indicates deeply ingrained tourist behavior, good connectivity to Greek holiday destinations, and tourist interest. Potential series line chart indicates even trend with a short-run anomaly between 2020-2021 due to the pandemic.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	790,56	797,70	843,98	914,77	986,48
	UCL	927,54	1086,28	1248,84	1390,45	1504,53
	LCL	653,58	509,11	439,12	439,08	468,43

Table 13. Forecasted total inbound tourism arrivals for Austria.

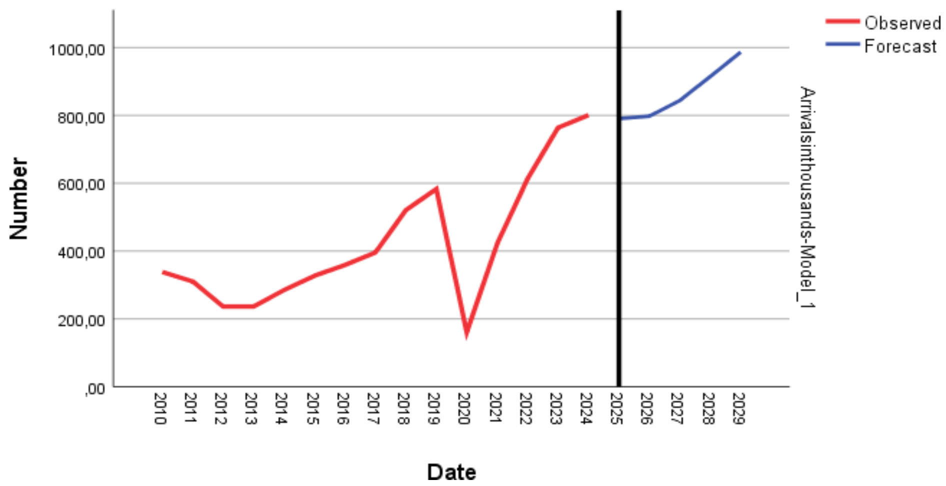

Figure 21. Forecast of inbound tourism total arrivals for Austria.

Belgium shows the same trend, increasing from 767 thousand to 888 thousand tourists during the same years. A good fit is given by ARIMA(0,1,1) model for the Belgian series, Stationary $R^2 = 0.694$, which is a relatively good level of explanatory power after differencing once. Confidence intervals impose moderate volatility, suggesting slow recovery post-pandemic. The Belgian market is characterized by repeat travelers, medium-haul pattern of visiting, and high synchronization with seasonally conditioned patterns of visiting in Greece.

Model		Forecast 2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	1061,06	1136,97	1212,89	1288,80	1364,72
	UCL	1258,90	1485,34	1664,09	1823,41	1971,37
	LCL	863,21	788,60	761,69	754,20	758,07

Table 14. Forecasted total inbound tourism arrivals for Belgium.

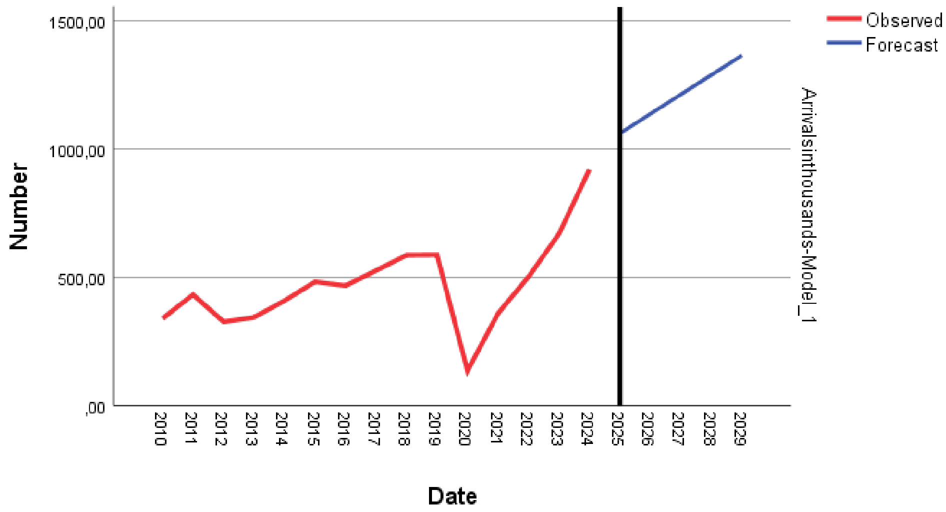

Figure 22. Forecast of inbound tourism total arrivals for Belgium.

France overwhelms the contributions of the Eurozone to these estimates, while omitting Germany because of non-stationarity in spite of first differencing its time series. The ARIMA(0,1,1) model used for the French series works very successfully, with a Stationary R^2 of 0.818, indicating excellent adequacy of explanation after first differencing. Arrivals are projected to grow from 2.04 million in 2025 to 2.28 million in 2029. The interval forecast, UCL 2.46–2.71 million and LCL 1.62–1.86 million, encompasses the extent of French market as well as remaining uncertainty in annual time-series forecast. The related series chart reflects post-pandemic recovery with linear trend of increase, verifying market strength.

Forecast

Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	2036,33	2098,27	2160,21	2222,16	2284,10
	UCL	2457,49	2519,51	2581,43	2643,30	2705,12
	LCL	1615,16	1677,03	1738,99	1801,02	1863,08

Table 15. Forecasted total inbound tourism arrivals for France.

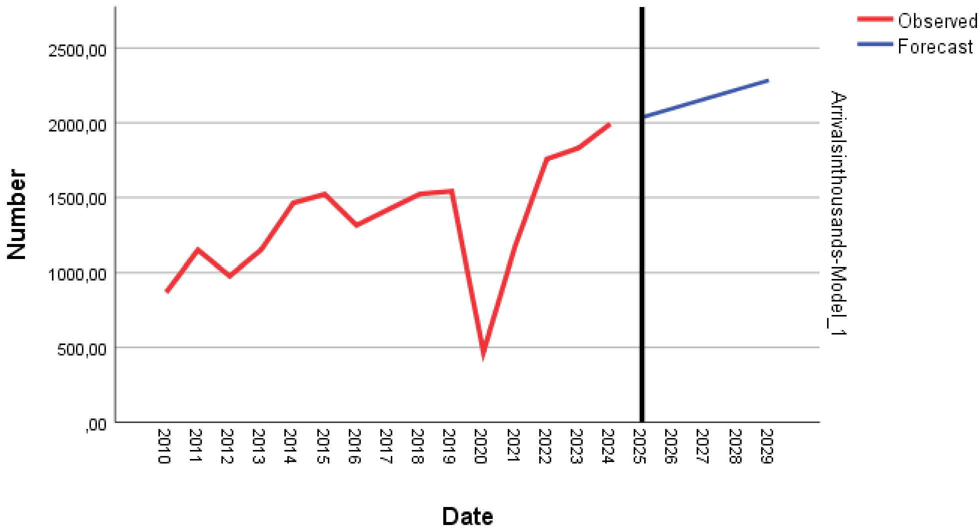

Figure 23. Forecast of inbound tourism total arrivals for France.

The growth rate for tourists from Spain is expected to be moderate, with the number rising from 442 thousand in 2025 to 537 thousand in 2029. The ARIMA(1,1,0) model fitted to the Spanish data has a Stationary R^2 of 0.689, which shows that the model fits the data well and that the predictability of the data is reliable after differencing. The large confidence intervals (UCL: 570-749 thousand; LCL: 314-325 thousand) are a result of the market being very sensitive to competitive forces in the Mediterranean region and seasonal price changes (Darvidou & Siskos, 2024). The form of the relationship between the projections shows a steady but slow rate of recovery, which is in line with Spain's steady movement towards the restoration of pre-crisis levels of outbound tourism.

Model		Forecast 2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	442,30	480,34	493,17	517,92	537,03
	UCL	570,32	625,06	666,89	710,26	748,95
	LCL	314,29	335,63	319,45	325,57	325,10

Table 16. Forecasted total inbound tourism arrivals for Spain.

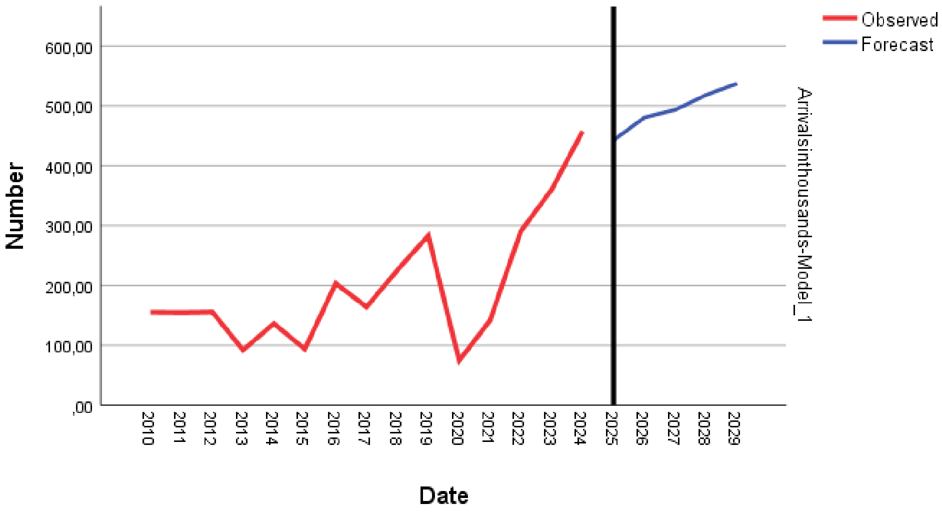

Figure 24. Forecast of inbound tourism total arrivals for Spain.

Cyprus shows steady and sustained growth, and the number of arrivals forecasted is to increase from 665 thousand in 2025 to 744 thousand in 2029. The ARIMA(1,1,1) model employed for model fitting for the Cypriot series indicates a Stationary R^2 of 0.666, which is a good enough approximation of goodness of fit and a well-behaved process for the residuals. The bounds of the confidence intervals (953-1,121 thousand and 367-377 thousand, respectively) indicate the sustained pattern of recovery that is a result of the geographically sound location, common culture, and the strength of short-haul intra-regional tourism.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	664,71	692,43	713,16	729,74	743,87
	UCL	952,87	1035,01	1076,73	1102,39	1120,64
	LCL	376,56	349,86	349,58	357,09	367,10

Table 17. Forecasted total inbound tourism arrivals for Cyprus.

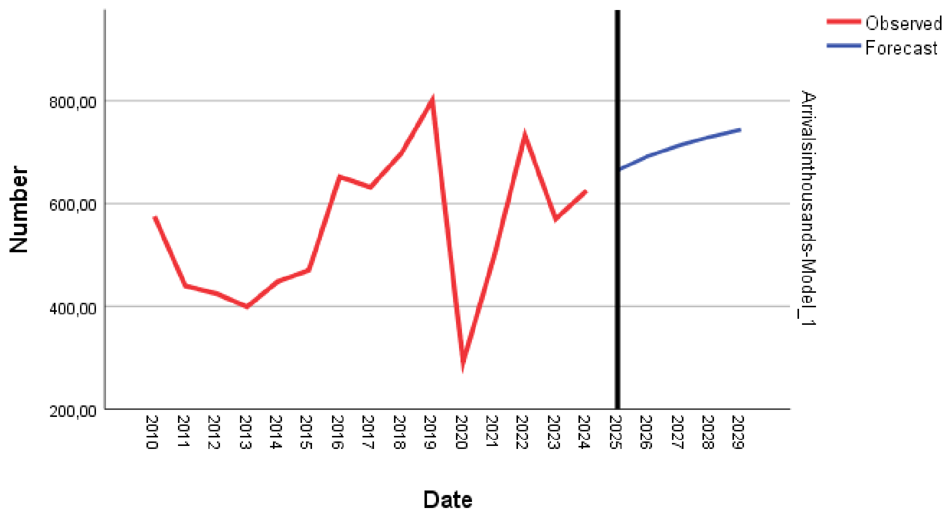

Figure 25. Forecast of inbound tourism total arrivals for Spain.

The Netherlands is expected to increase from 1.10 million arrivals in 2025 to 1.25 million in 2029. The ARIMA(2,1,0) model, which was modified to fit the Dutch data, has a Stationary R^2 of 0.787, which is a fair model performance. The forecast confidence intervals (UCL: 1.40-1.72 million, LCL: 770,000-794,000) reflect a certain level of uncertainty but are in line with the expectation of continued growth. The series chart reveals a smooth trend upwards, in line with the Netherlands' stable, high-spending tourist profile and the high loyalty of the market to Greek destinations.

Model		Forecast 2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	1094,82	1166,53	1181,02	1204,53	1247,09
	UCL	1395,98	1537,36	1572,86	1637,36	1724,57
	LCL	793,67	795,71	789,18	771,69	769,60

Table 18. Forecasted total inbound tourism arrivals for the Netherlands.

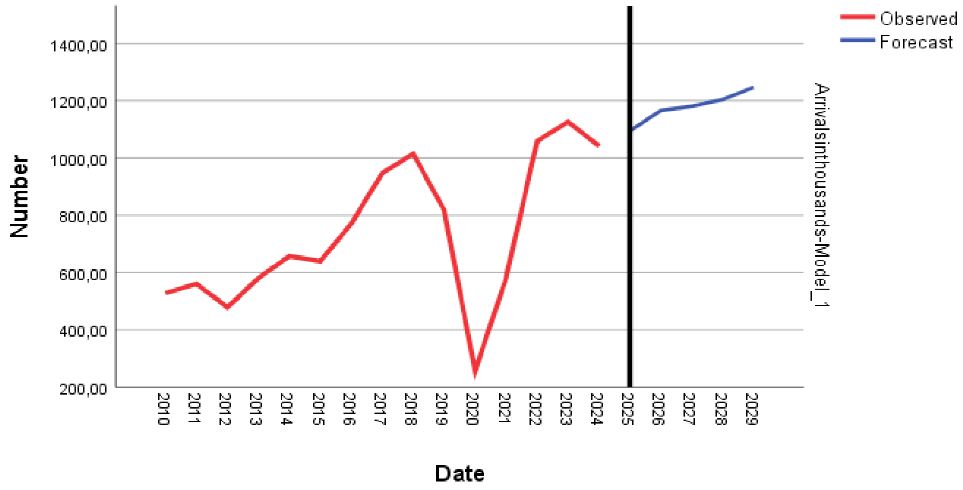

Figure 26. Forecast of inbound tourism total arrivals for the Netherlands.

Overall, the Eurozone markets represent the stable basis of the incoming tourism in Greece because they are distinguished by mature tourism behavior, high connectivity, and a high degree of resilience of the Europeans' high-value segments.

The non-Eurozone European markets, including the United Kingdom, the Czech Republic, Switzerland, and Albania, recorded positive developments with divergent growth volume and rate for each country.

The United Kingdom is the leading source market, with arrivals projected to grow from 4.75 million in 2025 to 5.37 million in 2029. The ARIMA(1,1,0) modelized for the UK series presents a highly stable adjustment, with a Stationary R^2 of 0.967, and high predictive credibility and stable residuals. The confidence limits (UCL: 5.24-6.32 million; LCL: 4.25-4.42 million) are moderate uncertainty in comparison to the magnitude of the series. The series graph presents a clear post-pandemic recovery and a tendency to return to pre-COVID-19 levels. The stability of the UK market is ensured by the established long-term tourist behavior, high connectivity of the carriers, and demand for Mediterranean mass leisure tourism.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	4745,44	4894,21	5053,63	5210,83	5368,49
	UCL	5239,08	5523,93	5806,33	6066,94	6317,20
	LCL	4251,81	4264,50	4300,93	4354,71	4419,77

Table 19. Forecasted total inbound tourism arrivals for the UK.

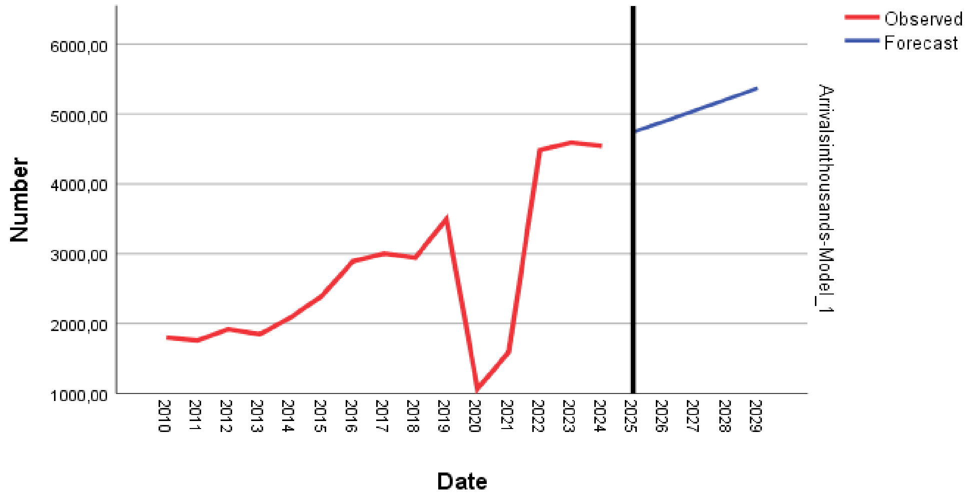

Figure 27. Forecast of inbound tourism total arrivals for the UK.

The Czech Republic is projected to experience a moderate rate of growth, from 430 thousand in 2025 to 466 thousand in 2029. The ARIMA(1,1,0) model applied to the Czech Republic series yields a Stationary R^2 of 0.680, which is acceptable. The prediction bounds (UCL: 604-748 thousand; LCL: 184-257 thousand) indicate minimal short-term variability, mainly driven by macroeconomic trends and facilitation of travel.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	430,08	458,35	452,03	463,63	465,94
	UCL	603,54	650,91	684,45	719,10	747,57
	LCL	256,63	265,79	219,61	208,15	184,31

Table 20. Forecasted total inbound tourism arrivals for the Czech Republic.

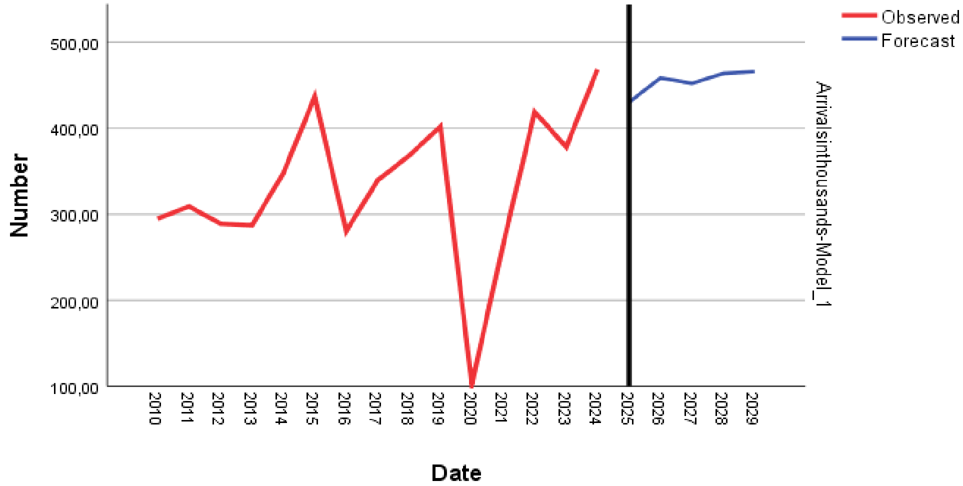

Figure 28. Forecast of inbound tourism total arrivals for the Czech Republic.

The Swiss market is projected to steadily increase, from 587 thousand visitors in 2025 to 723 thousand in 2029. ARIMA(1,1,1) model to the Swiss series has Stationary R^2 of 0.853, which is a great fit for the model and very high predictive power. The confidence limits (UCL: 712-872 thousand; LCL: 462-575 thousand) are low and confirm market stability and very low variability. The trend of the series indicates a smooth growth pattern, consistent with the high purchasing power of the Swiss economy and the continuous demand for visits to Greek holiday destinations.

Forecast

Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	430,08	458,35	452,03	463,63	465,94
	UCL	603,54	650,91	684,45	719,10	747,57
	LCL	256,63	265,79	219,61	208,15	184,31

Table 21. Forecasted total inbound tourism arrivals for Switzerland.

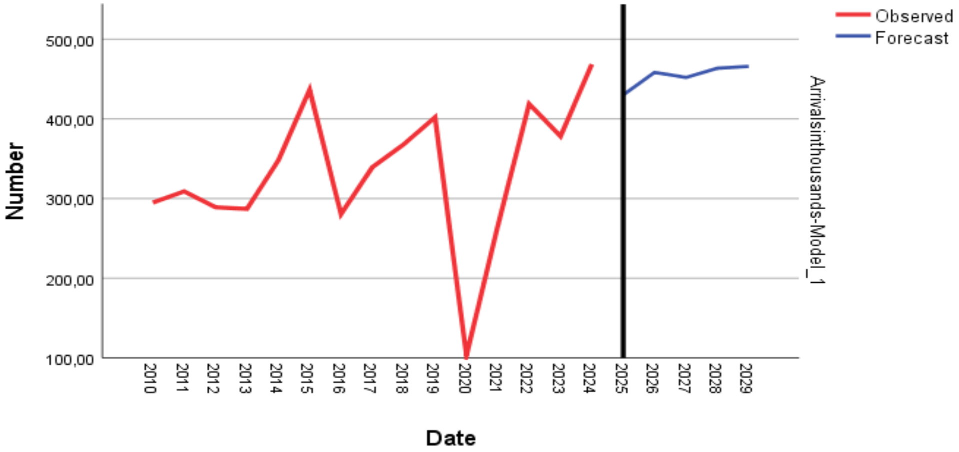

Figure 29. Forecast of inbound tourism total arrivals for Switzerland.

Albania will also be projected to register the largest absolute growth in this segment, with tourists rising from 1.21 million in 2025 to 1.51 million in 2029. The ARIMA(1,1,1) model, which was applied to the Albanian data, is also a very good model fit with a Stationary R^2 of 0.907. The forecast intervals (UCL: 1.42-1.73m; LCL: 1.01-1.29m) indicate a very high confidence level in the ongoing growth. The linear growth pattern indicates a high degree of cross-border mobility, improved transport links, and a short-break holiday trend. Albania is a case in point in terms of a high growth market in the wider Balkan context and has a number of implications for focused marketing and transport planning.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	1214,78	1280,53	1354,97	1432,17	1510,23
	UCL	1422,41	1502,00	1578,78	1656,42	1734,48
	LCL	1007,16	1059,06	1131,16	1207,92	1285,99

Table 22. Forecasted total inbound tourism arrivals for Albania.

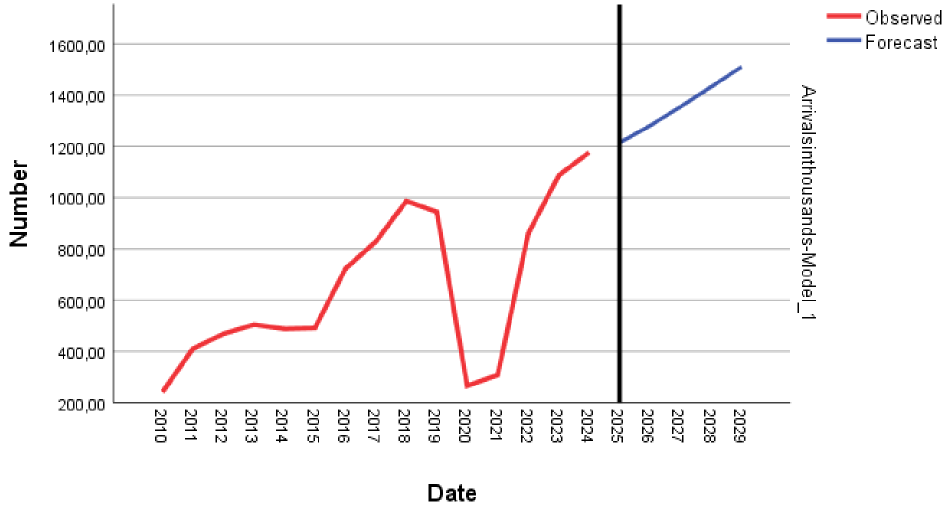

Figure 30. Forecast of inbound tourism total arrivals for Albania.

The non-European and long-distance markets, symbolized by Canada and Russia, exhibit diverse patterns because of the structural constraints and geopolitical uncertainties. Canada is expected to show relative stability, with tourists of around 324 thousand in 2025 to 317 thousand in 2029. The ARIMA(2,0,1) model for the Canadian data set shows a highly satisfactory fit, with Stationary R^2 of 0.948, which is a measure of high reliability of predictability. The prediction intervals (UCL: 422-428 thousand, LCL: 205-226 thousand) show moderate uncertainty, while the series plot shows modest volatility in terms of long-distance travel constraints, such as geographical distance, reduced air transport capacity, and macroeconomic factors. Canada is a stable and robust member of Greece's composition of incoming tourism.

		Forecast				
Model		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	319,62	308,90	322,34	311,08	322,76
	UCL	382,83	373,77	392,01	380,85	394,01
	LCL	256,41	244,04	252,67	241,31	251,51

Table 23. Forecasted total inbound tourism arrivals for Canada.

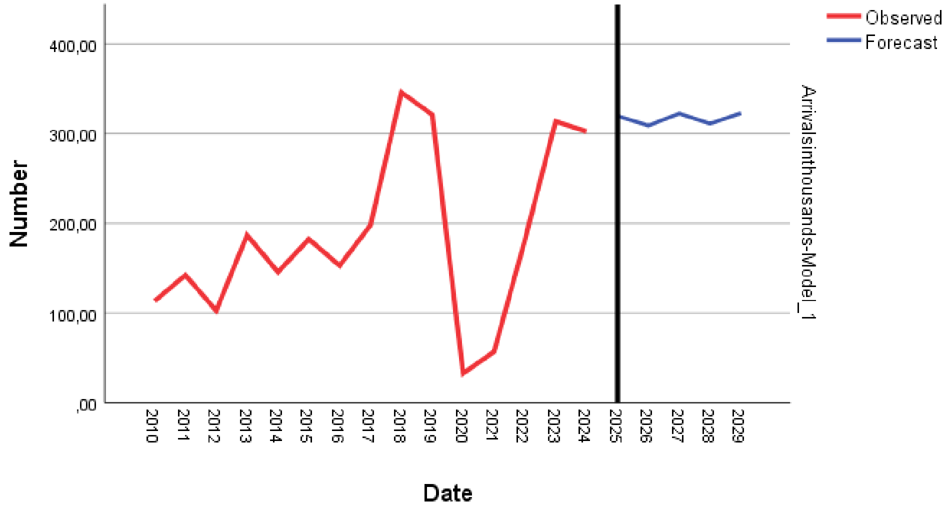

Figure 31. Forecast of inbound tourism total arrivals for Canada.

Russia is extremely volatile and sensitive to geopolitics. The ARIMA(0,1,1) series provides negative point forecasts (-36.2 thousand in 2025 to -196.6 thousand in 2029). These are not to be taken literally but rather suggest that simple time series models cannot model the flows in the presence of the extreme shocks caused by the Ukraine war and EU sanctions. Upper bounds (141.5-454.4 thousand) are more appropriate for scenario estimation, and the large intervals convey high levels of uncertainty. The series chart presents inordinate volatility and structural breaks.

Model		Forecast				
		2025	2026	2027	2028	2029
Arrivals (in thousands)-Model_1	Forecast	-36,18	-76,28	-116,39	-156,49	-196,59
	UCL	141,48	283,75	360,78	414,25	454,42
	LCL	-213,84	-436,31	-593,55	-727,23	-847,60

Table 24. Forecasted total inbound tourism arrivals for Russia.

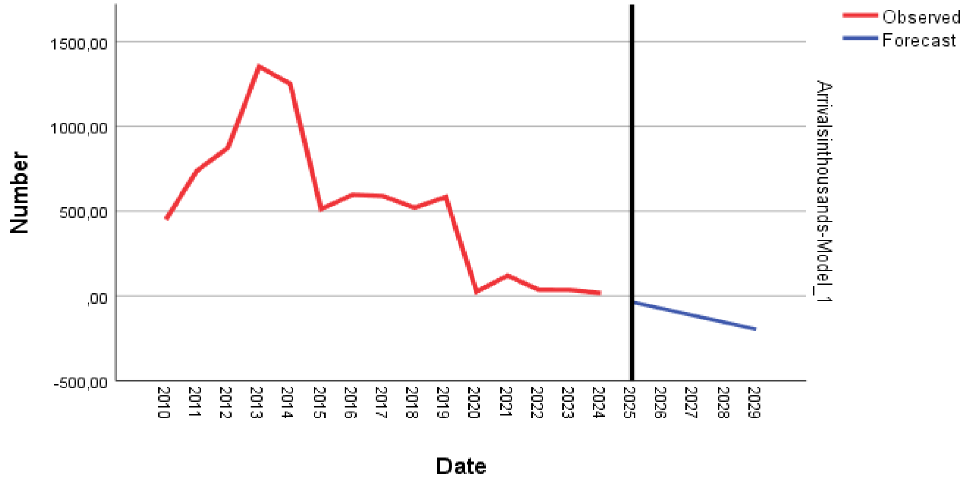

Figure 32. Forecast of inbound tourism total arrivals for Russia.

In general, the inbound forecasts present three distinct clusters of source markets for Greek tourism. Eurozone nations present stable and constant growth, which represents mature, reliable, and strong demand. Non-Eurozone European markets are more varied in trend: the United Kingdom provides massive stability and high volume, the Czech Republic steady but modest growth, and Albania strong potential for fast growth, the latter led primarily by increased mobility and cross-border travel. Non-European and long-haul markets are more volatile and sensitive to external shocks, with Canada maintaining relatively stable arrivals but Russia being geopolitically sensitive and highly unstable, with scenario planning and risk management in the best at its level. In total, the research highlights the importance of keeping a portfolio of diversified source markets and flexible strategies that can drive long-term growth in arrivals while hedging against risks from volatile or high-risk markets, and help stabilize total demand over time and build it up.

The projections of total inbound tourist nights in Greece during 2025–2029 provide a balanced view on how the intensity and duration of travel are expected to evolve across different markets of origin. Whereas the number of arrivals will merely reflect the volume of tourist arrivals, the nights spent will reflect the depth of such arrivals, i.e., the length of stay and their engagement with the destination as a whole.

All of the projections were done through the use of ARIMA models based on annual data from 2010 to 2024, using an evidence-based approach to model selection based on goodness of fit, residual test, and Stationary R^2 fit. The results, as shown in Table 25, combine the best models and projections for each source market, and form the basis of interpretation of the dynamics of travel behavior.

Nights (in thousands)									
					Forecasting				
Country	**Model Type**	**Fit Statistic**	**Mean**	***Year***	***2025***	***2026***	***2027***	***2028***	***2029***
Austria*	ARIMA (1,1,0)	Stationary R^2	0,699	***Forecast***	5949,1	6026,32	6164,21	6269,06	6391,91
				UCL	7816,19	8077,85	8650,2	8988,5	9391,88
				LCL	4082	3974,78	3678,22	3549,62	3391,94
France*	ARIMA (0,1,1)	Stationary R^2	0,698	***Forecast***	15585,46	15863,27	16141,09	16418,9	16696,72
				UCL	20185,19	20464,17	20742,13	21019,41	21296,23
				LCL	10985,73	11262,38	11540,05	11818,4	12097,21
Germany*	ARIMA (1,1,1)	Stationary R^2	0,848	***Forecast***	48662,64	50125,7	51626,4	53122,65	54619,42
				UCL	56813,34	58272,2	59778,65	61272,13	62766,22
				LCL	40511,94	41979,2	43474,14	44973,16	46472,62
Spain*	ARIMA (3,1,1)	Stationary R^2	0,982	***Forecast***	3192,19	3429,49	3242,25	3429,66	3438,53
				UCL	3494,64	3790,41	3745,36	4120,5	4243,36
				LCL	2889,74	3068,57	2739,14	2738,82	2633,69
Cyprus	ARIMA (1,0,0)	Stationary R^2	0,752	***Forecast***	4703,78	4871,68	4980,03	5049,97	5095,1
				UCL	6154,67	6598,49	6809,53	6920,58	6982,57
				LCL	3252,9	3144,87	3150,53	3179,35	3207,63
Netherlands	ARIMA (2,0,0)	Stationary R^2	0,804	***Forecast***	677,39	397,72	444,77	734,73	974,96
				UCL	948,75	775,82	823,32	1168,66	1462,34
				LCL	406,03	19,61	66,22	300,8	487,59
Other Eurozone Countries*	ARIMA (2,1,1)	Stationary R^2	0,855	***Forecast***	8018,26	8982,62	8822,3	9302,18	9581,72
				UCL	10294,39	11692,2	11801,3	12890,12	13350
				LCL	5742,12	6273,04	5843,31	5714,24	5813,45
Romania*	ARIMA (1,1,1)	Stationary R^2	0,725	***Forecast***	8033,35	9066,97	9895,6	10604,52	11243,55
				UCL	11933,56	13687,56	14789	15613,83	16304,72
				LCL	4133,15	4446,39	5002,2	5595,21	6182,38
Czech Republic*	ARIMA (2,1,1)	Stationary R^2	0,905	***Forecast***	3250,18	3066,91	3298,77	3194,29	3124,2
				UCL	4054,1	4025,69	4258,01	4198,74	4144,49

				LCL	2446,26	2108,13	2339,54	2189,84	2103,91
Other European countries outside the Eurozone*	ARIMA (1,1,0)	Stationary R^2	0,682	***Forecast***	15474,22	16710,32	17957,98	19204,92	20451,9
				UCL	21584,19	22809,42	24060,24	25308,01	26555,37
				LCL	9364,25	10611,22	11855,71	13101,82	14348,43
Albania	ARIMA (0,0,0)	Stationary R^2	0,979	***Forecast***	3912,07	3656,51	3501,25	3406,91	3349,59
				UCL	4429,87	4174,31	4019,05	3924,71	3867,39
				LCL	3394,28	3138,72	2983,45	2889,11	2831,8
Switzerland*	ARIMA (0,1,0)	Stationary R^2	0,967	***Forecast***	5464,62	5691,06	5917,5	6143,93	6370,37
				UCL	6019,32	6475,52	6878,26	7253,33	7610,71
				LCL	4909,93	4906,6	4956,73	5034,54	5130,03
United Kingdom*	ARIMA (0,1,0)	Stationary R^2	0,931	***Forecast***	33771,79	34304,75	34837,72	35370,68	35903,65
				UCL	39083,27	41816,33	44037,48	45993,65	47780,49
				LCL	28460,3	26793,18	25637,96	24747,71	24026,81
Canada	ARIMA (2,0,0)	Stationary R^2	0,905	***Forecast***	3097,42	2837,28	1775,25	1322,08	2162,07
				UCL	4097,22	4036,47	3038,79	2827,16	3681,52
				LCL	2097,63	1638,09	511,71	-183	642,62
Russia*	ARIMA (3,1,0)	Stationary R^2	0,997	***Forecast***	-958,79	-1370,83	-1435,78	-1795,87	-1979,65
				UCL	-164,02	85,67	289,66	31,68	-27,53
				LCL	-1753,56	-2827,33	-3161,23	-3623,42	-3931,76
Other Countries*	ARIMA (0,1,1)	Stationary R^2	0,880	***Forecast***	24271,77	25964,34	27656,91	29349,48	31042,05
				UCL	32486,47	34179,67	35871,04	37561,18	39250,51
				LCL	16057,07	17749	19442,77	21137,77	22833,59

Table 25. Inbound tourism total nights spent forecasting results.

Eurozone markets, in general, demonstrate stable and positive trends in cumulative nights, which are a testament to the maturity and dynamism of these markets. Forecasts show a trend of further normalization and consolidation after the events of the early 2020s, in line with the deeply ingrained journey culture of European Union member states.

Austria shows a slow and conservative growth trend, ranging from 5.95 million nights in 2025 to approximately 6.39 million in 2029. The ARIMA(1,1,0) for Austrian series Stationary R^2 is 0.699, which indicates a very good fit and extremely low variance of residuals. The small confidence interval indicates the high confidence level of the model and its robustness to variability. This growth trend is a reflection of Austria's natural susceptibility to Greece as a holiday destination, as well as the dominance of repeat stay and family holiday markets.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	5949,10	6026,32	6164,21	6269,06	6391,91
	UCL	7816,19	8077,85	8650,20	8988,50	9391,88
	LCL	4082,00	3974,78	3678,22	3549,62	3391,94

Table 26. Forecasted total inbound tourism nights for Austria.

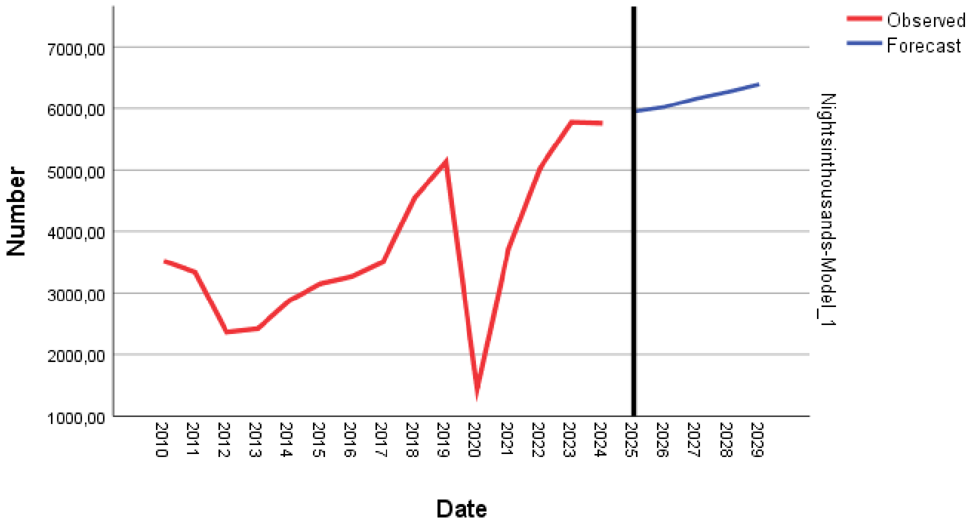

Figure 33. Forecast of inbound tourism total nights for Austria.

France remains the leading source market in terms of overnight stays, with a steady growth rate from 15.59 million in 2025 to 16.70 million in 2029. The ARIMA(0,1,1) model employed for the French market has a Stationary R^2 of 0.698, which reflects an odd pattern of steady and incremental growth. The steadily growing trend line with very narrow confidence intervals reveals that it is a mature and established market with excellent air links and brand recognition with Greece. Germany is the largest absolute market and the pivot for Greece's tourist performance.

Model	Forecast 2025	2026	2027	2028	2029
Forecast	15585,46	15863,27	16141,09	16418,90	16696,72

Nights (in thousands)-Model_1	UCL	20185,19	20464,17	20742,13	21019,41	21296,23
	LCL	10985,73	11262,38	11540,05	11818,40	12097,21

Table 27. Forecasted total inbound tourism nights for France.

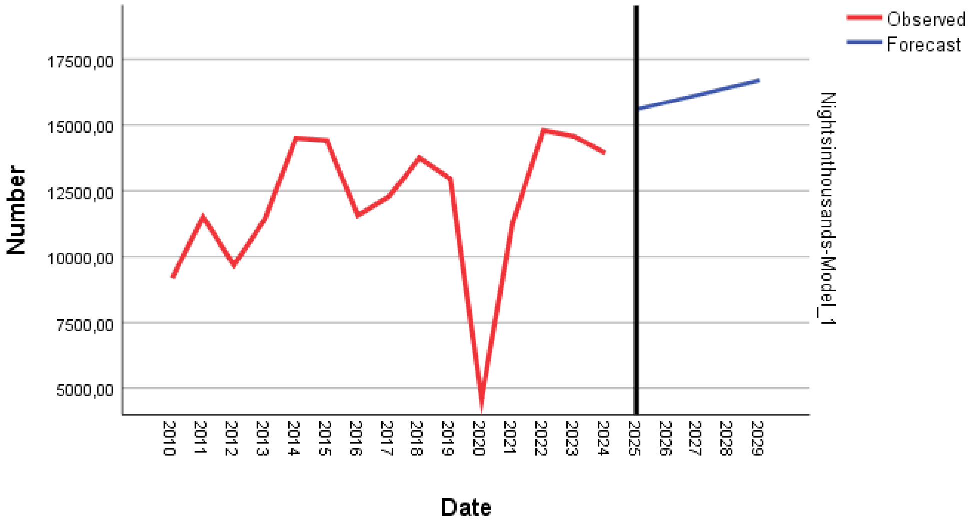

Figure 34. Forecast of inbound tourism total nights for France.

The largest market in absolute terms, Germany, remains Greece's anchor in tourism performance. The ARIMA(1,1,1) model on the German time series has a Stationary R^2 of 0.848, which is an excellent fit and has high accuracy levels for forecasting. The projected overnight stays are expected to increase from 48.66 million in 2025 to 54.62 million in 2029. This pattern indicates that the demand from Germany is stable and fueled by long-haul stays, family holidays, and geographical spread across Greek markets.

		Forecast				
Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	48662,64	50125,70	51626,40	53122,65	54619,42
	UCL	56813,34	58272,20	59778,65	61272,13	62766,22
	LCL	40511,94	41979,20	43474,14	44973,16	46472,62

Table 28. Forecasted total inbound tourism nights for Germany.

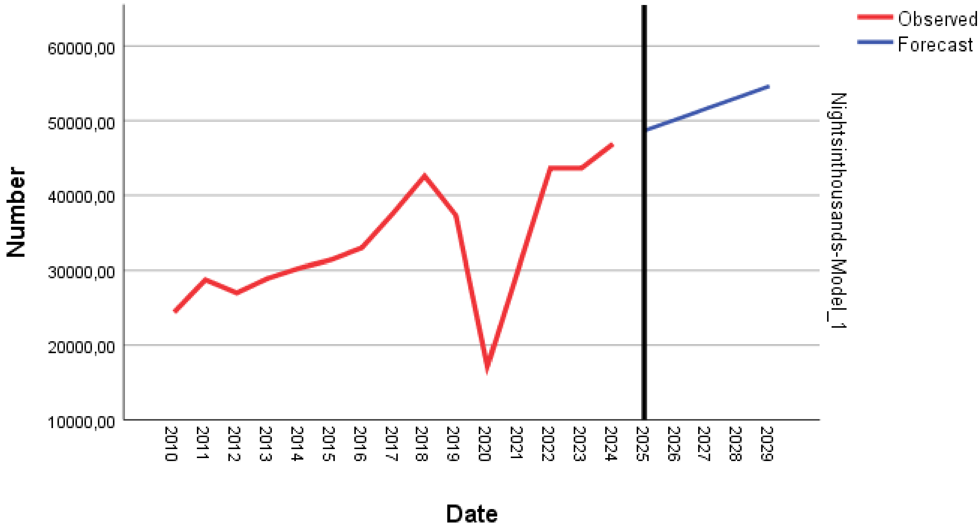

Figure 35. Forecast of inbound tourism total nights for Germany.

Spain has a consistent but modestly growing trend, with projections between 3.19 million and 3.44 million overnight stays in the forecast period. The ARIMA(3,1,1) model for Spain has a Stationary R^2 of 0.982, which is a perfect fit for the model and very good predictive ability. The forecasts indicate a consistent but modestly growing potential typical of an established market with short seasonal cycles and very competitive Mediterranean markets.

Forecast

Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	3192,19	3429,49	3242,25	3429,66	3438,53
	UCL	3494,64	3790,41	3745,36	4120,50	4243,36
	LCL	2889,74	3068,57	2739,14	2738,82	2633,69

Table 29. Forecasted total inbound tourism nights for Spain.

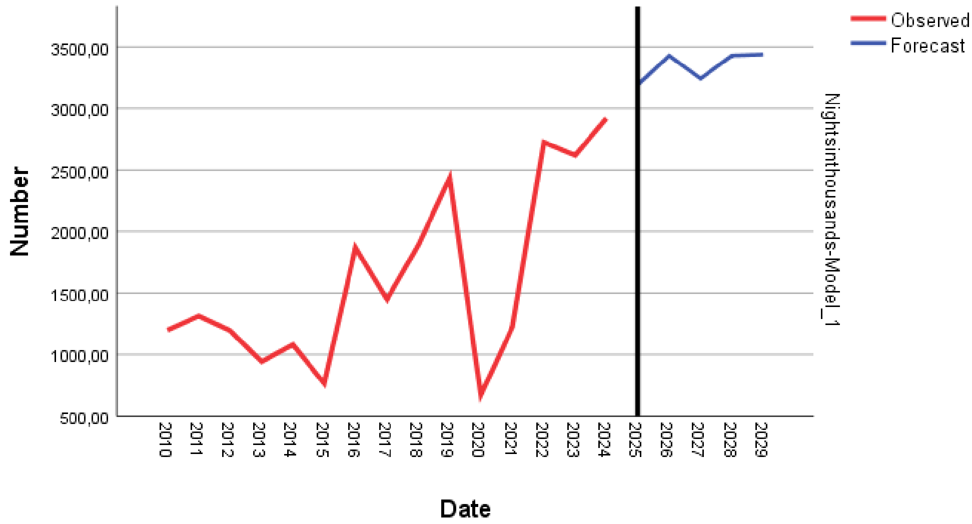

Figure 36. Forecast of inbound tourism total nights for Spain.

Cyprus also shows stable and constant growth from 4.70 million to 5.10 million nights until 2029. The ARIMA(1,0,0) on the Cypriot series indicates a Stationary R^2 of 0.752, which is a good fit and an indication of a stable process. The increase indicates a growing closeness in Mediterranean travel relations, and the tight confidence intervals indicate a stable market.

		Forecast				
Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	4703,78	4871,68	4980,03	5049,97	5095,10
	UCL	6154,67	6598,49	6809,53	6920,58	6982,57
	LCL	3252,90	3144,87	3150,53	3179,35	3207,63

Table 30. Forecasted total inbound tourism nights for Cyprus.

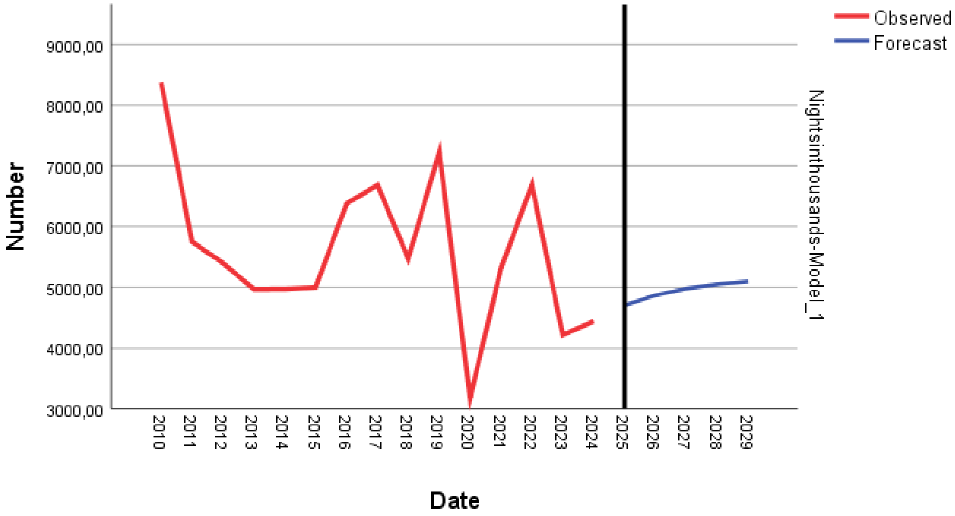

Figure 37. Forecast of inbound tourism total nights for Cyprus.

The Netherlands shows a rather volatile but overall positive trend, with predicted overnight stays increasing from 0.68 million to 0.97 million in the forecast period. The ARIMA(2,0,0) model shows a Stationary R^2 of 0.804, which is an indication of a rather good model fit with moderate short-run volatility. Although the short-run dynamics may show changes in airfares and travel behavior among the Dutch, the long-run dynamics are always positive, which shows a strong market with continuous demand for short vacation trips to Greece.

Forecast

Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	677,39	397,72	444,77	734,73	974,96
	UCL	948,75	775,82	823,32	1168,66	1462,34
	LCL	406,03	19,61	66,22	300,80	487,59

Table 31. Forecasted total inbound tourism nights for the Netherlands.

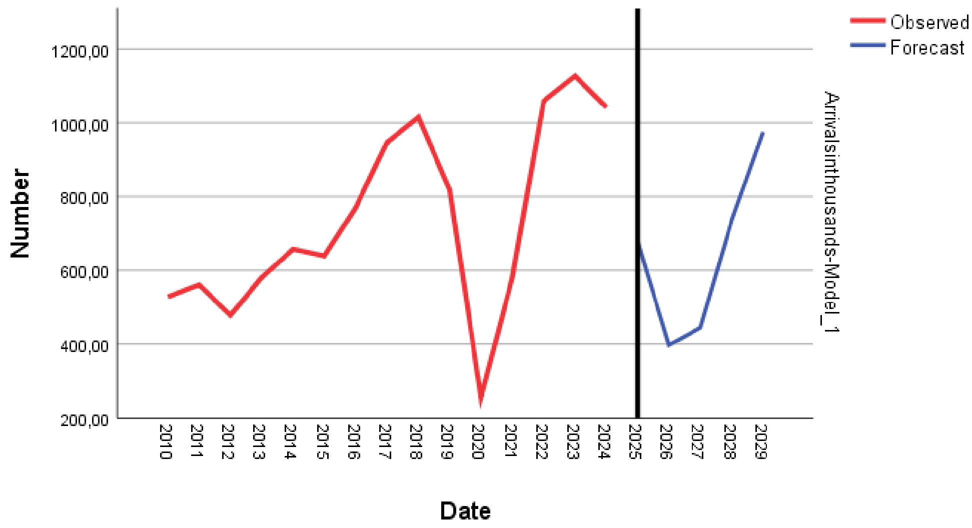

Figure 38. Forecast of inbound tourism total nights for the Netherlands.

Finally, the aggregated category of *"Other Eurozone countries"* presents a strong trend of growth, ranging from 8.02 million nights in 2025 to 9.58 million nights in 2029. The ARIMA(2,1,1) model used for the data series resulted in a Stationary R^2 of 0.855, which confirms the existence of a strongly good fit in the aggregated Eurozone series. The result shows a collective recovery in the smaller Eurozone economies and a normalization of travel depth in Europe.

Forecast

Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	8018,26	8982,62	8822,30	9302,18	9581,72
	UCL	10294,39	11692,20	11801,30	12890,12	13350,00
	LCL	5742,12	6273,04	5843,31	5714,24	5813,45

Table 32. Forecasted total inbound tourism nights for the group "Other Eurozone countries".

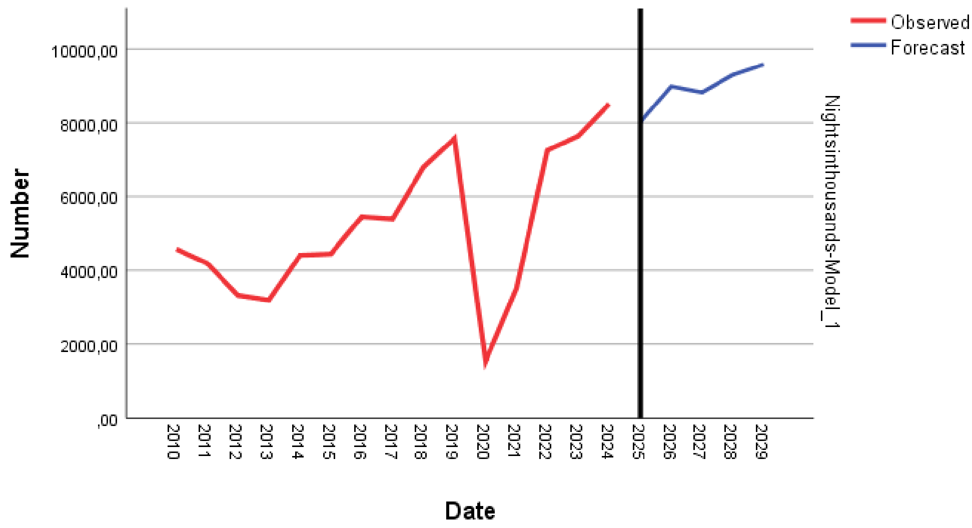

Figure 39. Forecast of inbound tourism total nights for the group "Other Eurozone countries".

The rest of the European markets, excluding the Eurozone, continue to provide support for the need for Greek incoming tourism with a very rising trend of traditional and new suppliers. The United Kingdom continues to be the leading market of the group with overnight stays forecast to increase from 33.77 million in 2025 to 35.90 million in 2029, while upper confidence limits approach nearly 48 million. The ARIMA(0,1,0) model for the UK series has Stationary R^2 = 0.931, which shows a very strong model fit. The small uncertainty band shows that there is a very stable basis for demand. This is supported by the historical synergy between the UK and Greek tourism and is further aided by good air links, package holiday facilities, and strong demand due to the favorable economic conditions compared to other economic problems.

Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	33771,79	34304,75	34837,72	35370,68	35903,65
	UCL	39083,27	41816,33	44037,48	45993,65	47780,49
	LCL	28460,30	26793,18	25637,96	24747,71	24026,81

Table 33. Forecasted total inbound tourism nights for the UK.

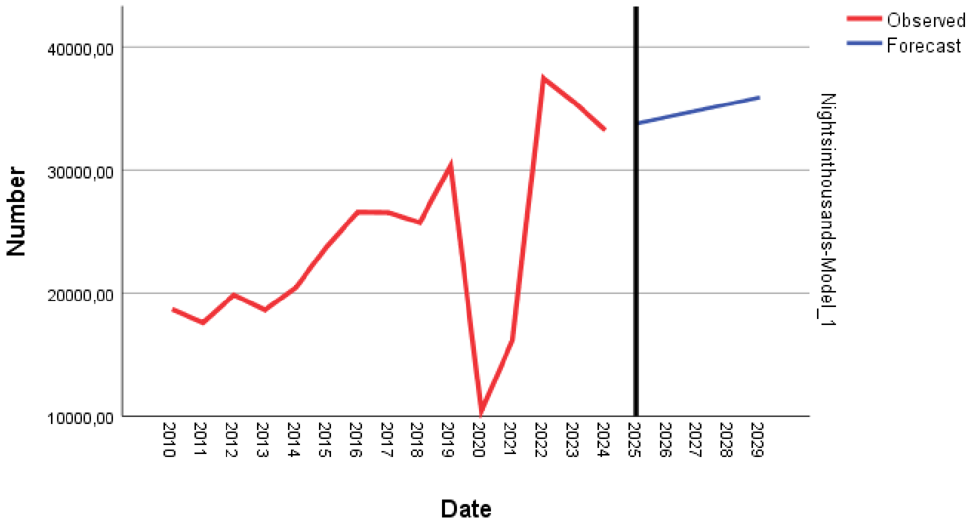

Figure 40. Forecast of inbound tourism total nights for the UK.

Romania is a strong developing market, which expands from 8.03 million to 11.24 million nights in the forecast period. The ARIMA(1,1,1) model used on the Romanian series has a Stationary R^2 of 0.725, which indicates a strong fit and a strong representation of the data. Although the confidence intervals are slightly wider, the overall trend is definitely positive. This is consistent with greater accessibility through regional road and airline connectivity, as well as greater disposable incomes and spending on leisure activities among Romanian tourists.

Model		Forecast				
		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	8033,35	9066,97	9895,60	10604,52	11243,55
	UCL	11933,56	13687,56	14789,00	15613,83	16304,72
	LCL	4133,15	4446,39	5002,20	5595,21	6182,38

Table 34. Forecasted total inbound tourism nights for Romania.

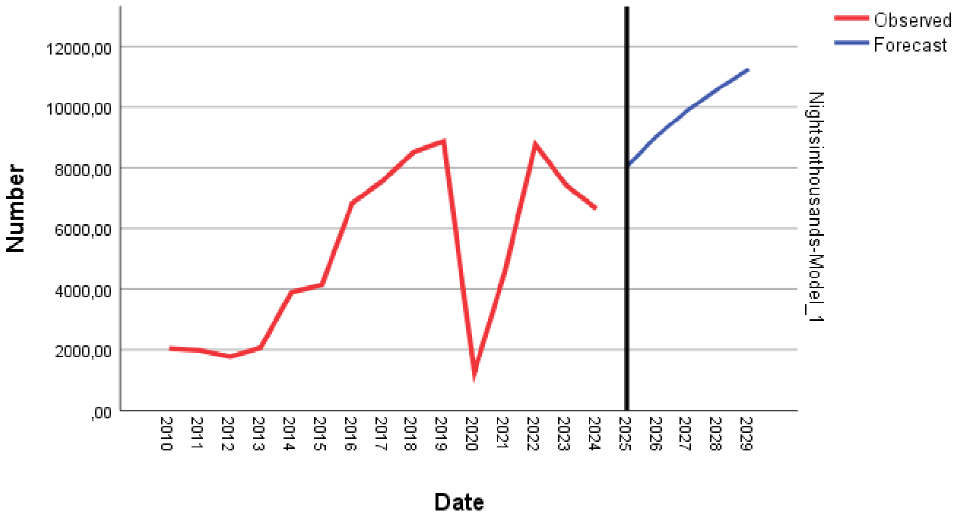

Figure 41. Forecast of inbound tourism total nights for Romania.

The Czech Republic will also be relatively stable, and the overnight stays for the years 2025-2029 are projected to be between 3.07 million and 3.25 million. The ARIMA(2,1,1) model that was used to model the data is projecting a Stationary R^2 of 0.905, which is very good for a model fit and an indication of a good trend. The forecast intervals (UCL: 4.05-4.26 million; LCL: 2.11-2.44 million) show average volatility, as expected in a saturated market that is under capacity constraint and has relatively shorter holiday seasons. The trend here shows moderate growth with very little volatility.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	3250,18	3066,91	3298,77	3194,29	3124,20
	UCL	4054,10	4025,69	4258,01	4198,74	4144,49
	LCL	2446,26	2108,13	2339,54	2189,84	2103,91

Table 35. Forecasted total inbound tourism nights for the Czech Republic.

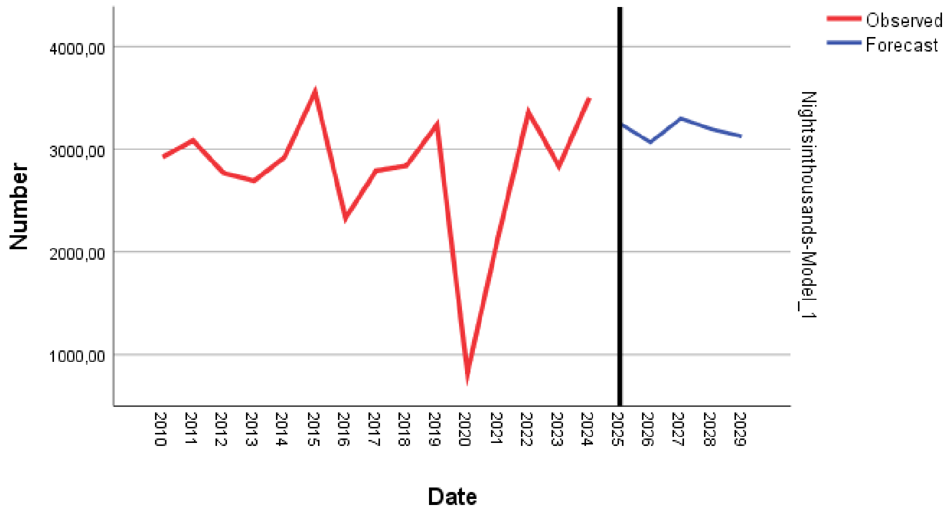

Figure 42. Forecast of inbound tourism total nights for the Czech Republic.

However, Albania sees a steady decline in the number of nights spent, 3.91 million in 2025 to 3.35 million in 2029. The ARIMA(0,0,0) model that is applicable to the Albanian data also produces a Stationary R^2 of 0.979, which is a clear indication of a very close fit despite the decline. This is not surprising, given the fact that there are many short visits across the borders as opposed to leisure visits, but the numbers are still higher than before the pandemic.

Forecast

Model		2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	3912,07	3656,51	3501,25	3406,91	3349,59
	UCL	4429,87	4174,31	4019,05	3924,71	3867,39
	LCL	3394,28	3138,72	2983,45	2889,11	2831,80

Table 36. Forecasted total inbound tourism nights for Albania.

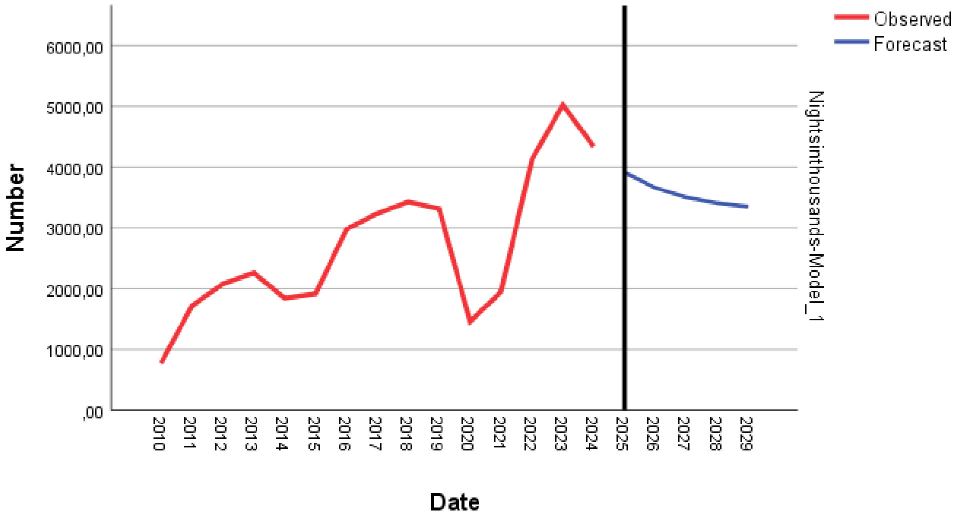

Figure 43. Forecast of inbound tourism total nights for Albania.

Switzerland is distinguished by a stable trend of increase, and the predictions increase from 5.46 million nights to 6.37 million nights in 2029. The ARIMA(0,1,0) model for Switzerland is distinguished by a Stationary R^2 of 0.967, which shows a good fit and a well-extracted underlying trend. A small interval of upper and lower bounds of forecasts ensures market predictability and demonstrates high purchasing power and stability of travel typical of European high-income segments.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	5464,62	5691,06	5917,50	6143,93	6370,37
	UCL	6019,32	6475,52	6878,26	7253,33	7610,71
	LCL	4909,93	4906,60	4956,73	5034,54	5130,03

Table 37. Forecasted total inbound tourism nights for Switzerland.

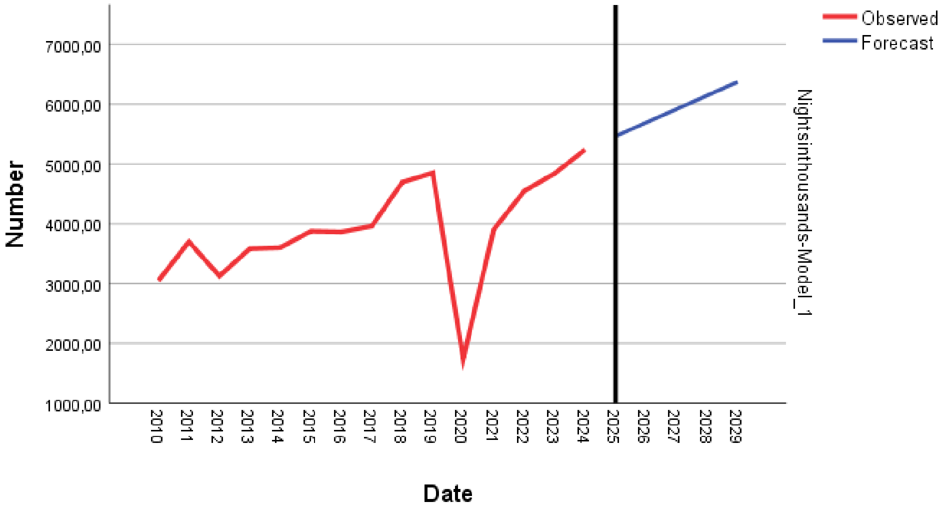

Figure 44. Forecast of inbound tourism total nights for Switzerland.

Finally, the overall category of *"Other European countries outside the Eurozone"* also shows good and balanced growth, ranging from 15.47 million nights in 2025 to 20.45 million nights in 2029. The corresponding ARIMA(1,1,1) model provides us with a Stationary R^2 of 0.682, which may be considered moderate but is acceptable given the composite nature of the above-mentioned category. The model explains about two-thirds of the variance in the differenced series, and this is sufficient explanatory power when dealing with the heterogeneity and asymmetry of market behaviors.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	15474,22	16710,32	17957,98	19204,92	20451,90
	UCL	21584,19	22809,42	24060,24	25308,01	26555,37
	LCL	9364,25	10611,22	11855,71	13101,82	14348,43

Table 38. Forecasted total inbound tourism nights for the group "Other European countries outside the Eurozone".

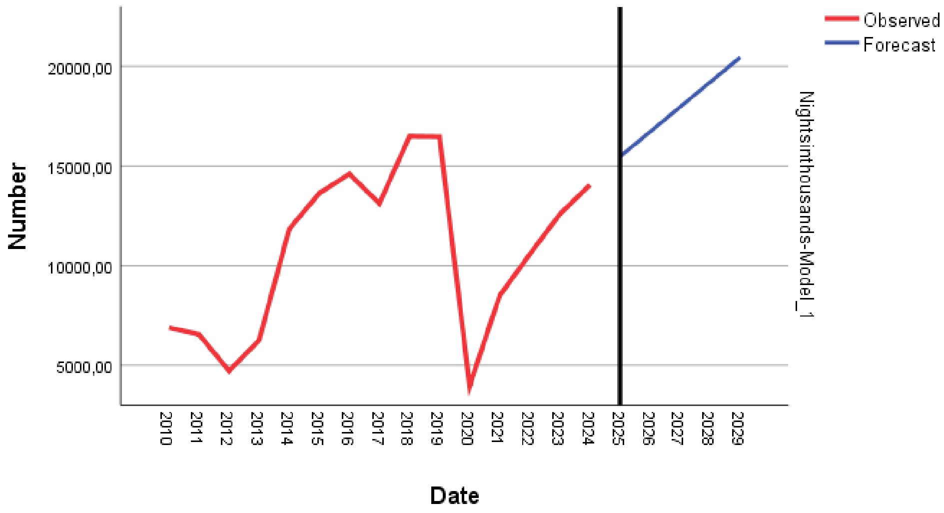

Figure 45. Forecast of inbound tourism total nights for the group "Other European countries outside the Eurozone".

The third set of countries that were considered in the forecasting analysis were non-European and long-haul markets. These markets tend to be more volatile in terms of total nights due to macro-economic factors, air prices, and global elasticity of demand. However, despite the volatility, they do constitute a significant source of high-value business for Greek tourism.

Canada is projected to experience a slight decrease in overnight stays, from 3.10 million in 2025 to 2.16 million in 2029. The ARIMA(2,0,0) model applied to the Canadian series has a Stationary R^2 of 0.905, which indicates a good fit and stationary modeling of past series. The expanding confidence intervals indicate susceptibility to external influences, such as connectivity and exchange rate volatilities, that have tendencies to affect the demand for long-haul travel.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	3097,42	2837,28	1775,25	1322,08	2162,07
	UCL	4097,22	4036,47	3038,79	2827,16	3681,52
	LCL	2097,63	1638,09	511,71	-183,00	642,62

Table 39. Forecasted total inbound tourism nights for Canada.

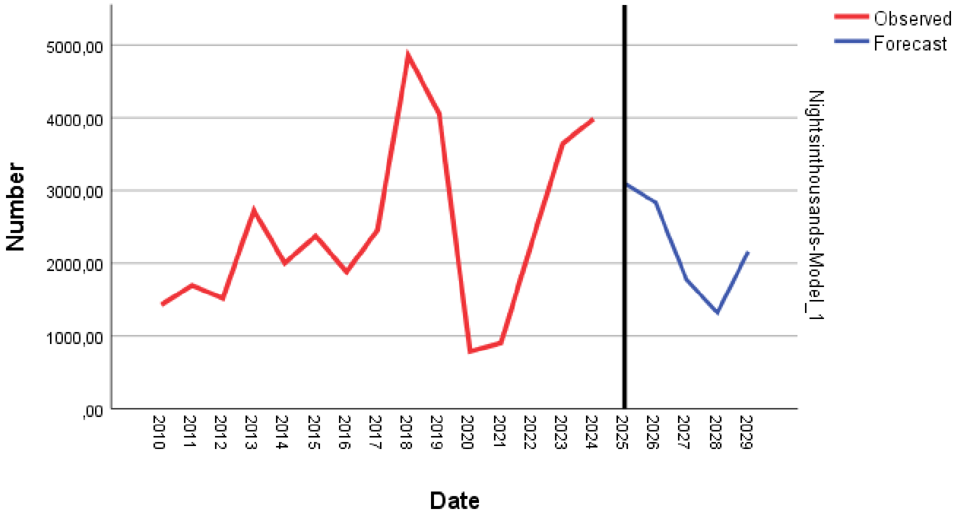

Figure 46. Forecast of inbound tourism total nights for Canada.

The Russian market, again, is known for its historical volatility. The ARIMA(3,1,0) model predicts negative point values, not the actual negative values but the reflection of the dissolution of controllable trends in the face of relentless geopolitical shocks. The wide and ever-so confidence intervals and the near-zero upper bounds are a reflection of perpetual uncertainty, driven by the war in Ukraine and travel bans imposed by its allies that have effectively zeroed out outbound flows.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	-958,79	-1370,83	-1435,78	-1795,87	-1979,65
	UCL	-164,02	85,67	289,66	31,68	-27,53
	LCL	-1753,56	-2827,33	-3161,23	-3623,42	-3931,76

Table 40. Forecasted total inbound tourism nights for Russia.

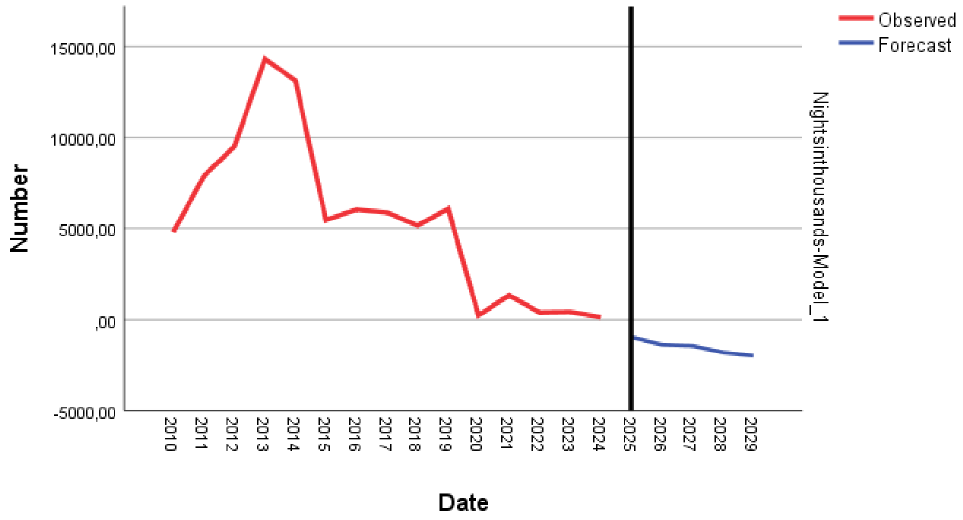

Figure 47. Forecast of inbound tourism total nights for Russia.

Finally, the category of *"Other countries"*, including a number of non-European markets in North America, Asia, and the Middle East, has a very strong positive trend, with overnight stays projected to grow from 24.27 million in 2025 to over 31 million in 2029. The ARIMA(0,1,1) model identified for this series is 0.880 Stationary R^2, reflecting a fit and explanation of underlying trends that is truly exceptional. This trend reflects the increasing diversification of Greece into long-staying and high-spending types of visitors, a development strategy that improves the value resilience of incoming tourism.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	24271,77	25964,34	27656,91	29349,48	31042,05
	UCL	32486,47	34179,67	35871,04	37561,18	39250,51
	LCL	16057,07	17749,00	19442,77	21137,77	22833,59

Table 41. Forecasted total inbound tourism nights for the group "Other non-European countries".

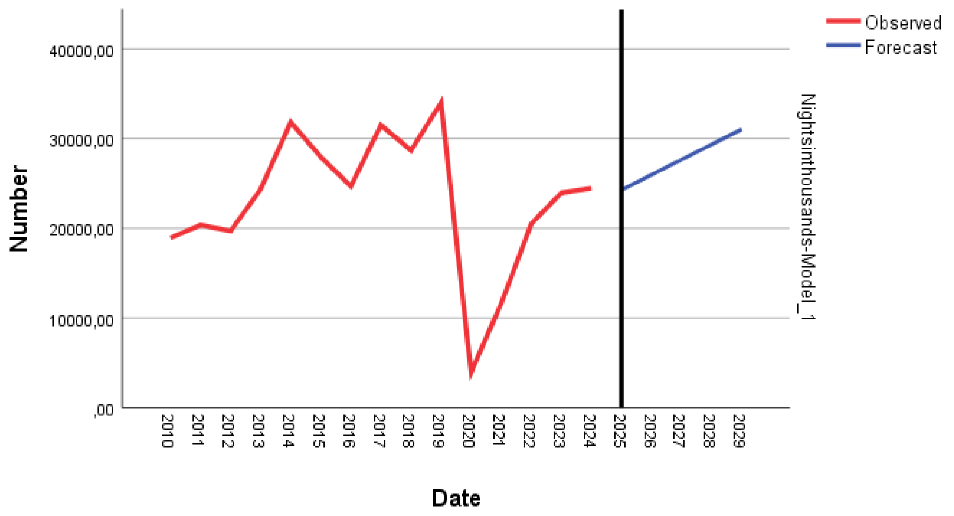

Figure 48. Forecast of inbound tourism total nights for the group "Other non-European countries".

Overall, the projections of inbound tourist nights in Greece for the years 2025-2029 show obvious differences among the three groups of source markets. The Eurozone countries show overall stable and positive trends, indicating a mature market and high interest in Greek destinations, with Austria, France, Germany, Spain, Cyprus, the Netherlands, and other smaller Eurozone economies contributing steadily to the total number of nights. Non-Eurozone European countries are more diversified in terms of trends, with the United Kingdom being the largest and most stable market, Romania with high growth and moderate uncertainty, the Czech Republic and Switzerland with stable but relatively volatile growth, and Albania, with a small decline in the number of nights, indicating higher cross-border mobility and regional importance. Long-haul and non-European countries are more diversified because of macroeconomic limitations, travel restrictions to long-haul destinations, and geopolitical limitations. Canada shows a stable night spent, while Russia shows highly volatile night spent, reflecting the geopolitical turmoil and travel caution, with ranges of forecasts capturing the gargantuan uncertainty that surrounds them. The combined group *"Other Countries"* shows an upward trend, reflecting the increasing role of all emerging and non-European markets. Taken together, the estimates place market diversification, resilience of core European sources, and value of high growth markets at the top of the agenda, in what appears to be a necessity for adaptive planning in exogenous shock risk scenarios. These trends point to incremental extension of stay by high-value markets, further normalization from the pandemic, and further economic engagement with Greece as a tourism destination.

The break-down of the total inbound tourism expenditure for the period 2025-2029, as projected by the ARIMA model, provides the big picture of the contribution each of the markets will make to the tourism receipts of Greece (Table 42). The findings indicate that there are obvious disparities between the Eurozone markets, the non-Eurozone European countries, and the non-European countries in terms of size and stability. They are dominated by the performance of individual countries, consumer confidence, and the trend of travel demand to Greece.

Total Expenditure (in millions €)									
	Model	**Fit**			**Forecasting**				
Country	**Type**	**Statistic**	**Mean**	***Year***	***2025***	***2026***	***2027***	***2028***	***2029***
Austria*	ARIMA (1,1,1)	Stationary R^2	0,885	***Forecast***	549,56	561,95	570,39	580,55	580,67
				UCL	666,48	686,34	697,41	707,53	707,83
				LCL	432,63	437,56	443,37	453,57	453,51

Belgium*	ARIMA (0,1,0)	Stationary R^2	0,915	***Forecast***	671,93	747,3	812,73	870,1	920,93
				UCL	773,86	891,45	989,27	1073,95	1148,84
				LCL	570,01	603,16	636,19	666,25	693,02
France*	ARIMA (0,1,1)	Stationary R^2	0,708	***Forecast***	1425,36	1453,88	1482,41	1510,93	1539,45
				UCL	1829,88	1858,58	1887,2	1915,75	1944,26
				LCL	1020,85	1049,19	1077,62	1106,1	1134,63
Spain*	ARIMA (5,1,0)	Stationary R^2	0,918	***Forecast***	256,34	264,34	307,91	220,04	275,75
				UCL	292,93	304,49	377,32	304,3	371,68
				LCL	219,76	224,2	238,5	135,77	179,82
Cyprus	ARIMA (4,0,0)	Stationary R^2	0,673	***Forecast***	4891,43	5570,12	6174,85	6378,98	6321,67
				UCL	6868,28	7590,77	8361,75	8567,08	8644,34
				LCL	2914,58	3549,48	3987,94	4190,87	3999
Other Eurozone Countries*	ARIMA (5,1,0)	Stationary R^2	0,954	***Forecast***	826,83	717,99	801,36	885,54	998,1
				UCL	946,22	837,47	925,85	1014,75	1128,72
				LCL	707,45	598,5	676,87	756,34	867,48
Denmark*	ARIMA (0,1,1)	Stationary R^2	0,632	***Forecast***	230,93	236,69	242,45	248,22	253,98
				UCL	312,69	318,47	324,23	329,98	335,72
				LCL	149,16	154,91	160,68	166,46	172,24
Romania*	ARIMA (2,1,0)	Stationary R^2	0,915	***Forecast***	583,6	535,31	592,98	611,62	589,31
				UCL	730,02	682,85	742,74	798	778,22
				LCL	437,17	387,77	443,21	425,24	400,41
Czech Republic*	ARIMA (0,1,0)	Stationary R^2	0,812	***Forecast***	266,92	267,66	268,4	269,14	269,88
				UCL	333,84	362,3	384,31	402,98	419,51
				LCL	200	173,03	152,5	135,31	120,25
Other European countries outside the Eurozone*	ARIMA (1,1,1)	Stationary R^2	0,737	***Forecast***	1023,37	1142,79	1188,47	1261,19	1324
				UCL	1320,5	1452,57	1502,25	1574,65	1637,62
				LCL	726,25	833,01	874,69	947,74	1010,38
Albania	ARIMA (2,0,0)	Stationary R^2	0,789	***Forecast***	394,54	377,61	359,11	341,31	325,22
				UCL	484,6	531,44	561,22	578,38	586,99
				LCL	304,47	223,78	157	104,25	63,45
Switzerland*	ARIMA (0,1,0)	Stationary R^2	0,828	***Forecast***	517,37	541,5	565,64	589,78	613,91
				UCL	641,35	716,84	780,39	837,75	891,15
				LCL	393,38	366,16	350,89	341,81	336,67
United Kingdom*	ARIMA (1,1,0)	Stationary R^2	0,997	***Forecast***	3044,47	3128,68	3018,46	3098,7	2942,19
				UCL	3151,6	3238,45	3159,47	3244,86	3107,52
				LCL	2937,35	3018,9	2877,46	2952,54	2776,86
Russia	ARIMA (2,0,1)	Stationary R^2	0,891	***Forecast***	28,69	125,75	228,41	305,53	352,27
				UCL	341,02	834,62	1148,9	1313,44	1386,84
				LCL	-283,65	-583,12	-692,09	-702,37	-682,31
Other Countries*	ARIMA (0,1,2)	Stationary R^2	0,904	***Forecast***	2561,07	2726,44	2887,63	3048,82	3210,01
				UCL	3196,14	3650,48	4031,46	4376,55	4699,1
				LCL	1926	1802,4	1743,8	1721,09	1720,92

Table 42. Inbound tourism total expenditure forecasting results.

The Eurozone countries are stable and strong contributors to the tourism earnings of Greece. The stability of these countries can be attributed to the overall economic stability of these economies, their high levels of tourist spending, and the long-standing tourist habits in the single market. The Stationary R^2 values of most of these markets are high, indicating that the models are good at identifying the underlying trends in spending.

Austria and Belgium are special cases in terms of steady growth. Austria's growth pattern is a slow rise, with overall spending rising from €549.6 million in 2025 to €580.7 million in 2029. The overall confidence interval is not very wide (UCL: €666-708 million, LCL: €433-454 million), indicating moderate variability and a mature market with frequent visits and cultural affinity.

Model		Forecast 2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	549,56	561,95	570,39	580,55	580,67
	UCL	666,48	686,34	697,41	707,53	707,83
	LCL	432,63	437,56	443,37	453,57	453,51

Table 43. Forecasted total inbound tourism expenditure for Austria.

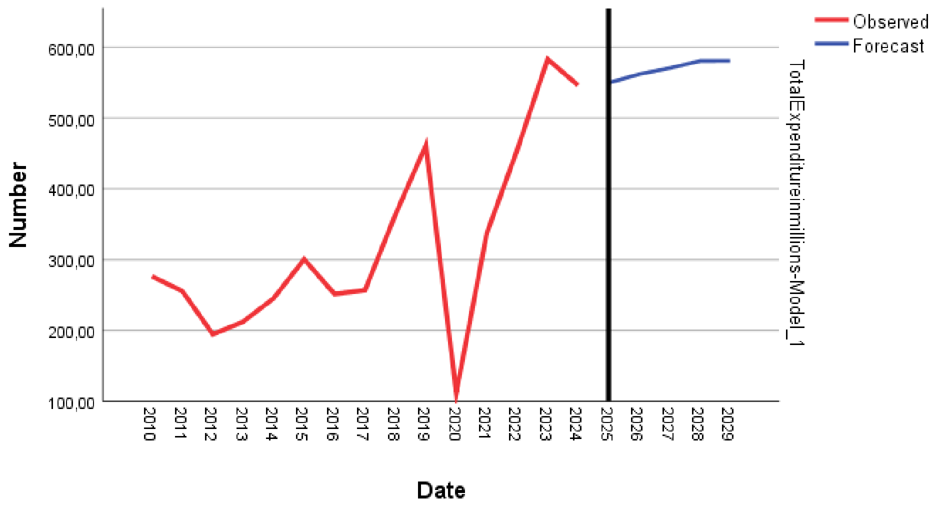

Figure 49. Forecast of inbound tourism total expenditure for Austria.

Belgium shows a stronger trend, with spending rising considerably from €671.9 million in 2025 to €920.9 million in 2029. The Stationary R^2 is also extremely high (0.915), which further reinforces the accuracy of the model, and the steady rise can be attributed to the improvement in air connectivity and the rise in average expenditure per visitor.

Model		Forecast 2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	671,93	747,30	812,73	870,10	920,93
	UCL	773,86	891,45	989,27	1073,95	1148,84
	LCL	570,01	603,16	636,19	666,25	693,02

Table 44. Forecasted total inbound tourism expenditure for Belgium.

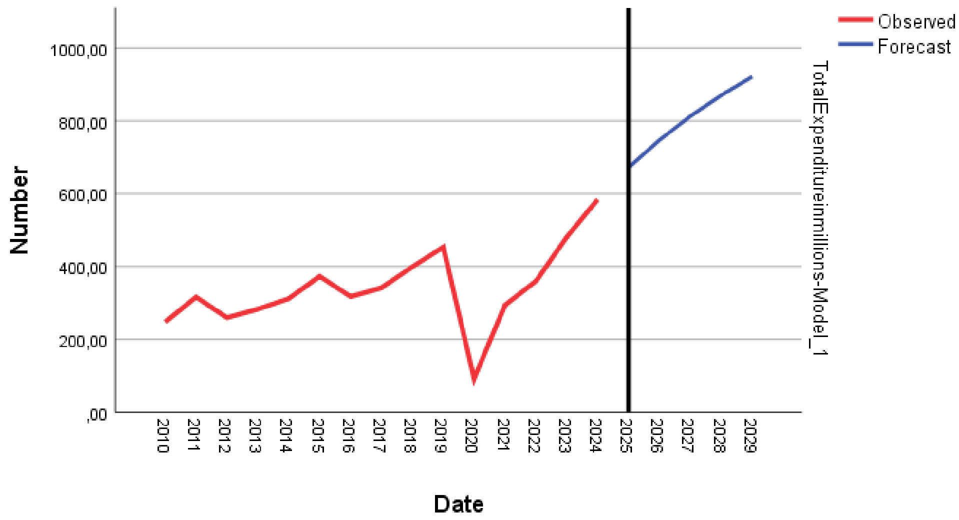

Figure 50. Forecast of inbound tourism total expenditure for Belgium.

The largest market in the Eurozone in total expenditure is France, and it will increase from €1.43 billion in 2025 to €1.54 billion in 2029. The Stationary R^2 of the model is relatively average at 0.708, although the trend is strongly positive. The large upper confidence intervals (up to €1.94 billion) show that it can very well continue, due to the sheer cultural visitor flow.

Model		Forecast 2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	1425,36	1453,88	1482,41	1510,93	1539,45
	UCL	1829,88	1858,58	1887,20	1915,75	1944,26
	LCL	1020,85	1049,19	1077,62	1106,10	1134,63

Table 45. Forecasted total inbound tourism expenditure for France.

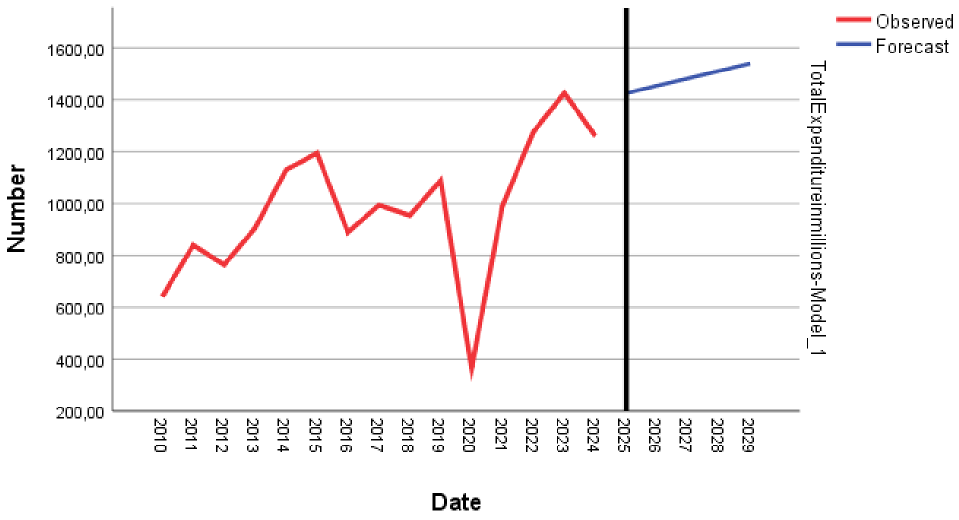

Figure 51. Forecast of inbound tourism total expenditure for France.

The Spanish markets are also slightly volatile, with total expenditure fluctuating between €256 million and €276 million during the forecasting horizon. The ARIMA (5,1,0) model is highly sensitive to the volatility of the market, which suggests that the model reacts to economic and seasonal influences. However, the high value of R^2 (0.918) suggests that the volatility is due to real market activities rather than statistical irregularities.

Model		Forecast 2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	256,34	264,34	307,91	220,04	275,75
	UCL	292,93	304,49	377,32	304,30	371,68
	LCL	219,76	224,20	238,50	135,77	179,82

Table 46. Forecasted total inbound tourism expenditure for Spain.

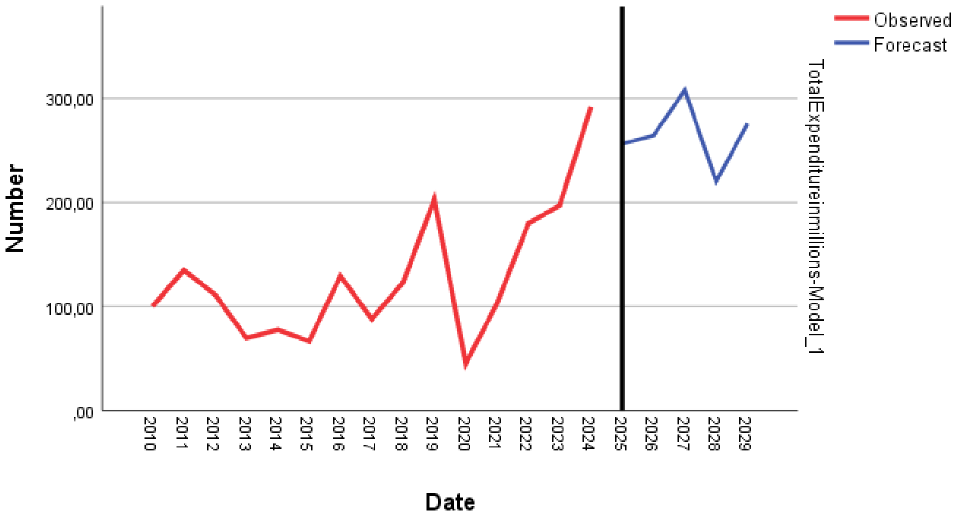

Figure 52. Forecast of inbound tourism total expenditure for Spain.

Cyprus registers an impressive rise in total expenditure, above €6 billion by 2029. While the growth looks robust, the rather weak Stationary R^2 (0.673) suggests that some of the variation in expenditure is caused by external or structural shocks, rather than stable, long-term relations. The latter can be an effect of the air connectivity variability, changes in the disposable income, or movements of the intra-regional short-haul travels.

Model		Forecast 2025	2026	2027	2028	2029
Nights (in thousands)-Model_1	Forecast	4891,43	5570,12	6174,85	6378,98	6321,67
	UCL	6868,28	7590,77	8361,75	8567,08	8644,34
	LCL	2914,58	3549,48	3987,94	4190,87	3999,00

Table 47. Forecasted total inbound tourism expenditure for Cyprus.

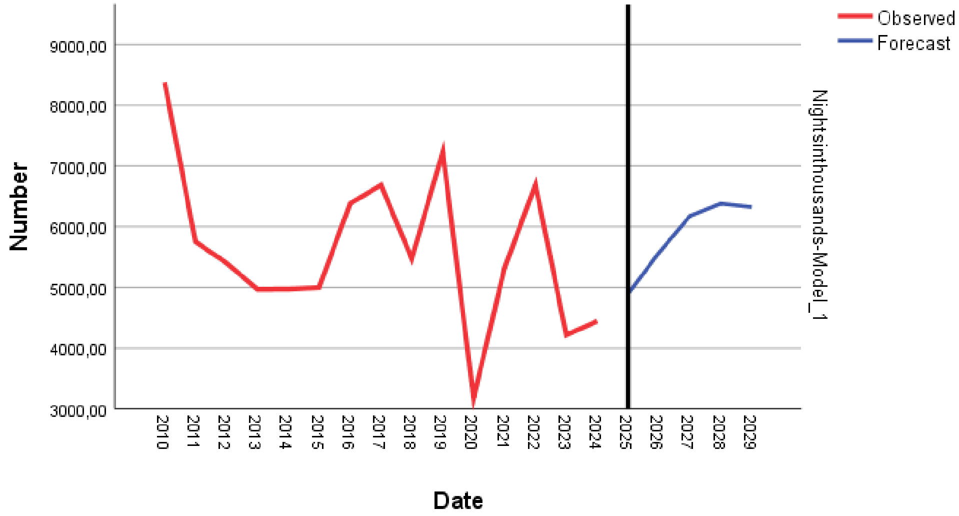

Figure 53. Forecast of inbound tourism total expenditure for Cyprus.

The *"Other Eurozone countries"* also remain with positive growth, with overall expenditure envisaged to increase from €826.8 million in 2025 to approximately €1 billion by 2029. The very strong Stationary R^2 (0.954) reaffirms the robustness of the model, suggesting a regular pattern that is common with mature European markets.

Model		Forecast 2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	826,83	717,99	801,36	885,54	998,10
	UCL	946,22	837,47	925,85	1014,75	1128,72
	LCL	707,45	598,50	676,87	756,34	867,48

Table 48. Forecasted total inbound tourism expenditure for the group "Other Eurozone countries".

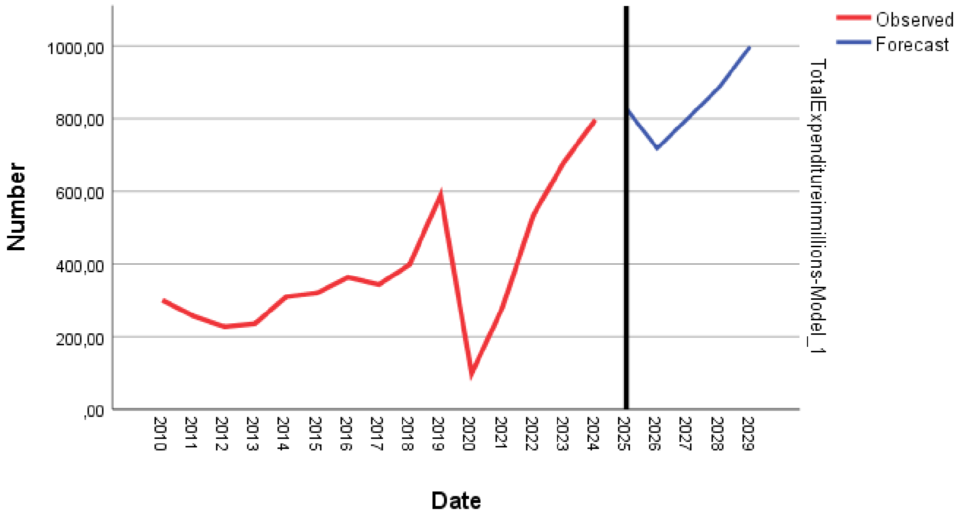

Figure 54. Forecast of inbound tourism total expenditure for the group "Other Eurozone countries".

Together, the Eurozone markets can further underpin Greece's economic support base with tourism, combining stable demand with strong incomes and domestic cultural allegiances.

Countries within the European Union but outside the Eurozone show a stable but sluggish positive trend for expenditure on tourism, affected through divergent incomes and trip styles. Denmark shows a small but stable growth from €230.9 million in 2025 to €254 million in 2029. Although the Stationary R^2 value is 0.632, there is some volatility in the curve, but the stable growth pattern also indicates a stable demand for Greek markets among Scandinavian tourists.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	230,93	236,69	242,45	248,22	253,98
	UCL	312,69	318,47	324,23	329,98	335,72
	LCL	149,16	154,91	160,68	166,46	172,24

Table 49. Forecasted total inbound tourism expenditure for Denmark.

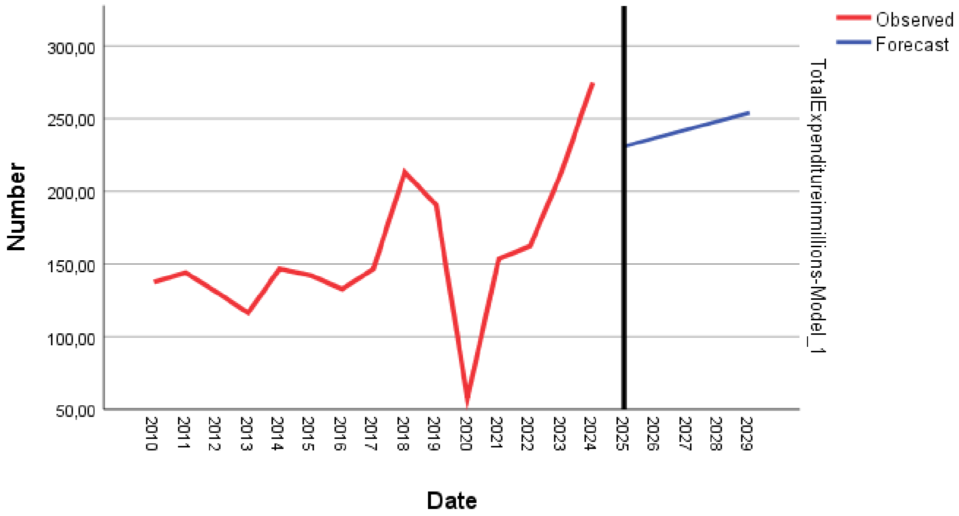

Figure 55. Forecast of inbound tourism total expenditure for Denmark.

The most unpredictable market is the Romanian market, where the expenses start at €583.6 million in 2025, slightly decreasing in the medium term, and then increase again to €589.3 million in 2029. This is probably due to budget travel price sensitivity and discretionary spending.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	583,60	535,31	592,98	611,62	589,31
	UCL	730,02	682,85	742,74	798,00	778,22
	LCL	437,17	387,77	443,21	425,24	400,41

Table 50. Forecasted total inbound tourism expenditure for Romania.

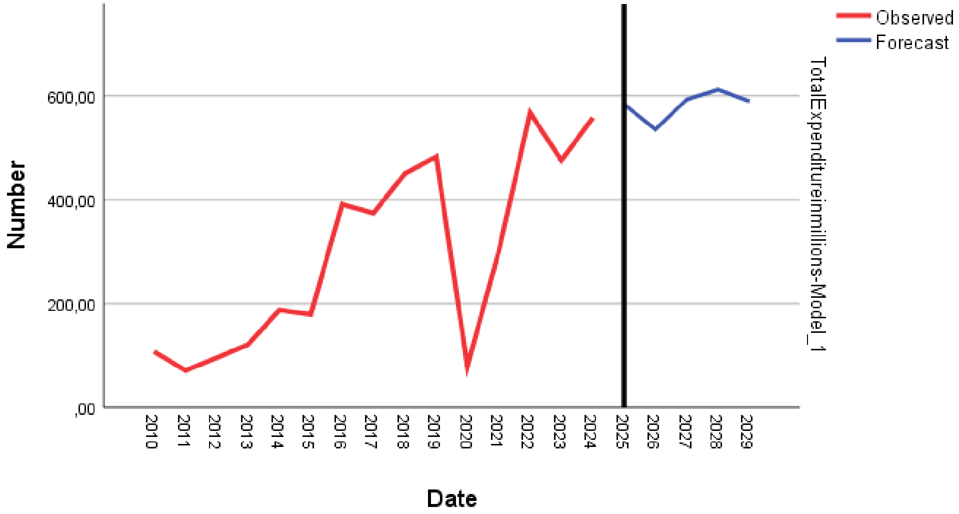

Figure 56. Forecast of inbound tourism total expenditure for Romania.

The Czech Republic shows a stable but low growth rate, ranging from €266.9 million to €269.9 million, typical for a stable and committed market and low development potential. The high Stationary R^2 (0.812) also supports the validity of the model and indicates stable travel behavior.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	266,92	267,66	268,40	269,14	269,88
	UCL	333,84	362,30	384,31	402,98	419,51
	LCL	200,00	173,03	152,50	135,31	120,25

Table 51. Forecasted total inbound tourism expenditure for the Czech Republic.

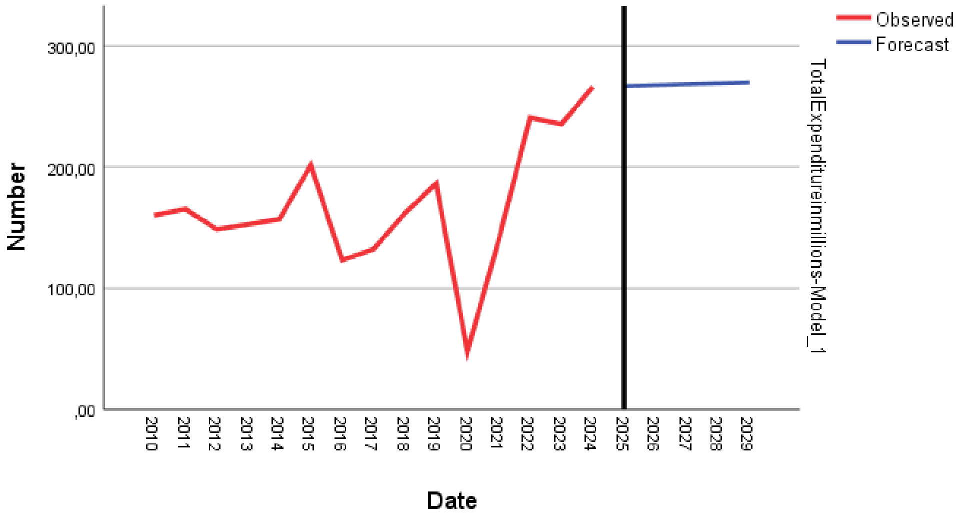

Figure 57. Forecast of inbound tourism total expenditure for the Czech Republic.

Albania is forecasted to have a reduction in total expenditure on tourism, from €394.5 million in 2025 to €325.2 million in 2029. The ARIMA(2,0,0) model with the Albanian dataset has Stationary $R^2 = 0.789$, with a good fit and a good description of the pattern of expenditure. The trend is as expected, given the nature of short-distance economy holidays, with less expenditure per holiday, although overall holiday activity is stable.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	394,54	377,61	359,11	341,31	325,22
	UCL	484,60	531,44	561,22	578,38	586,99
	LCL	304,47	223,78	157,00	104,25	63,45

Table 52. Forecasted total inbound tourism expenditure for Albania.

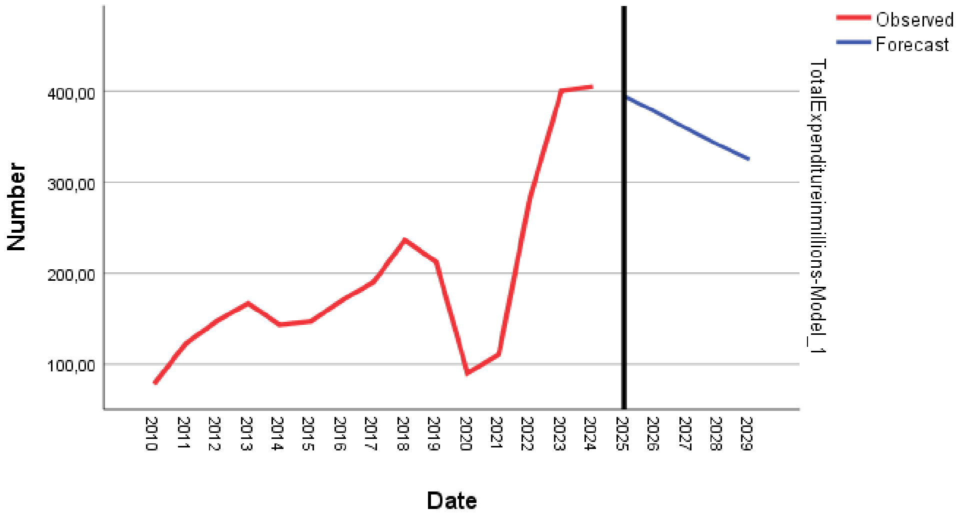

Figure 58. Forecast of inbound tourism total expenditure for Albania.

In comparison to that, Switzerland displays a clear and consistent pattern from €517 million in 2025 to €614 million in 2029 with barely any uncertainty and a Stationary R^2 (0.828) of comparatively high importance. The outcome is reasonable with the persistent arrival of well-off tourists and quality tourist demand.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	517,37	541,50	565,64	589,78	613,91
	UCL	641,35	716,84	780,39	837,75	891,15
	LCL	393,38	366,16	350,89	341,81	336,67

Table 53. Forecasted total inbound tourism expenditure for Switzerland.

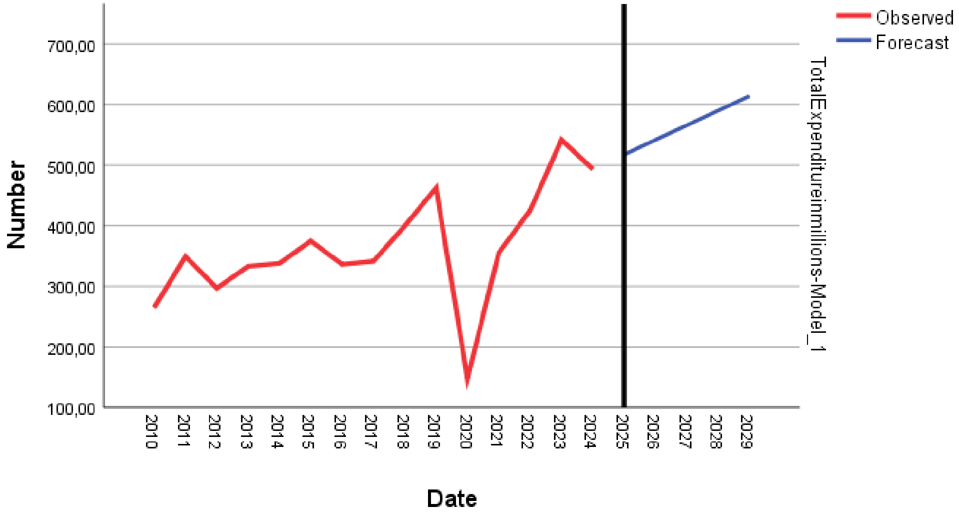

Figure 59. Forecast of inbound tourism total expenditure for Switzerland.

The United Kingdom is still Greece's most valuable market, with a spending level that is extremely high, between €3.04 billion and €3.10 billion. The near perfect value of the Stationary R^2, or the coefficient of determination, at 0.997, is a guarantee of high predictive ability and is a sign of elite performance by the United Kingdom in tourism for Greece.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	3044,47	3128,68	3018,46	3098,70	2942,19
	UCL	3151,60	3238,45	3159,47	3244,86	3107,52
	LCL	2937,35	3018,90	2877,46	2952,54	2776,86

Table 54. Forecasted total inbound tourism expenditure for the UK.

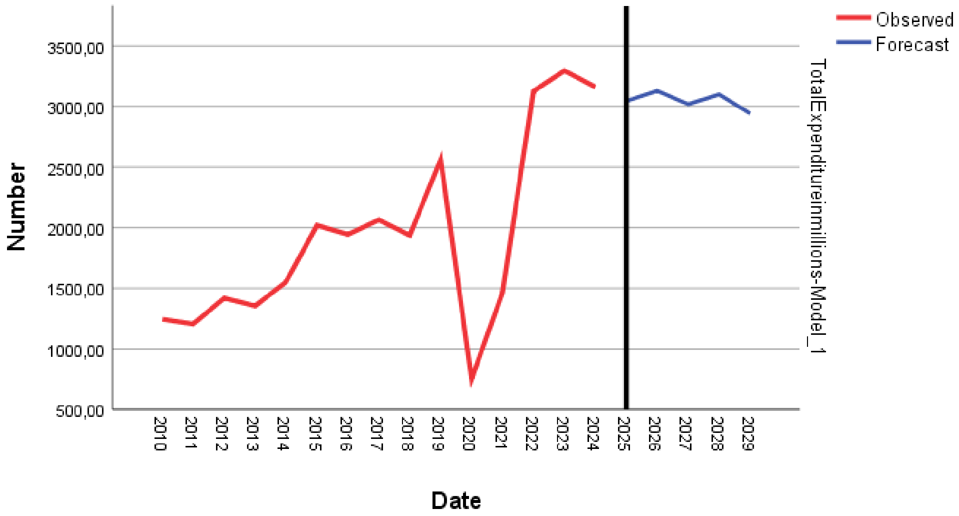

Figure 60. Forecast of inbound tourism total expenditure for the UK.

The category *"Other EU nations outside the Eurozone"* shows the most improvement out of all, with spending increasing from €1.02 billion in 2025 to €1.32 billion in 2029. The large confidence interval (UCL: €1.32-1.64 billion, LCL: €0.73-1.01 billion) reflects strong potential, in particular driven by the growth markets in Central and Eastern Europe.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	1023,37	1142,79	1188,47	1261,19	1324,00
	UCL	1320,50	1452,57	1502,25	1574,65	1637,62
	LCL	726,25	833,01	874,69	947,74	1010,38

Table 55. Forecasted total inbound tourism expenditure for the group "Other European countries outside the Eurozone".

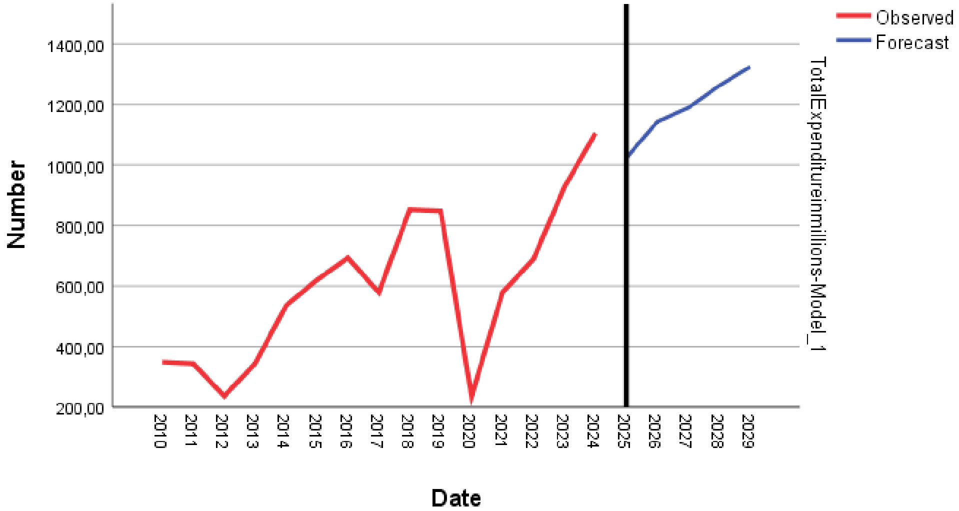

Figure 61. Forecast of inbound tourism total expenditure for the group "Other European countries outside the Eurozone".

In fact, this group is steadily increasing its contribution to expenditure on Greece's incoming tourism, merging affordability with growing demand for southern European holidays.

The third group comprises non-European countries. Russia is once again the most volatile market. Even though predictions suggest partial restoration later than 2026, the series is even more significantly influenced by geopolitical circumstances. The negative lower bounds within the confidence intervals are not actual but represent the extent of model uncertainty resulting from disrupted air travels.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	28,69	125,75	228,41	305,53	352,27
	UCL	341,02	834,62	1148,90	1313,44	1386,84
	LCL	-283,65	-583,12	-692,09	-702,37	-682,31

Table 56. Forecasted total inbound tourism expenditure for Russia.

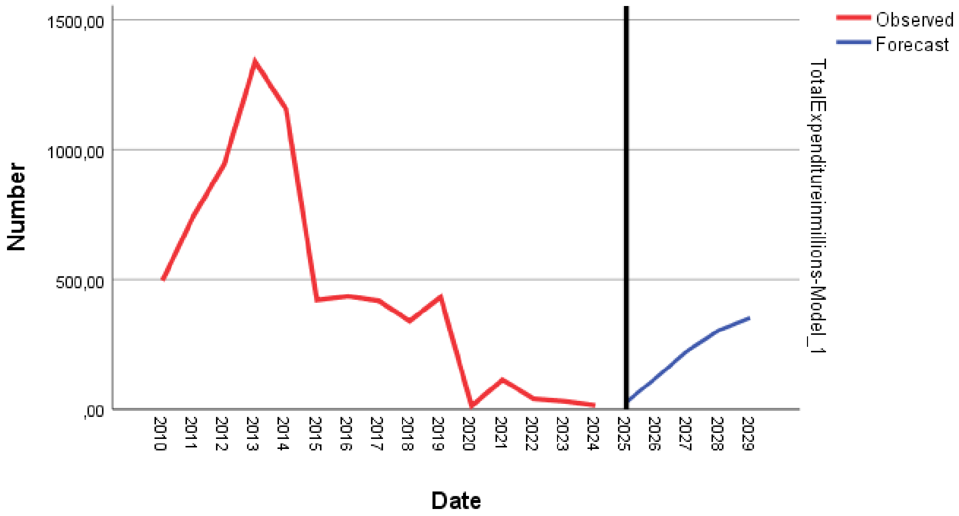

Figure 62. Forecast of inbound tourism total expenditure for Russia.

"Other non-European countries" group's contribution to Greece's inbound tourism total expenditure remains stable, from 2025's €2.56 billion to 2029's €3.21 billion. These markets are assuming ever greater significance for the diversification and robustness of Greece's tourism.

Forecast

Model		2025	2026	2027	2028	2029
Total Expenditure (in millions)-Model_1	Forecast	2561,07	2726,44	2887,63	3048,82	3210,01
	UCL	3196,14	3650,48	4031,46	4376,55	4699,10
	LCL	1926,00	1802,40	1743,80	1721,09	1720,92

Table 57. Forecasted total inbound tourism expenditure for the group "Other non-European countries".

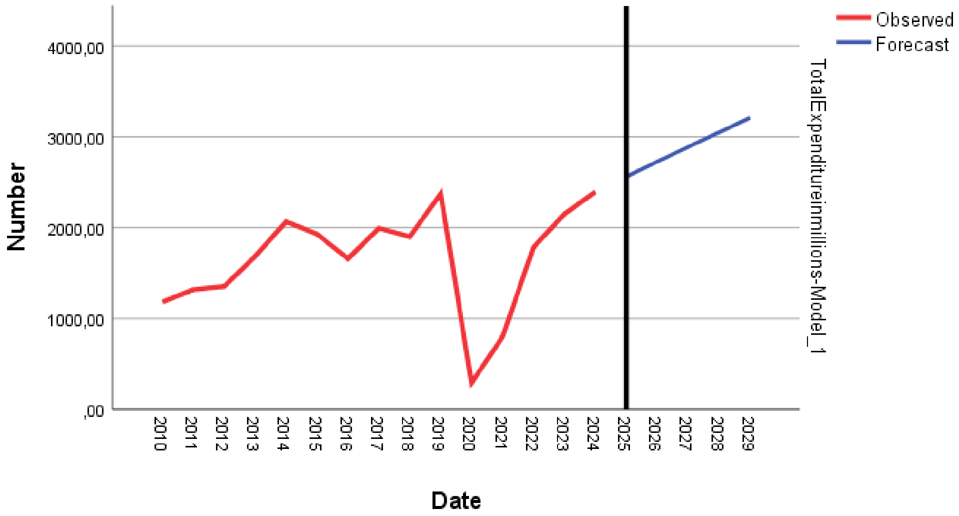

Figure 63. Forecast of inbound tourism total expenditure for the group "Other non-European countries".

In general, the forecasts for inbound tourism total expenditure also support further consolidation of Eurozone and UK markets, stable advancement for Central European markets, and more divergent trends for the rest. The findings indicate that Greece is set to maintain very high levels of expenditure under tourism up to 2029, with the trend rates for growth derived accordingly with respect to regional economic performance and the changing international demand composition.

Following the analysis of aggregate incoming tourism expenditure that measures total economic value derived from each market, it is also relevant to analyze how the same expenditure is expressed at an individual level. The analysis of average per capita expenditure offers a complementary insight, as it records both the sheer-size dynamics of total expenditure and the intrinsic dynamics that include tourist behavior, buying power, and value creation per traveler. The indicator is less specific in accounting for quality in markets because of the differences in spending intensity that are disclosed across source countries with spending-intensive character and in determining the structural and behavior components that constitute tourism demand. The average per capita expenditure growth and forecast for the years 2025-2029 will be tackled in the next part, presenting an overview that the economic value of each market is more than just the number of visitors.

Per capita expenditure forecasts among inbound tourists to Greece for the period 2025–2029 richen the qualitative dimension to tourism performance. While total expenditure provides the magnitude of economic contribution by each market, per capita expenditure provides the strength and value of individual personal travel behavior. The measure provides the purchasing power, travel inspiration and consumer behavior of each visitor from the country of origin, placing the macroeconomic picture presented by the number of arrivals and overnight stays in the appropriate context.

The following Table 58 presents a summary of the ARIMA models identified as the best fit for each country, as well as the forecasted average per capita expenditure values, which will be used as the foundation for a discussion of each country.

Average Per Capita Expenditure in €									
Country	Model Type	Fit Statistic	Mean	*Year*	Forecasting *2025*	*2026*	*2027*	*2028*	*2029*
Austria*	ARIMA (2,1,0)	Stationary R^2	0,758	***Forecast***	796,98	764,52	777,35	824,34	810,73
				UCL	935,31	902,98	931,62	994,02	982,57
				LCL	658,64	626,07	623,07	654,66	638,9
Belgium*	ARIMA (0,1,3)	Stationary R^2	0,407	***Forecast***	718,55	625,86	708,49	669,21	696,66
				UCL	908,33	817,44	911,63	872,86	900,48
				LCL	528,77	434,28	505,35	465,63	492,85
France*	ARIMA (4,1,0)	Stationary R^2	0,803	***Forecast***	651,09	515,41	603,25	566,58	698,15
				UCL	745,95	630,6	792,42	763,16	916,03
				LCL	556,23	400,21	414,09	369,99	480,26
Germany*	ARIMA (1,1,0)	Stationary R^2	0,677	***Forecast***	721,32	688,81	701,06	682,51	683,89
				UCL	797,78	769,35	801,21	789,15	802,51
				LCL	644,86	608,26	600,91	575,86	565,26
Spain	ARIMA (0,0,0)	Stationary R^2	0,431	***Forecast***	632,2	632,2	632,2	632,2	632,2
				UCL	818,3	818,3	818,3	818,3	818,3

				LCL	446,09	446,09	446,09	446,09	446,09
Italy*	ARIMA (1,1,1)	Stationary R^2	0,705	***Forecast***	580,01	563,47	546,4	529,36	512,32
				UCL	655,15	638,47	621,4	604,34	587,28
				LCL	504,86	488,47	471,39	454,37	437,36
Netherlands	ARIMA (1,0,5)	Stationary R^2	0,628	***Forecast***	672,21	695,06	652,33	674,16	648,23
				UCL	740,06	761,44	737,67	762,08	738,42
				LCL	604,36	628,67	566,98	586,24	558,04
Other Eurozone Countries*	ARIMA (2,1,0)	Stationary R^2	0,981	***Forecast***	654,1	627,49	651,51	634,59	650,68
				UCL	688,46	673,79	705,66	692,7	711,8
				LCL	619,74	581,2	597,36	576,47	589,56
Denmark*	ARIMA (2,1,0)	Stationary R^2	0,878	***Forecast***	705,82	632,4	670,5	664,76	648,25
				UCL	780,98	717,75	790,73	787,92	783,93
				LCL	630,66	547,05	550,27	541,59	512,58
Romania*	ARIMA (2,1,0)	Stationary R^2	0,645	***Forecast***	396,44	321,73	357,86	375,92	309
				UCL	471,93	399,27	435,58	476,48	414,36
				LCL	320,94	244,19	280,13	275,35	203,63
Sweden*	ARIMA (1,1,1)	Stationary R^2	0,455	***Forecast***	640,95	611,56	639,63	610,74	638,32
				UCL	735,13	737,63	796,94	789,1	839,93
				LCL	546,76	485,5	482,32	432,37	436,71
Czech Republic*	ARIMA (1,1,1)	Stationary R^2	0,498	***Forecast***	559,13	547,39	535,18	522,9	510,6
				UCL	639,93	630,08	618,04	605,77	593,45
				LCL	478,34	464,7	452,32	440,03	427,76
Other European countries outside the Eurozone*	ARIMA (1,1,0)	Stationary R^2	0,726	***Forecast***	204,44	203,28	179,04	168,08	149,48
				UCL	289,66	295,87	291,83	290,73	284,95
				LCL	119,21	110,68	66,25	45,43	14,02
Albania*	ARIMA (1,1,0)	Stationary R^2	0,794	***Forecast***	361,29	354,06	360,4	358,64	361,29
				UCL	416,45	413,95	433,38	437,98	448,92
				LCL	306,14	294,16	287,42	279,3	273,66
Switzerland*	ARIMA (0,1,0)	Stationary R^2	0,763	***Forecast***	705,61	681,14	656,67	632,2	607,73
				UCL	830,13	857,24	872,35	881,25	886,18
				LCL	581,08	505,04	440,99	383,15	329,29
United Kingdom	ARIMA (3,0,0)	Stationary R^2	0,784	***Forecast***	738,64	694,89	716,15	694,6	716,49
				UCL	842,92	804,22	825,91	811,13	835,4
				LCL	634,36	585,55	606,39	578,07	597,57
USA	ARIMA (0,0,0)	Stationary R^2	0,471	***Forecast***	1054,63	1054,63	1054,63	1054,63	1054,63
				UCL	1331,04	1331,04	1331,04	1331,04	1331,04
				LCL	778,21	778,21	778,21	778,21	778,21
Canada*	ARIMA (1,1,0)	Stationary R^2	0,356	***Forecast***	1121,81	1155,19	1108,94	1099,62	1073,17
				UCL	1486,67	1569,18	1605,45	1650,1	1679,68
				LCL	756,96	741,2	612,42	549,13	466,66
Russia*	ARIMA (1,1,1)	Stationary R^2	0,810	***Forecast***	850,78	821,93	762,85	713,45	660,96
				UCL	1032,94	1009,59	952,16	902,57	850,11
				LCL	668,62	634,26	573,53	524,34	471,81
Other Countries*	ARIMA (1,1,0)	Stationary R^2	0,519	***Forecast***	414,65	415,05	416,52	418,21	419,96
				UCL	488,69	531,49	565,68	594,5	619,79
				LCL	340,61	298,62	267,36	241,93	220,12

Table 58. Inbound tourism per capita expenditure forecasting results.

The first set of countries comprises those in the Eurozone and have relatively stable per capita expenditure patterns with negligible variations. Austria has a fair level of variation around the average spend per visitor of approximately €790, increasing to €824 for 2028 and then stabilizing at approximately €811 for 2029. The relatively strong Stationary R^2 of 0.758 indicates a good model fit and forecast, as would be expected for Austria, which is an established source market.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	796,98	764,52	777,35	824,34	810,73
	UCL	935,31	902,98	931,62	994,02	982,57
	LCL	658,64	626,07	623,07	654,66	638,90

Table 59. Forecasted inbound tourism per capita expenditure for Austria.

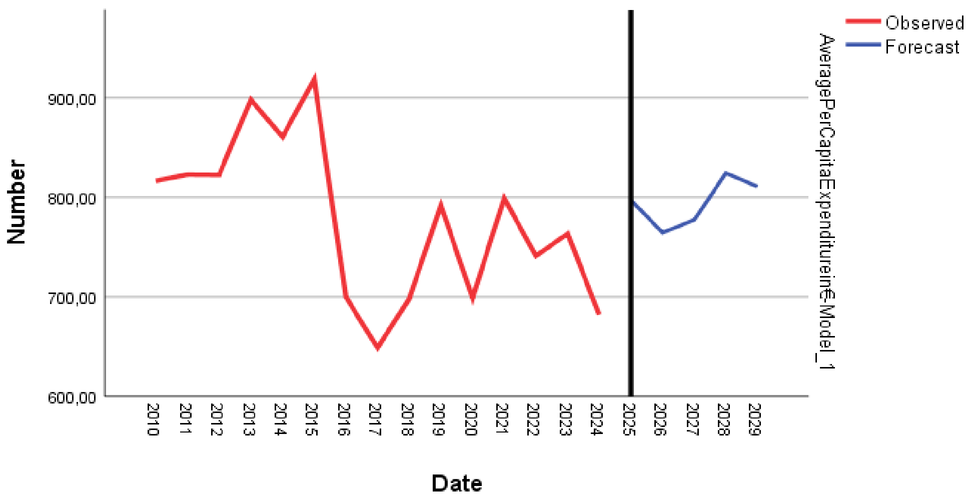

Figure 64. Forecast of inbound tourism per capita expenditure for Austria.

Belgium shows a stable trend of average per capita expenditure, as evidenced by the ARIMA (2,1,6) model with a good Stationary R^2 of 0.635, which is a good fit for the model. The forecast shows that there is low volatility in the forecast period with levels of expenditure ranging between €625.86 in

2026 and €696.66 in 2029, a peak of €718.55 in 2025. The confidence intervals (UCL: €817-908; LCL: €434-529) show that there is some volatility with possible causes being inflation, holiday focus changes, and economic factors. In conclusion, the average Belgian tourist is expected to spend similar amounts with slight changes to reflect European holiday spending trends.

Forecast							
Model			2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast		718,55	625,86	708,49	669,24	696,66
	UCL		908,33	817,44	911,63	872,86	900,48
	LCL		528,77	434,28	505,35	465,63	492,85

Table 60. Forecasted inbound tourism per capita expenditure for Belgium.

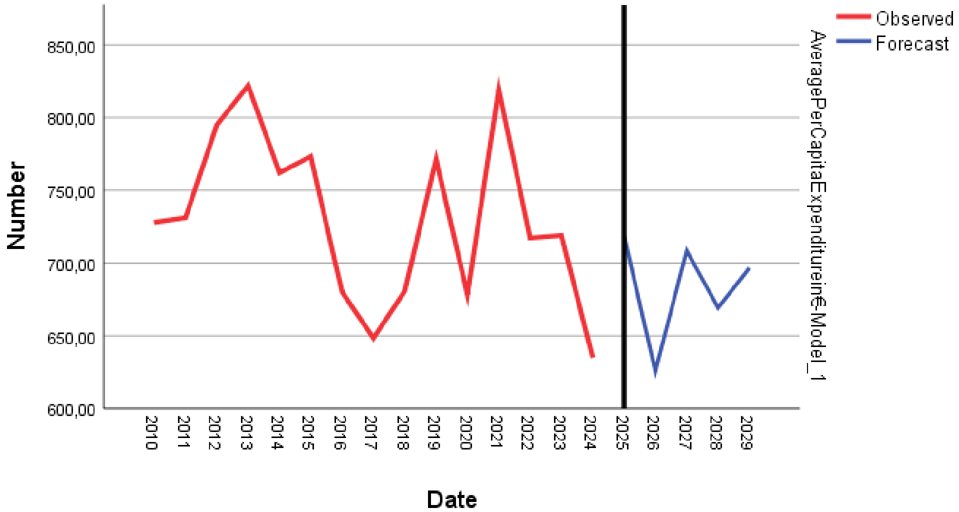

Figure 65. Forecast of inbound tourism per capita expenditure for Belgium.

The French market is the most uncertain, with per capita spending ranging between €515 in 2026 and €698 in 2029. The fairly good model fit (R^2=0.803) ensures that the signs of the trends are pointing towards volumes of spending being on their way back towards the end of the decade.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	651,09	515,41	603,25	566,58	698,15
	UCL	745,95	630,60	792,42	763,16	916,03
	LCL	556,23	400,21	414,09	369,99	480,26

Table 61. Forecasted inbound tourism per capita expenditure for France.

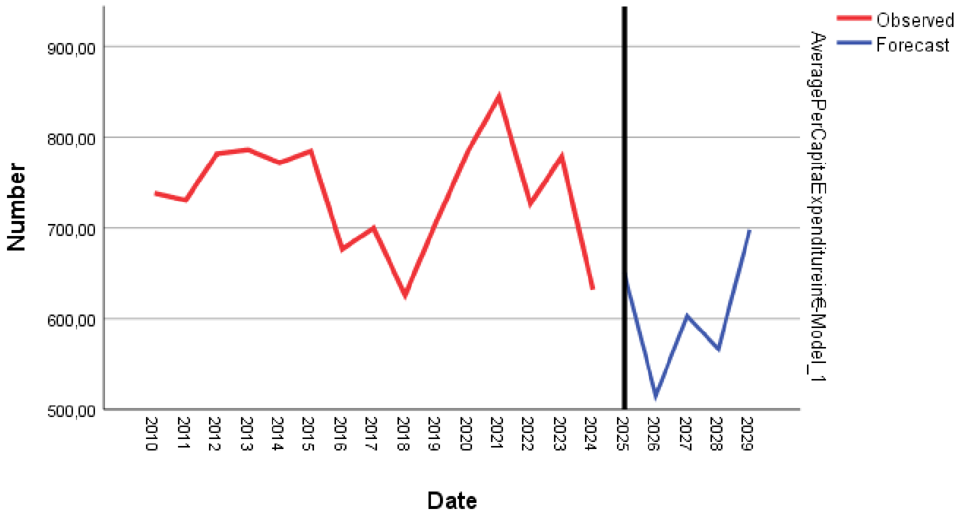

Figure 66. Forecast of inbound tourism per capita expenditure for France.

Germany's per capita expenditure is stable, and it remains constant at 700 euros for the entire forecast period. The Stationary R^2 for the ARIMA(1,1,0) model on the German series is 0.677, which shows that the model fits well and that expenditure is stable at the individual trip level. This is a sign of stable spending behavior among German tourists, which is a positive forecast for Greek revenue.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	721,32	688,81	701,06	682,51	683,89
	UCL	797,78	769,35	801,21	789,15	802,51

		2025	2026	2027	2028	2029
	LCL	644,86	608,26	600,91	575,86	565,26

Table 62. Forecasted inbound tourism per capita expenditure for Germany.

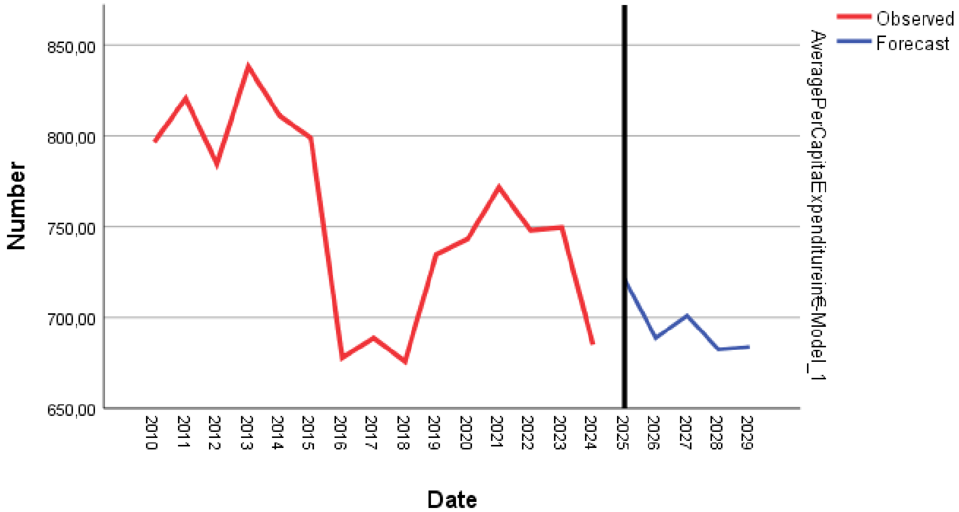

Figure 67. Forecast of inbound tourism per capita expenditure for Germany.

The Spanish series is always stable (€632) over the forecast years, reflecting the impact of a stable ARIMA(0,0,0) model, which indicates modest spending habits characteristic of no-frills Mediterranean sun-and-fun holidays.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	632,20	632,20	632,20	632,20	632,20
	UCL	818,30	818,30	818,30	818,30	818,30
	LCL	446,09	446,09	446,09	446,09	446,09

Table 63. Forecasted inbound tourism per capita expenditure for Spain.

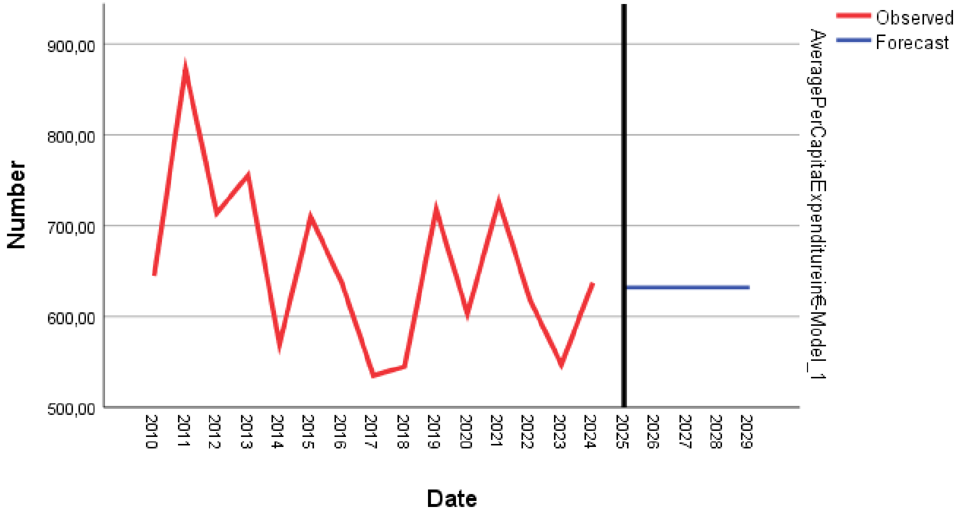

Figure 68. Forecast of inbound tourism per capita expenditure for Spain.

The projection for Italy reveals a steadily decreasing trend from 580 in 2025 to 512 in 2029, which reflects the expected pattern of frugal travel or stays [ARIMA (1,1,1) model with even Stationary R^2 value of 0.705].

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	580,01	563,47	546,40	529,36	512,32
	UCL	655,15	638,47	621,40	604,34	587,28
	LCL	504,86	488,47	471,39	454,37	437,36

Table 64. Forecasted inbound tourism per capita expenditure for Italy.

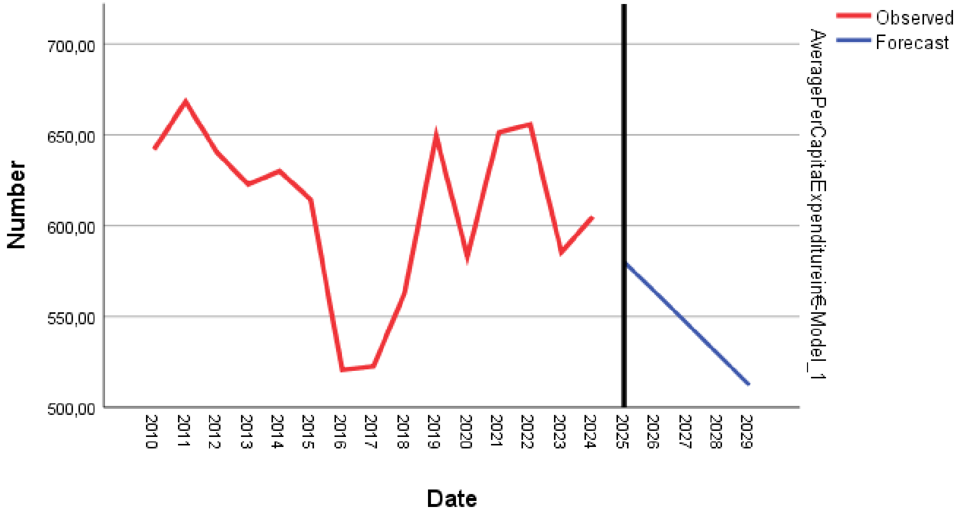

Figure 69. Forecast of inbound tourism per capita expenditure for Italy.

The Netherlands has a marginal growth pattern in per capita spending, which is around €695 in 2026 and stabilizes at around €648 in 2029. The ARIMA(1,0,5) model of the Netherlands series has an R^2 of 0.628 on Stationary R^2, with a moderate level of fit and the underlying trend with a few cycles of deviations. The forecast intervals (UCL: €740-€762; LCL: €559-€629) are indicated with moderate volatility, which records unstructured short-term peak spikes in spending while indicating a stable market.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	672,21	695,06	652,33	674,16	648,23
	UCL	740,06	761,44	737,67	762,08	738,42
	LCL	604,36	628,67	566,98	586,24	558,04

Table 65. Forecasted inbound tourism per capita expenditure for the Netherlands.

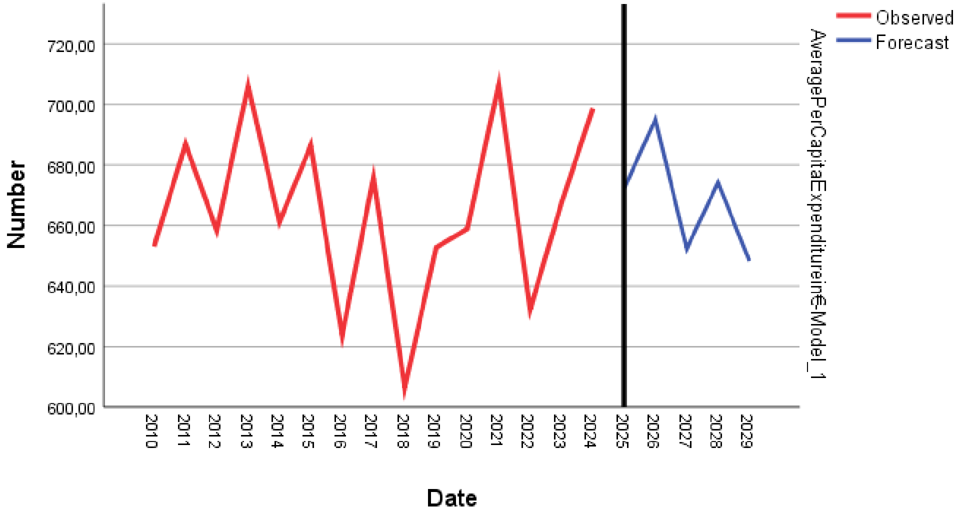

Figure 70.Forecast of inbound tourism per capita expenditure for the Netherlands.

The group of *"Other Eurozone countries"* has stable figures ranging from €627 to €651, with an extremely high Stationary R^2 of 0.981, which greatly supports the validity of the model.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	654,10	627,49	651,51	634,59	650,68
	UCL	688,46	673,79	705,66	692,70	711,80
	LCL	619,74	581,20	597,36	576,47	589,56

Table 66. Forecasted inbound tourism per capita expenditure for the group "Other Eurozone countries".

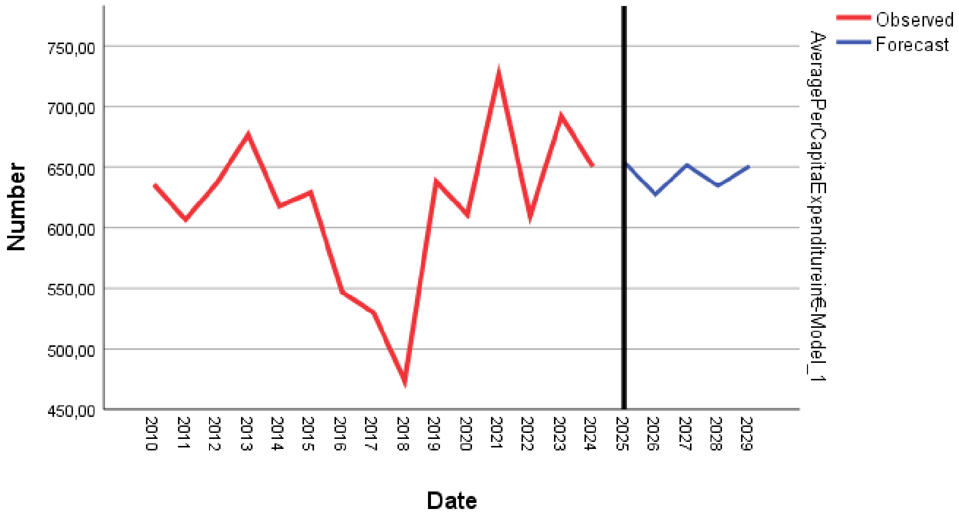

Figure 71. Forecast of inbound tourism per capita expenditure for the group "Other Eurozone countries".

Overall, Eurozone markets have stable per capita expenditure consistent with established demand patterns and extremely high levels of higher purchasing power without annual variation.

Moving on to the second set of markets, the non-Eurozone European countries appear to be more diverse. The per-capita expenditure for Denmark is projected to vary between around €705 in 2025 and €648 in 2029, which depicts a mild decline. The ARIMA model fitted to the Danish data set portrays an excellent fit, with a Stationary R^2 of 0.878, which is a positive sign of the accurate depiction of expenditure behavior. Although there are minute fluctuations from year to year, the overall trend depicts a stable expenditure pattern among Danish tourists, which depicts a mature source market and stable travel preferences among Danish tourists.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	705,82	632,40	670,50	664,76	648,25
	UCL	780,98	717,75	790,73	787,92	783,93

	LCL	630,66	547,05	550,27	541,59	512,58

Table 67. Forecasted inbound tourism per capita expenditure for Denmark.

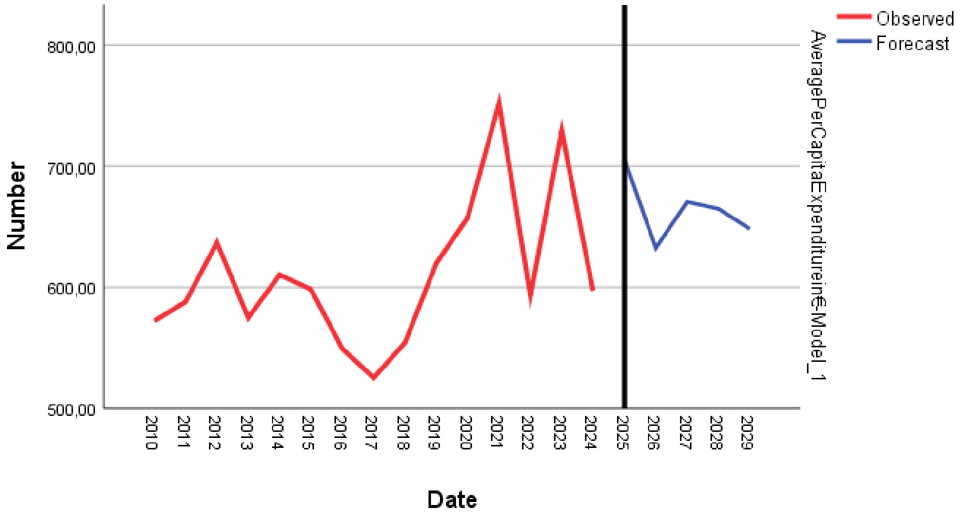

Figure 72. Forecast of inbound tourism per capita expenditure for Denmark.

The growth pattern of Romania is steeper and negative, moving downwards from €396 to €309, with a very good fit of the model (R^2=0.645). This means that there is a growing price sensitivity and a shorter length of stay, as would be expected in a mature market trend in Eastern Europe.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	396,44	321,73	357,86	375,92	309,00
	UCL	471,93	399,27	435,58	476,48	414,36
	LCL	320,94	244,19	280,13	275,35	203,63

Table 68. Forecasted inbound tourism per capita expenditure for Romania.

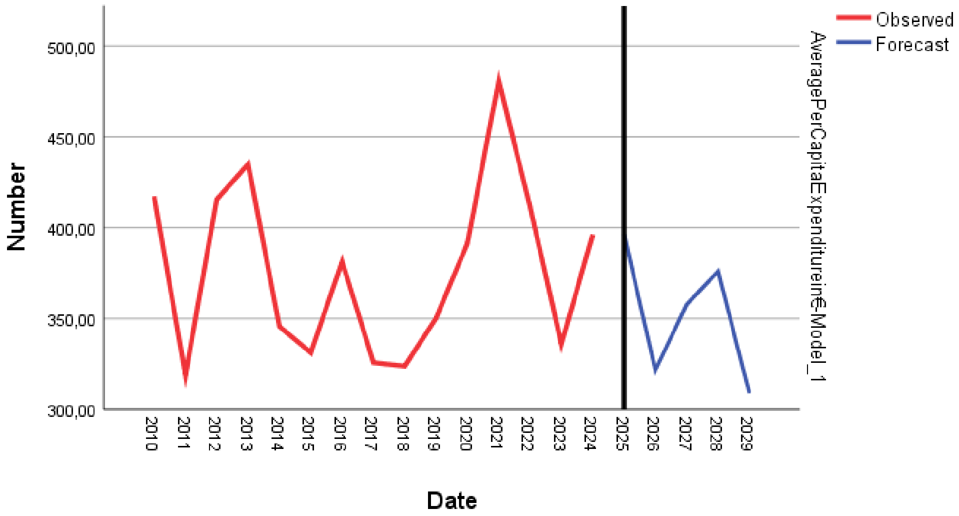

Figure 73. Forecast of inbound tourism per capita expenditure for Romania.

Sweden has a remarkably stable growth curve in average per capita expenditure over the forecast period, with projections that fluctuate within a remarkably narrow band of around €610 to €640. This stability reflects the high purchasing power as well as matured outbound vacation culture of the nation, and puts emphasis on quality rather than quantity in vacation experience. Despite a relatively weak Stationary R^2 of 0.455 that shows the volatility in the data, the model succeeds in reflecting the inherent stability of Swedish travel expenditure. The marginal variations observed may arise out of short-term economic adjustments, i.e., inflationary or currency fluctuations, and not due to structural variations in travel demand. Swedish travelers display well-entrenched consumption patterns, preferring to indulge in sustainable and rich experiences rather than incurring high variability in their expenses per trip. This stability makes Sweden one of the most stable and healthy markets outside the Eurozone.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	640,95	611,56	639,63	610,74	638,32
	UCL	735,13	737,63	796,94	789,10	839,93
	LCL	546,76	485,50	482,32	432,37	436,71

Table 69. Forecasted inbound tourism per capita expenditure for Sweden.

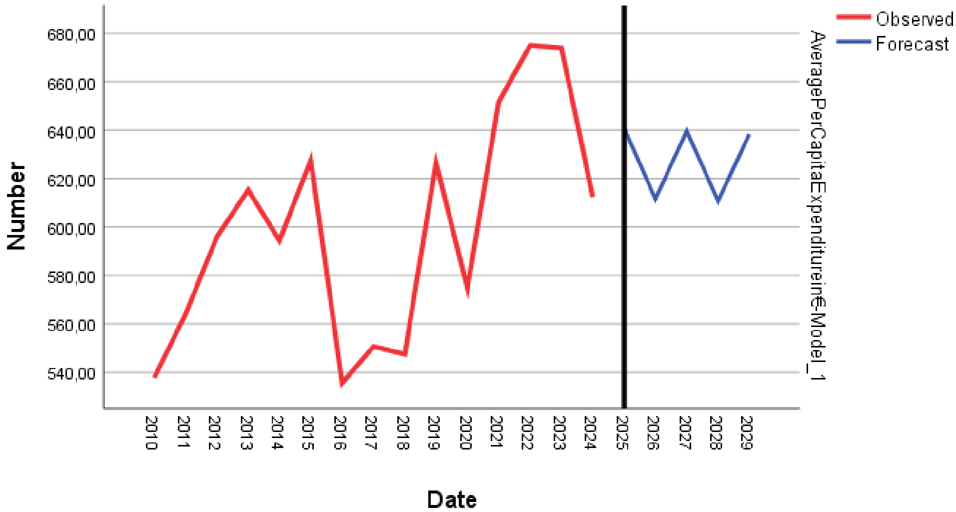

Figure 74. Forecast of inbound tourism per capita expenditure for Sweden.

The Czech Republic is providing a gradual but consistent reduction in per capita expenditures, from €559 in 2025 to €511 in 2029. This trend reflects a comparatively moderate reduction in the average tourist spending that can be linked with broader normalization of travel habits following the post-pandemic restoration phase. The Stationary R^2 of the model (0.498) reflects moderate reliability and suggests that the expenditure behavior is driven by factors other than the nation, including home country income growth rates and intra-EU inflation differentials. The country's positioning as a middle-income tourist destination favoring low-cost destinations and short breaks explains the low levels of expenditure, which are lower than those of more affluent Western European markets. However, the Czech market remains a stable contributor to the total inbound tourism revenues of Greece due to stable consumption behavior and balanced travel budgets.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	559,13	547,39	535,18	522,90	510,60
	UCL	639,93	630,08	618,04	605,77	593,45
	LCL	478,34	464,70	452,32	440,03	427,76

Table 70. Forecasted inbound tourism per capita expenditure for the Czech Republic.

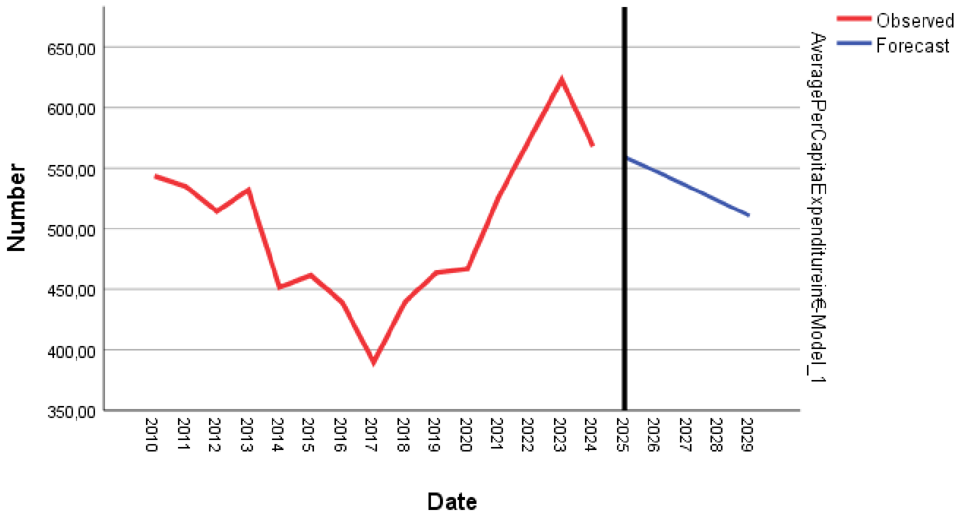

Figure 75. Forecast of inbound tourism per capita expenditure for the Czech Republic.

The composite category of *"Other European countries outside the Eurozone"* shows substantially low levels of spending, declining from €204 in 2025 to €149 in 2029. The Stationary R^2 (0.726) justifies reasonable model fitness, although negative trend suggests increasing budgetary behavior or shorter durations.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	204,44	203,28	179,04	168,08	149,48
	UCL	289,66	295,87	291,83	290,73	284,95

	LCL	119,21	110,68	66,25	45,43	14,02

Table 71. Forecasted inbound tourism per capita expenditure for the group "Other European countries outside the Eurozone".

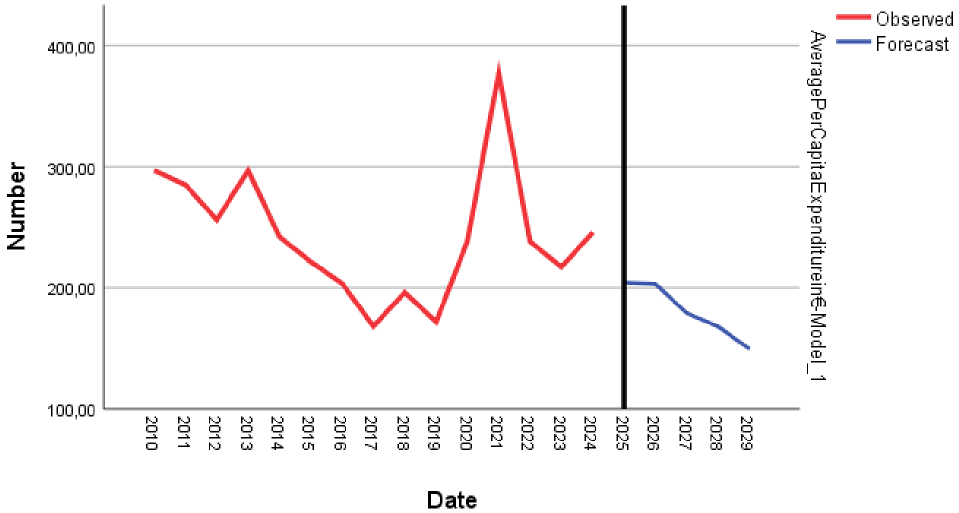

Figure 76. Forecast of inbound tourism per capita expenditure for the group "Other European countries outside the Eurozone".

Albania demonstrates perfect stability in average per capita expenditure throughout the forecasting period with figures persistently fluctuating about €360. The model's high Stationary R^2 (0.794) indicates superior reliability and confirms that Albanian tourists demonstrate long-standing stable behavior. This trend reflects the cross-border nature of Albanian tourism visits to Greece, which are primarily flows of tourism, in the tendency to be short-distance in nature, family-visits, and quite frugal in outlay. Stability of expenditure is also linked with the absence of dramatic external shocks as well as a comparatively stable macroeconomic environment. Though still below Western European markets in terms of expenditure levels, Albania is a consistent regional source market with ongoing contribution towards Greece's total inbound tourism revenues.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	361,29	354,06	360,40	358,64	361,29
	UCL	416,45	413,95	433,38	437,98	448,92
	LCL	306,14	294,16	287,42	279,30	273,66

Table 72. Forecasted inbound tourism per capita expenditure for Albania.

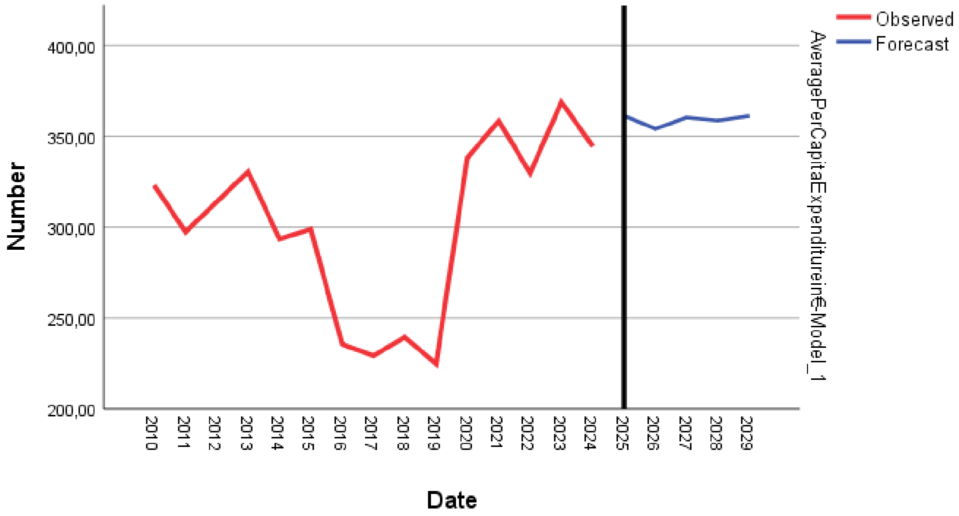

Figure 77. Forecast of inbound tourism per capita expenditure for Albania.

Switzerland has a consistent downward trend in average per capita expenditure from €705 in 2025 to €608 in 2029. This is in line with currency effects, with the historic strength of the Swiss franc, with relative holiday costs and influencing overseas spending, which can moderate overseas spending. The Stationary R^2 of 0.763 in the model verifies the accuracy of the forecast, with smooth adjustment rather than jerky changes. The decline observed can also be affected by a change in holiday habits to shorter or more frequent holidays, which would prove to be an increasing price elasticity in the Eurozone. However, the Swiss market remains a value segment of the tourist arrivals in Greece, with above-average spending levels compared to the rest of the European markets.

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	705,61	681,14	656,67	632,20	607,73
	UCL	830,13	857,24	872,35	881,25	886,18
	LCL	581,08	505,04	440,99	383,15	329,29

Table 73. Forecasted inbound tourism per capita expenditure for Switzerland.

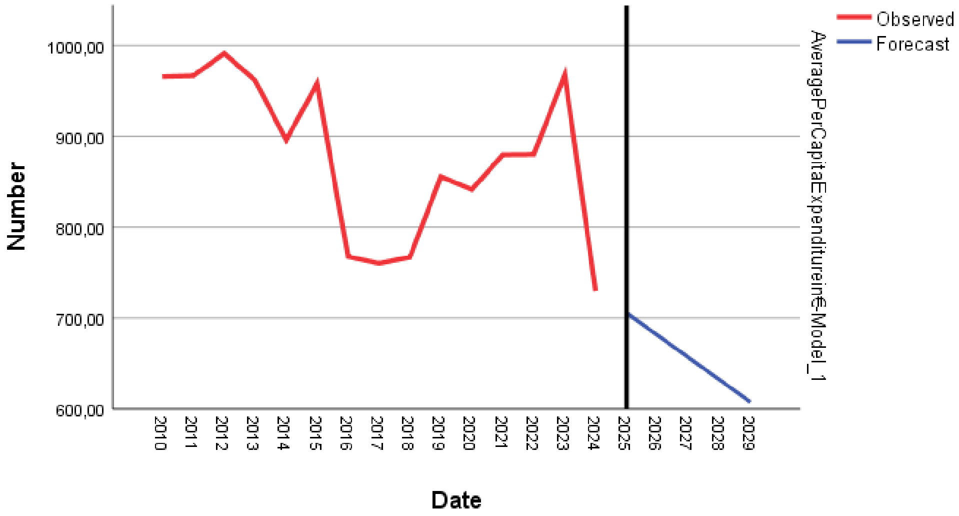

Figure 78. Forecast of inbound tourism per capita expenditure for Switzerland.

The UK is one of the most profitable source markets for Greece in terms of per capita expenditure at around €695-€740 for the 2025-2029 period. The high predictive validity, with the model displaying an 'extremely high' Stationary R^2 of 0.784, indicates that there is consistent consumer behavior as well as macroeconomic issues such as inflation and uncertainty over exchange rates post-Brexit. The consistent high levels of expenditure reflect the high level of maturity and demand from the British market, which is driven by a combination of holiday home and second-home travel, as well as long-stay holidays in island destinations. The UK is clearly an important source market for high-expenditure tourism business, driven by cultural links, air links, and established travel patterns to Greece.

Forecast						
Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	738,64	694,89	716,15	694,60	716,49
	UCL	842,92	804,22	825,91	811,13	835,40
	LCL	634,36	585,55	606,39	578,07	597,57

Table 74. Forecasted inbound tourism per capita expenditure for the UK.

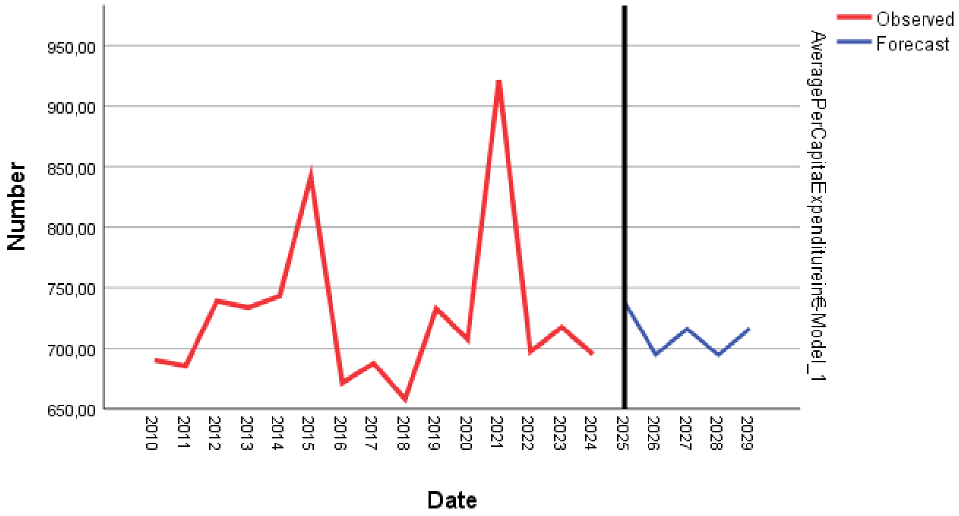

Figure 79. Forecast of inbound tourism per capita expenditure for the United Kingdom.

The third category, non-European and long-haul source markets, is more differentiated in terms of spending behavior, traditionally indicated by higher per capita spending amounts. The United States is always the leading market in terms of per capita average spending, with stable amounts of around €1,055 over the entire forecasting period. This is because of the premium nature of transatlantic travel, where the tendency is for the visitors to be high-spending individuals. The inelastic nature of demand for long-haul holiday travel, combined with longer stays and a need for high-quality services, is what sustains high spending amounts. The Stationary R^2 value of 0.471, although low, also indicates that only a portion of the behavior of expenditure variability is captured, and that possibly some of the external factors, such as the volatility of exchange rates, the inflation of the travel components, or post-pandemic transatlantic capacity, are not fully captured. These factors imply a moderate degree of uncertainty but do not alter the basic stability and premium positioning of the U.S. market within Greece's transatlantic tourism scenario.

Model		Forecast 2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	1054,63	1054,63	1054,63	1054,63	1054,63
	UCL	1331,04	1331,04	1331,04	1331,04	1331,04
	LCL	778,21	778,21	778,21	778,21	778,21

Table 75. Forecasted inbound tourism per capita expenditure for the USA.

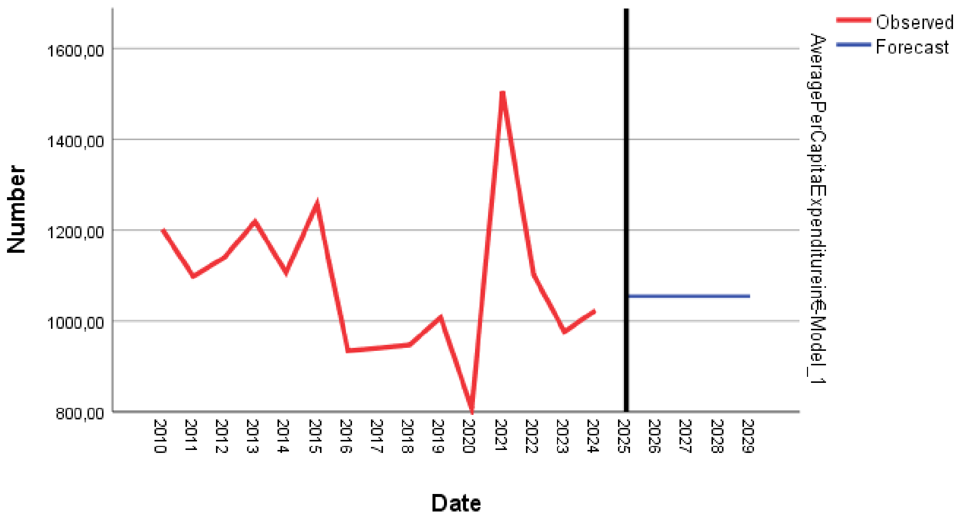

Figure 80. Forecast of inbound tourism per capita expenditure for the USA.

Canada also maintains the same trend in terms of spending amounts above €1,100 and then €1,155 in 2026. Although the Stationary R^2 of the model is 0.356, which is a sign of low reliability, the results show the steady spending trend of Canadian tourists, whose demographic characteristics and traits are no different from those of U.S. tourists. The low level of model fit may result from factors such as exchange rate fluctuations, adjustments in air links, and fuel-related changes in the cost of long-distance travel. However, Canada is still a high-paying source market that adds to the stability of Greece's total tourism revenue.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	1121,81	1155,19	1108,94	1099,62	1073,17
	UCL	1486,67	1569,18	1605,45	1650,10	1679,68
	LCL	756,96	741,20	612,42	549,13	466,66

Table 76. Forecasted inbound tourism per capita expenditure for Canada.

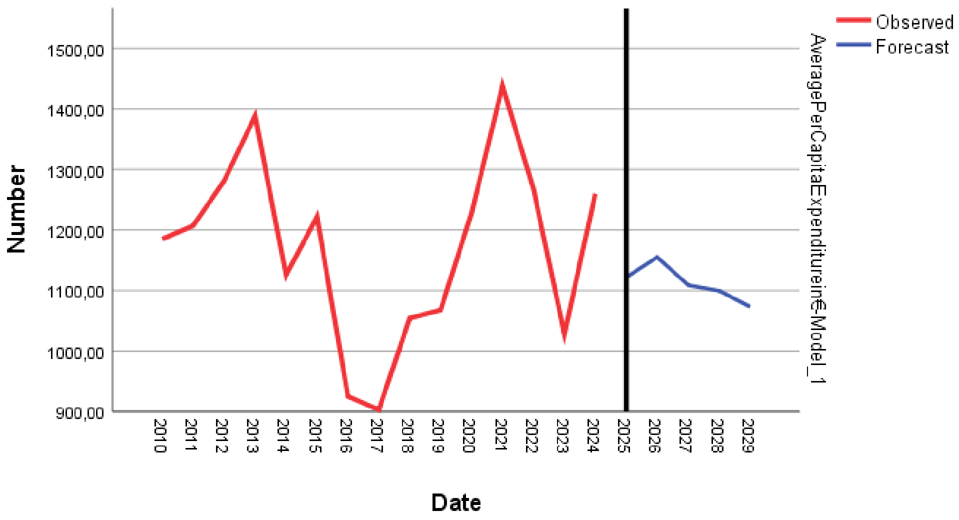

Figure 81. Forecast of inbound tourism per capita expenditure for Canada.

On the other hand, Russia has a clear trend of decline, where the average per capita spending decreases from €851 in 2025 to approximately €661 as of 2029. Despite the decline, the model indicates an extremely high level of fit ($R^2 = 0.810$), hence justifying the validity of the trend. The decline is fueled by the presence of geopolitical conflicts, economic sanctions, and disruptions of direct air transport, which limit the capacity of outbound travel and spending behavior. Russian tourists who will be traveling to Greece will be better off financially, but the overall market contraction exceeds the average spending level.

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	850,78	821,93	762,85	713,45	660,96
	UCL	1032,94	1009,59	952,16	902,57	850,11
	LCL	668,62	634,26	573,53	524,34	471,81

Table 77. Forecasted inbound tourism per capita expenditure for Russia.

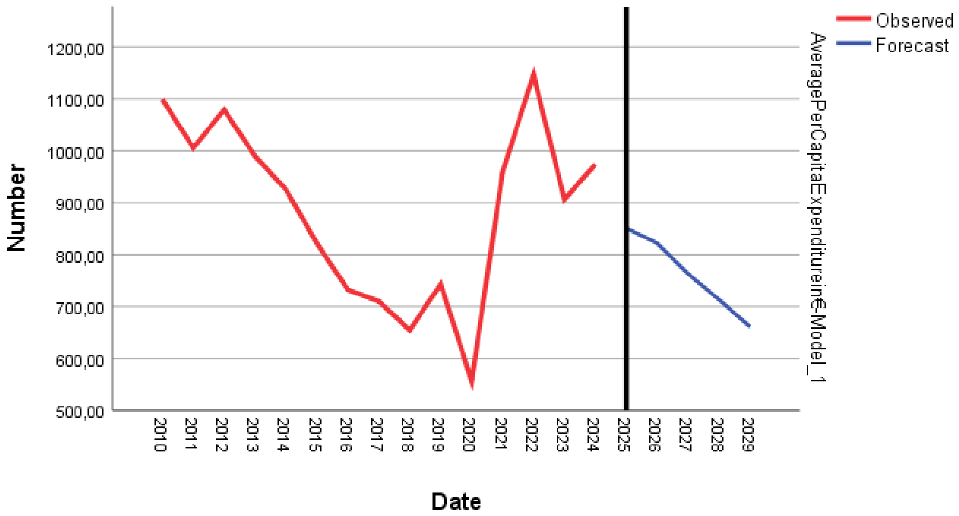

Figure 82. Forecast of inbound tourism per capita expenditure for Russia.

The group of *"Other non-European countries"* presents a small but positive trend, where the per capita spending is gradually rising from €414 in 2025 to about €420 in 2029. As much as the Stationary R^2 (0.519) is as supportive of the limited model fit as possible, there is a slowly changing trend towards the normalization and recovery process in the various non-European and developing economies, some of which are still trying to find their place within the inbound tourism basket of Greece.

Forecast

Model		2025	2026	2027	2028	2029
Average Per Capita Expenditure (in €)-Model_1	Forecast	414,65	415,05	416,52	418,21	419,96
	UCL	488,69	531,49	565,68	594,50	619,79
	LCL	340,61	298,62	267,36	241,93	220,12

Table 78. Forecasted inbound tourism per capita expenditure for the group "Other non-European countries".

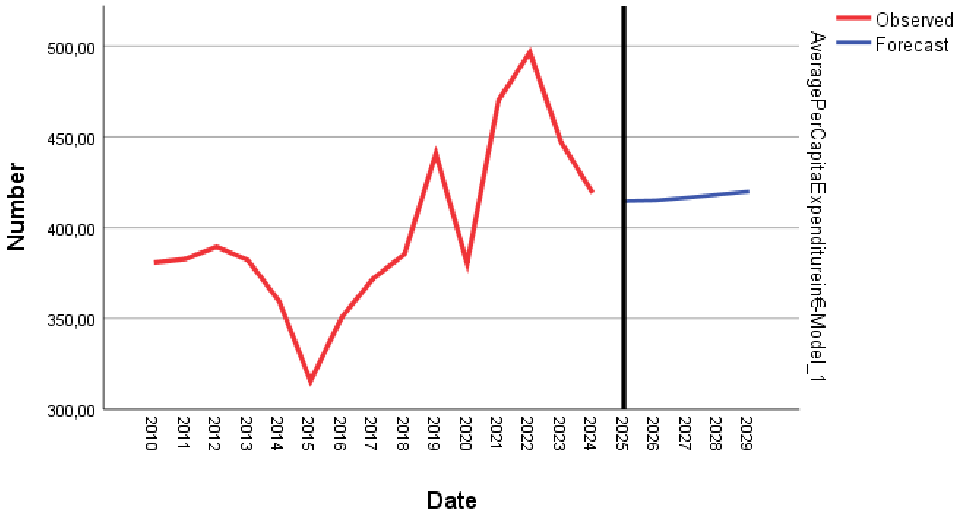

Figure 83. Forecast of inbound tourism per capita expenditure for the group "Other non-European countries".

Collectively, the projections of per capita expenditure highlight the structural stratification among source markets. Western Europe and the Eurozone nations have refined, middle-to-upper spending habits that reflect mature demand and secure buying power. Long-haul markets, particularly the United States and Canada, continue to yield the greatest revenues on a per capita level, which constitute the foundation of the overall value of Greek tourism. On the other hand, the emerging markets and Eastern European are price-sensitive, drawing increasing volumes of visitors but comparatively weaker spending levels. Together, these trends indicate that Greece's inbound travel demand is shifting towards a stabilization cycle, driven by robust, value-driven, incumbent markets and supplemented by expansion in newer, price-sensitive segments.

The above analysis of average per capita expenditure reveals alternative patterns of expenditures in markets that reflect variations in incomes, purpose of travel, and trip duration. This indicator alone cannot adequately reflect the intensity of tourists' overnight consumption, however. In order to achieve a better appreciation of the true economic contribution of inbound tourism, it is important to examine what visitors spend on average per night in Greece. The subsequent section thus focuses on per-night development and forecasting of average expenditure, providing a further perspective on visitor behavior and destination profitability.

Average expenditure per night represents one of the most important measures of tourist activity and accommodation intensity that characterizes the performance of every source market in terms of tourism receipts for Greece expressed as overnight stays. Relative to the total or per-capita expenditure, the variable reflects the qualitative element of demand, offering insights into price sensitivity, length of stay, and consumption behavior. Higher average nightly expenditure is generally linked to short stay and high-value customers, including long-haul travelers or those demanding luxury accommodation, whereas lower values are more likely to indicate longer stays and value markets.

The ARIMA forecasts for the period 2025-2029 indicate various levels of expenditure driven by source market dynamics, exchange rate fluctuations, and travel behavior. Noting Table 79, the forecasts register total moderate year-over-year trends, thus verifying the stabilization of the future tourism industry in Greece following the pandemic crisis. The subsequent analysis is organized into three groups, namely Eurozone markets, non-Eurozone European markets, and long-haul/non-European markets, before proceeding to a point-by-point country-by-country analysis aimed at developing the individual spending patterns that shape each market.

Average Expenditure per Night in €					
Country			Mean		Forecasting

	Model Type	Fit Statistic		Year	2025	2026	2027	2028	2029
Austria*	ARIMA (2,1,0)	Stationary R^2	0,832	***Forecast***	105,98	105,74	109,17	114,96	115,58
				UCL	117,35	117,45	123,32	129,46	130,31
				LCL	94,61	94,03	95,03	100,46	100,86
Belgium	ARIMA (1,0,0)	Stationary R^2	0,428	***Forecast***	79,28	79,41	79,34	79,38	79,36
				UCL	93,99	96,08	96,53	96,71	96,73
				LCL	64,57	62,73	62,15	62,04	61,98
France*	ARIMA (2,1,1)	Stationary R^2	0,603	***Forecast***	99,19	94,2	100,89	97,63	102,84
				UCL	112,84	108	119,13	116,21	124,27
				LCL	85,53	80,39	82,64	79,05	81,41
Germany	ARIMA (2,0,0)	Stationary R^2	0,741	***Forecast***	79,48	80,26	78,83	79,38	78,5
				UCL	88,45	89,49	90,36	91,36	91,76
				LCL	70,51	71,02	67,3	67,4	65,24
Spain*	ARIMA (2,1,2)	Stationary R^2	0,620	***Forecast***	79,51	58,37	62,46	73,4	69,07
				UCL	103,62	86,06	95,5	107,02	106,03
				LCL	55,41	30,68	29,42	39,78	32,11
Italy*	ARIMA (2,1,1)	Stationary R^2	0,919	***Forecast***	78,02	95,33	80,66	83,88	101,33
				UCL	86,15	103,53	89,5	94,94	112,39
				LCL	69,89	87,13	71,81	72,82	90,27
Cyprus*	ARIMA (2,1,1)	Stationary R^2	0,984	***Forecast***	85,83	93,84	102,52	110,76	119,31
				UCL	89,36	98,73	108,19	117,37	126,56
				LCL	82,31	88,95	96,85	104,15	112,05
Netherlands*	ARIMA (1,1,1)	Stationary R^2	0,411	***Forecast***	94,62	93,37	98,89	97,64	103,16
				UCL	105,76	108,62	117,77	119,24	127,46
				LCL	83,47	78,13	80	76,05	78,86
Other Eurozone Countries*	ARIMA (0,1,1)	Stationary R^2	0,479	***Forecast***	86,88	87,27	87,67	88,06	88,45
				UCL	103,78	104,18	104,59	104,99	105,39
				LCL	69,99	70,37	70,75	71,13	71,51
Denmark*	ARIMA (2,1,2)	Stationary R^2	0,780	***Forecast***	79,33	82,4	82,79	81,66	81,32
				UCL	93,42	101,31	101,77	101,11	100,8
				LCL	65,25	63,49	63,81	62,21	61,84
Romania	ARIMA (2,0,1)	Stationary R^2	0,786	***Forecast***	40,07	62,66	59,43	39,84	43,87
				UCL	51,51	78,72	77,99	61,15	66,47
				LCL	28,64	46,6	40,86	18,54	21,28
Sweden*	ARIMA (0,1,0)	Stationary R^2	0,884	***Forecast***	82,45	84,25	86,05	87,84	89,64
				UCL	91,5	97,05	101,72	105,94	109,88
				LCL	73,4	71,45	70,37	69,74	69,4
Czech Republic*	ARIMA (1,1,0)	Stationary R^2	0,913	***Forecast***	75,29	76,82	76,8	77,84	78,16
				UCL	79,98	81,74	82,95	84,37	85,43
				LCL	70,59	71,89	70,65	71,32	70,89
Other European countries outside the Eurozone*	ARIMA (0,1,1)	Stationary R^2	0,738	***Forecast***	75,63	77,26	78,89	80,5	82,12
				UCL	83,56	85,19	86,81	88,43	90,03
				LCL	67,71	69,34	70,96	72,58	74,2
Australia*	ARIMA (1,1,0)	Stationary R^2	0,710	***Forecast***	113,95	95,83	103,48	94,37	96,15
				UCL	152	136,14	153,37	147,74	155,4
				LCL	75,9	55,51	53,58	41	36,9

Switzerland*	ARIMA (0,1,0)	Stationary R^2	0,685	***Forecast***	94,55	94,93	95,32	95,71	96,1
				UCL	107,53	113,29	117,81	121,67	125,13
				LCL	81,56	76,57	72,83	69,74	67,06
United Kingdom	ARIMA (2,0,0)	Stationary R^2	0,352	***Forecast***	92,01	92,46	90,79	90,58	89,54
				UCL	109,22	110,36	112,09	112,76	113,31
				LCL	74,79	74,57	69,49	68,41	65,76
USA	ARIMA (0,0,1)	Stationary R^2	0,529	***Forecast***	89	94,71	94,71	94,71	94,71
				UCL	108,9	121,95	121,95	121,95	121,95
				LCL	69,1	67,48	67,48	67,48	67,48
Canada*	ARIMA (1,1,0)	Stationary R^2	0,697	***Forecast***	84,89	87,04	79,95	79,5	74,28
				UCL	108,95	112,03	111,46	112,64	111,38
				LCL	60,84	62,04	48,44	46,35	37,18
Russia*	ARIMA (2,1,0)	Stationary R^2	0,732	***Forecast***	71,85	111,97	70,42	104,31	68,56
				UCL	97,02	137,17	104,91	138,8	109,35
				LCL	46,68	86,76	35,94	69,82	27,77
Other Countries*	ARIMA (1,1,0)	Stationary R^2	0,712	***Forecast***	99,9	101,59	103,2	104,8	106,41
				UCL	108,76	114,49	119,17	123,35	127,21
				LCL	91,04	88,68	87,22	86,26	85,61

Table 79. Inbound tourism per night expenditure forecasting results.

The Eurozone countries exhibit typically stable patterns in average nightly expenditure, reflecting the kind of mature tourism economies having stable spending habits with no volatility in the period. Austria registers a firmly increasing pattern in average nightly expenditure from €105.98 in 2025 to €115.58 in 2029. The model is able to capture high accuracy (Stationary R^2 = 0.832), reflecting a stable spending habit of a mature Eurozone economy. The stable growth indicates a robust combination of high-spending tourists, whose holidays in Greece remain infused with premium flavor. In inflation-adjusted terms, the trend revealed by the forecast translates into real spending linked with high-end hotel and experience-based travel preferences, which is indifferent to against short-term economic volatility.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	105,98	105,74	109,17	114,96	115,58
	UCL	117,35	117,45	123,32	129,46	130,31
	LCL	94,61	94,03	95,03	100,46	100,86

Table 80. Forecasted inbound tourism per night expenditure for Austria.

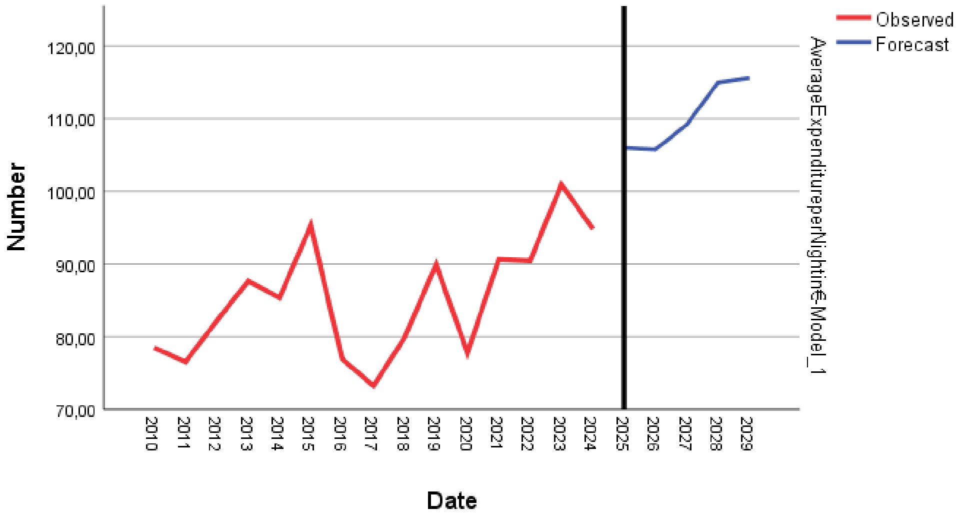

Figure 84. Forecast of inbound tourism per night expenditure for Austria.

The consistency of the Belgian forecasts is breathtaking, with the evening expenditure ranging only from €79.28 to €79.36. The low value of the Stationary R^2 (0.428) suggests that the expenditure could be affected by external or behavioral factors, such as changes in the purpose of travel, seasonal preferences, or changes in disposable income of Belgian tourists. Nevertheless, overall consistency indicates Belgium's balanced traveling profile, which consists of medium-duration trips with consistent daily expenditures and steady demand for mid-range accommodation.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	79,28	79,41	79,34	79,38	79,36
	UCL	93,99	96,08	96,53	96,71	96,73
	LCL	64,57	62,73	62,15	62,04	61,98

Table 81. Forecasted inbound tourism per night expenditure for Belgium.

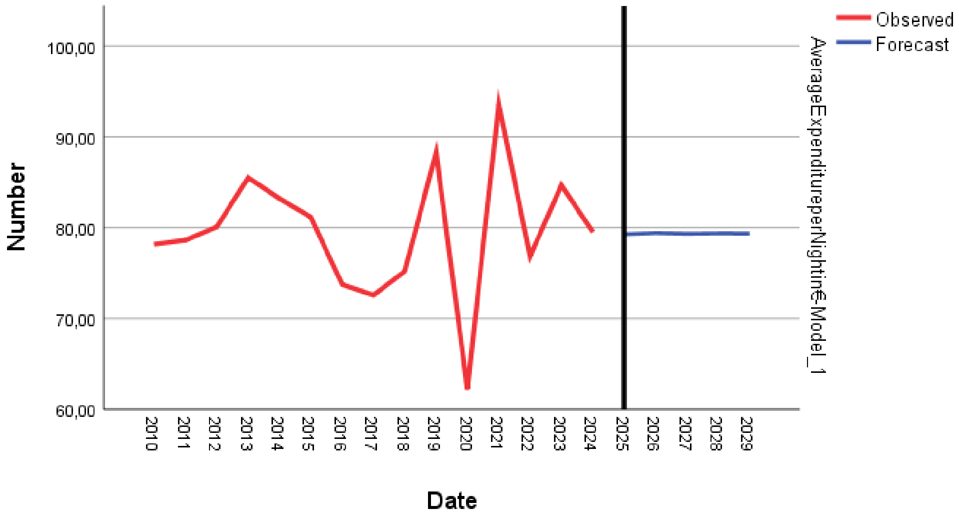

Figure 85. Forecast of inbound tourism per night expenditure for Belgium.

France experiences moderate fluctuations throughout the forecast period, ranging from €94.2 in 2026 to €102.84 in 2029. The model's Stationary R^2 value (0.603) indicates moderate reliability, which picks up the cyclical patterns that are inherent in French outbound travel. The trend suggests repeat visitor and diversified purpose of travel - cultural, leisure, and family tourism - whose spending intensity might fluctuate seasonally. Recovery in the final years of the forecasting period shows a gradual restoration to normal and potential upgrading of accommodations available as consumer confidence and disposable incomes return.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	99,19	94,20	100,89	97,63	102,84
	UCL	112,84	108,00	119,13	116,21	124,27
	LCL	85,53	80,39	82,64	79,05	81,41

Table 82. Forecasted inbound tourism per night expenditure for France.

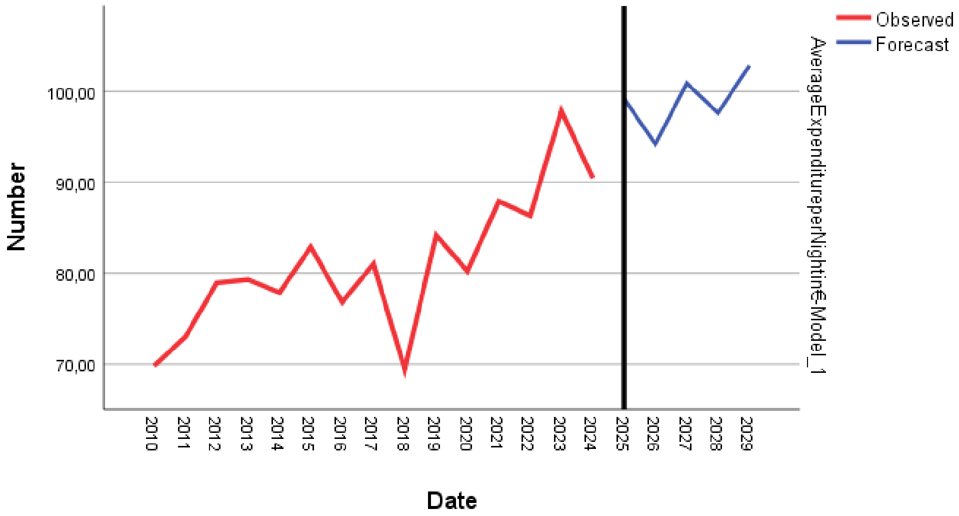

Figure 86. Forecast of inbound tourism per night expenditure for France.

Germany shows a stable, mature pattern, with forecasts varying between €78.5 and €80.26. The good model fit (Stationary R^2 = 0.741) confirms expectation of a high-volume, stable market whose per night expenditure is barely affected by short-run economic or geopolitical turbulence. The low year-on-year variation is an indication of a fully institutionalized behavior pattern concerning German outbound tourism to Greece, typically for extended stays, even with moderate to high daily expenses. German tourists are the most stable inbound tourism asset for Greece, in terms of both number and economic impact.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	79,48	80,26	78,83	79,38	78,50
	UCL	88,45	89,49	90,36	91,36	91,76
	LCL	70,51	71,02	67,30	67,40	65,24

Table 83. Forecasted inbound tourism per night expenditure for Germany.

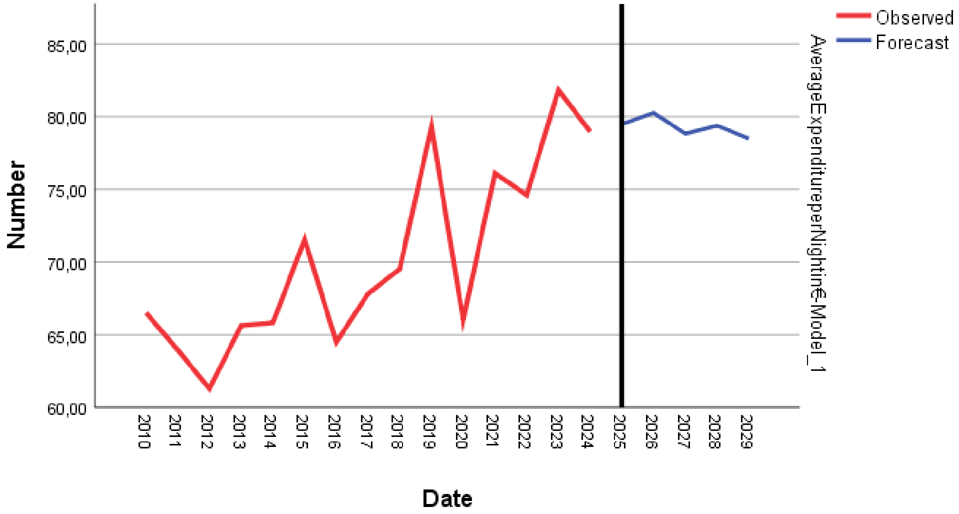

Figure 87. Forecast of inbound tourism per night expenditure for Germany.

Spain demonstrates more cyclical instability, starting at €79.51 in 2025, decreasing to €58.37 in 2026, and then moving up a little to €69.07 in 2029. The Stationary R^2 (0.620) indicates satisfactory fit of the model, which is still able to detect the cyclical instability of the market. The precipitous decline in 2026 can be a signal of short-run bounds on consumer spending budgets or shifts in budget-constrained travel behavior. In the long term, the limited growth rate implies an adjustment to medium levels of spending, which is expected from Spain, which is a Mediterranean country with similar travel behavior and costs to Greece, while also being a strong competitor.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	79,51	58,37	62,46	73,40	69,07
	UCL	103,62	86,06	95,50	107,02	106,03
	LCL	55,41	30,68	29,42	39,78	32,11

Table 84. Forecasted inbound tourism per night expenditure for Spain.

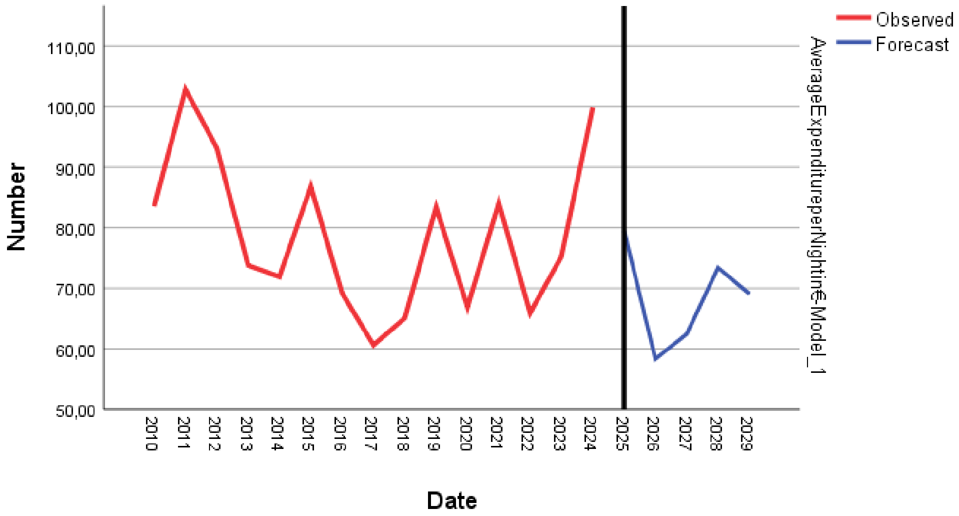

Figure 88. Forecast of inbound tourism per night expenditure for Spain.

Italy shows a strong positive trend with overnight expenses rising from €78.02 in 2025 to €101.33 in 2029. The results show an extremely high level of reliability (Stationary $R^2 = 0.919$), which indicates continuous growth. This is an indication of a shift in the trend towards better-quality trip generation for shorter lengths of stay, which may be a result of city tourism and improved air links between Greek and Italian holiday destinations. The numbers highlight the growth of Italy as a higher qualitative value market segment with higher qualitative value for Greek tourist receptions.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	78,02	95,33	80,66	83,88	101,33
	UCL	86,15	103,53	89,50	94,94	112,39
	LCL	69,89	87,13	71,81	72,82	90,27

Table 85. Forecasted inbound tourism per night expenditure for Italy.

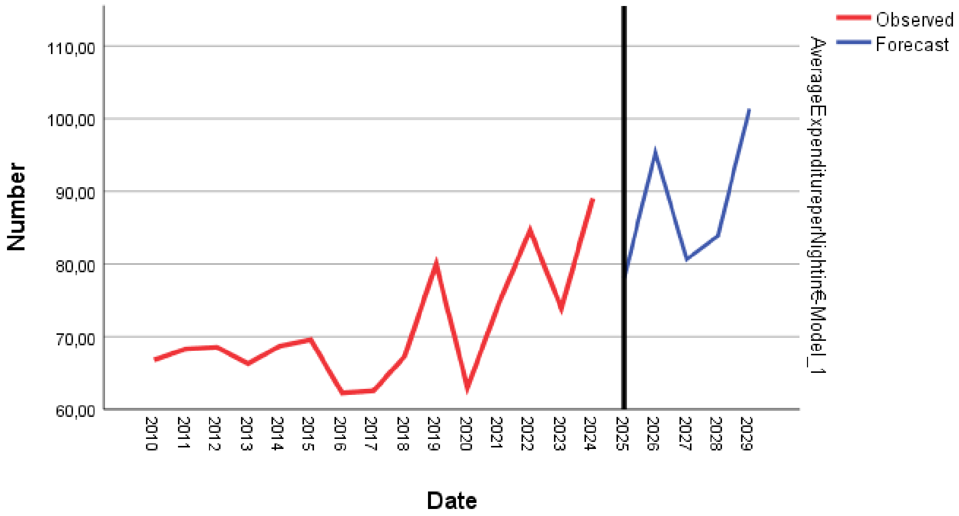

Figure 89. Forecast of inbound tourism per night expenditure for Italy.

Cyprus also displays a particularly healthy trend, where the level of expenditure increases from €85.83 in 2025 to €119.31 in 2029. The Stationary R^2 of 0.984 also indicates the accuracy and predictability of the model, while the steady growth indicates the level of leisure travel, cultural and family links, and re-adjusted positive development of accommodation expenditure. The Cypriot market is a precious market, despite its size, and therefore its value from a strategic point of view for the Greek tourist economy.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	85,83	93,84	102,52	110,76	119,31
	UCL	89,36	98,73	108,19	117,37	126,56
	LCL	82,31	88,95	96,85	104,15	112,05

Table 86. Forecasted inbound tourism per night expenditure for Cyprus.

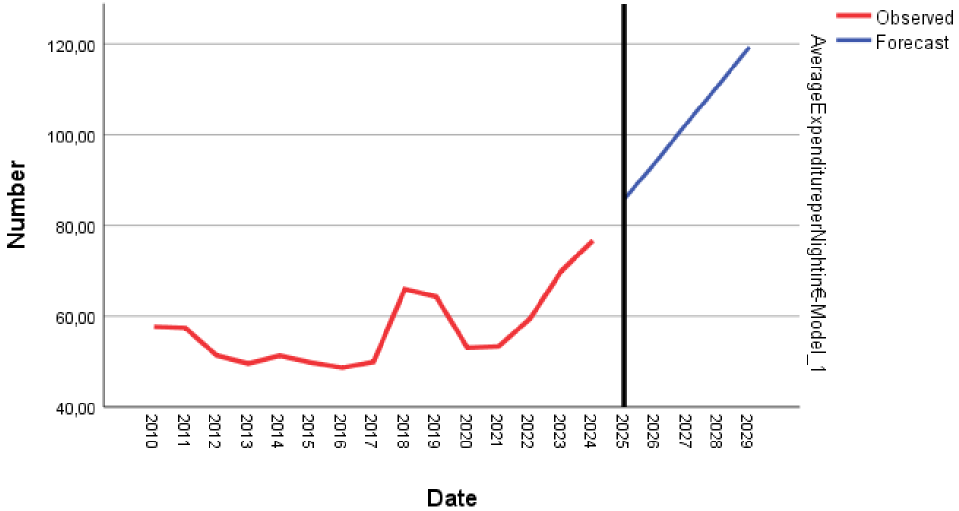

Figure 90. Forecast of inbound tourism per night expenditure for Cyprus.

The Netherlands has a moderate growth rate, with estimates ranging from €94.62 in 2025 to €103.16 in 2029. Although with less model fit (Stationary $R^2 = 0.411$), the trend of increase still meets the economic stability of the Netherlands and the tendency towards high-quality travel. Volatility should represent the general European inflationary impacts and the consumer orientation towards sustainable and experience tourism that both have the tendency to influence the tourism expenditure behavior.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	94,62	93,37	98,89	97,64	103,16
	UCL	105,76	108,62	117,77	119,24	127,46
	LCL	83,47	78,13	80,00	76,05	78,86

Table 87. Forecasted inbound tourism per night expenditure for the Netherlands.

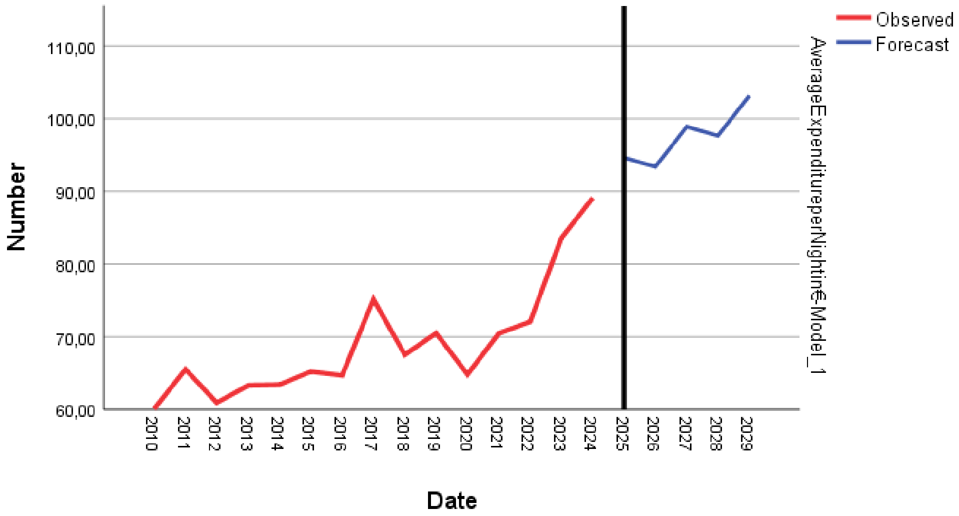

Figure 91. Forecast of inbound tourism per night expenditure for the Netherlands.

The *"Other Eurozone countries"* category demonstrates constant growth from €86.88 in 2025 to €88.45 in 2029. The Stationary R^2 value of 0.479 indicates that the data fits well, which is expected for the category that represents a compilation of various small markets with different attributes. Although there is a slight fluctuation, the overall stability and growth pattern confirm that the pattern of intra-Eurozone travel expenditure remains consistent.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	86,88	87,27	87,67	88,06	88,45
	UCL	103,78	104,18	104,59	104,99	105,39
	LCL	69,99	70,37	70,75	71,13	71,51

Table 88. Forecasted inbound tourism per night expenditure for the group "Other Eurozone countries".

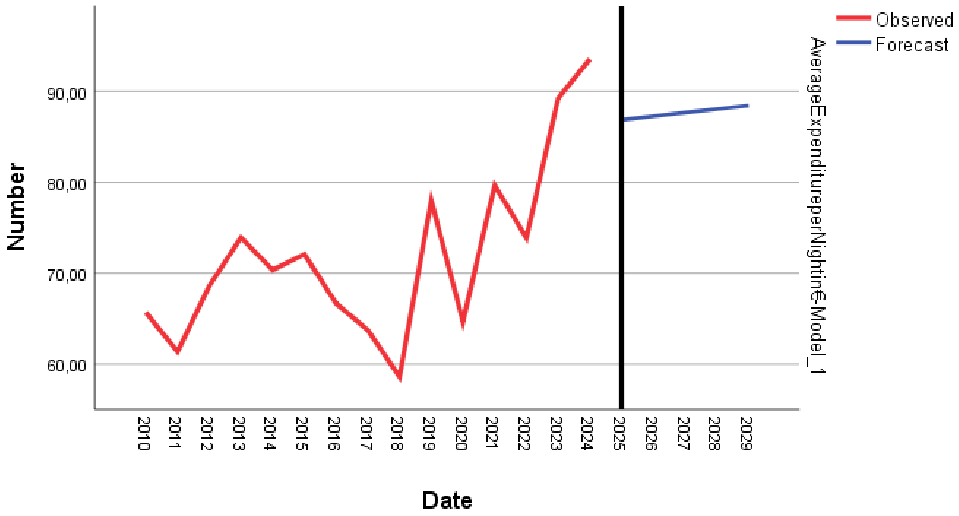

Figure 92. Forecast of inbound tourism per night expenditure for the group "Other Eurozone countries".

However, returning to the remaining European countries outside the Eurozone, this group of countries portrays a more diversified level of spending behavior throughout the visit due to differences in purchasing power, type of accommodation, and length of stay. While some of the mature markets in Northern Europe do portray a level of appreciable stability, others, particularly in Eastern Europe, have been found to be more sensitive to price and external economic factors.

Denmark portrays moderate but stable growth in average per night spending, from €79.33 in 2025 to €81.32 in 2029. The growth portrays good stability (Stationary R^2 = 0.780), which reflects a stable spending behavior over the years. The growth also portrays high-income tourism for Denmark, with more expensive but shorter stays. This reflects a stable market with low price sensitivity, as Danish tourists would be more focused on service quality and authenticity rather than price reductions, thereby portraying stable high-end spending in the hotels of Greece.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	79,33	82,40	82,79	81,66	81,32
	UCL	93,42	101,31	101,77	101,11	100,80
	LCL	65,25	63,49	63,81	62,21	61,84

Table 89. Forecasted inbound tourism per night expenditure for Denmark.

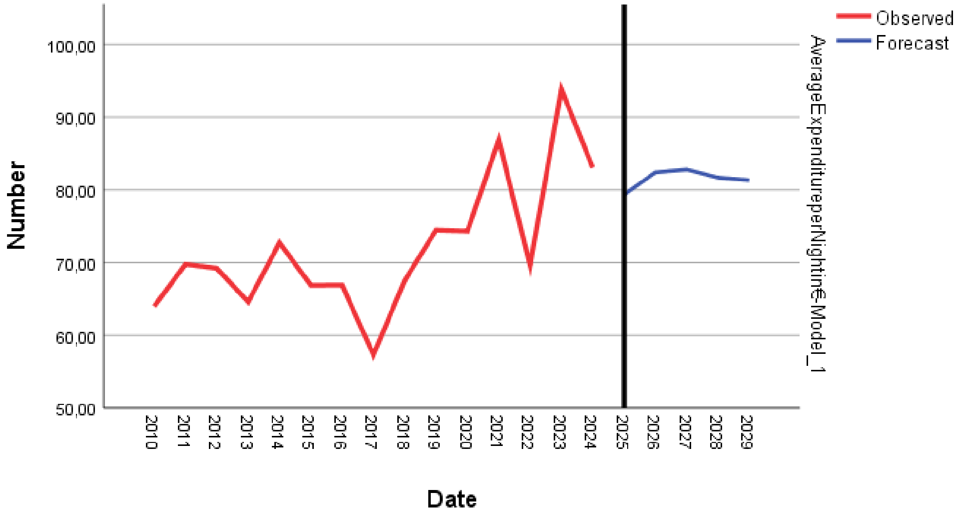

Figure 93. Forecast of inbound tourism per night expenditure for Denmark.

Switzerland is a very stable country regarding the average night spend, with forecasts slightly increasing from €94.55 in 2025 to €96.10 in 2029. The model fit is good (Stationary $R^2 = 0.685$), which confirms that the spending pattern is stable and forecastable. This is probably due to the strong Swiss franc and the country's stable high-income visitation pattern, where visitors are less concerned with prices and more with convenience and luxury. The trend is a result of the cost inflation of luxury category accommodations and services, but not a shift in the pattern of spending behavior.

Forecast

Model		2025	2026	2027	2028	2029
	Forecast	94,55	94,93	95,32	95,71	96,10

Average Expenditure per Night (in €)-Model_1	UCL	107,53	113,29	117,81	121,67	125,13
	LCL	81,56	76,57	72,83	69,74	67,06

Table 90. Forecasted inbound tourism per night expenditure for Switzerland.

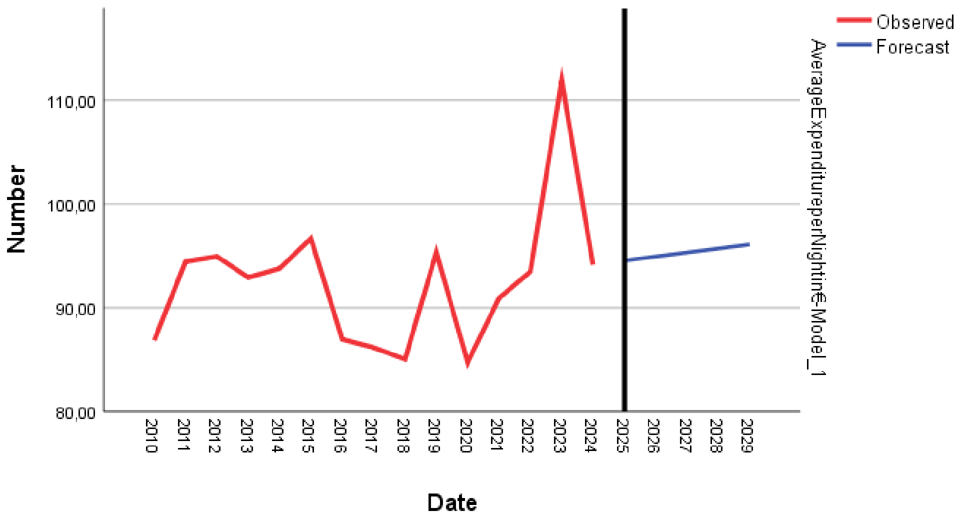

Figure 94. Forecast of inbound tourism per night expenditure for Switzerland.

The trend for Romania is very non-stationary, with the average nightly spend ranging from €40.07 in 2025 to €62.66 in 2026, then falling to €39.84 in 2028 and rising again to €43.87 in 2029. Even with the high levels of volatility, the model is statistically significant (Stationary $R^2 = 0.786$). Such levels of volatility may be indicative of the economic uncertainty that is common in developing countries, where economic factors such as prices, disposable income, and exchange rates may have a significant effect on travel spend. The trend is also indicative of a rising number of young and frugal travelers, which is also consistent with the Romanian outbound market.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	40,07	62,66	59,43	39,84	43,87
	UCL	51,51	78,72	77,99	61,15	66,47
	LCL	28,64	46,60	40,86	18,54	21,28

Table 91. Forecasted inbound tourism per night expenditure for Romania.

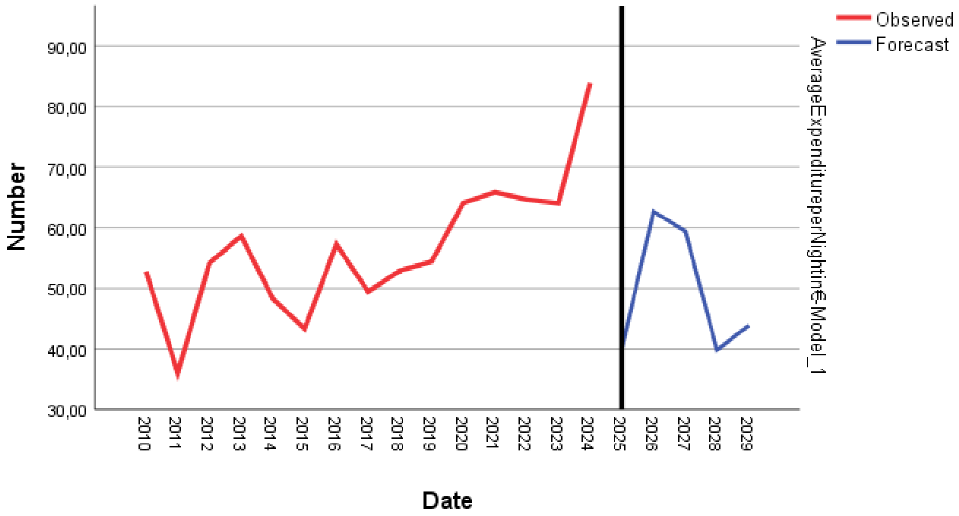

Figure 95. Forecast of inbound tourism per night expenditure for Romania.

The Swedish forecasted values present a clear positive trend, cumulatively growing from €82.45 in 2025 to €89.64 in 2029. The very good model fit (Stationary R^2 = 0.884) verifies the trend's stability and the correlation of the forecast. The positive trend corresponds to the Swedish tradition of experiential and high-spending holidays, with average lengths of stay and high day spending levels. The results indicate a balanced market with stable growth prospects, which is a sign of economic dynamism and the continuous demand for high-end travel services provided by the Greek destination.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	82,45	84,25	86,05	87,84	89,64
	UCL	91,50	97,05	101,72	105,94	109,88
	LCL	73,40	71,45	70,37	69,74	69,40

Table 92. Forecasted inbound tourism per night expenditure for Sweden.

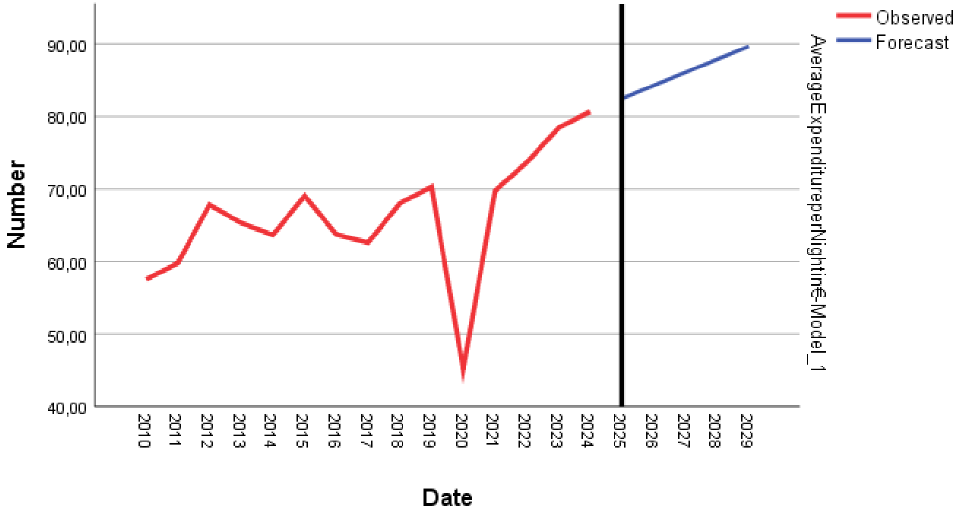

Figure 96. Forecast of inbound tourism per night expenditure for Sweden.

The Czech Republic has a stable and steadily rising level of expenditure, at €75.29 in 2025 and €78.16 in 2029. The graph indicates a high degree of reliability (Stationary $R^2 = 0.913$), which is a clear indicator of a good fit and stable consumption behavior. The stability of the graph also indicates a successful transformation of the middle-class in the country, where tourists are able to balance prices with rising demands for quality. The steadily rising graph also indicates a focus on value-for-money accommodation and services, as Greece expands its tourist market in Central and Eastern Europe.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	75,29	76,82	76,80	77,84	78,16
	UCL	79,98	81,74	82,95	84,37	85,43
	LCL	70,59	71,89	70,65	71,32	70,89

Table 93. Forecasted inbound tourism per night expenditure for the Czech Republic.

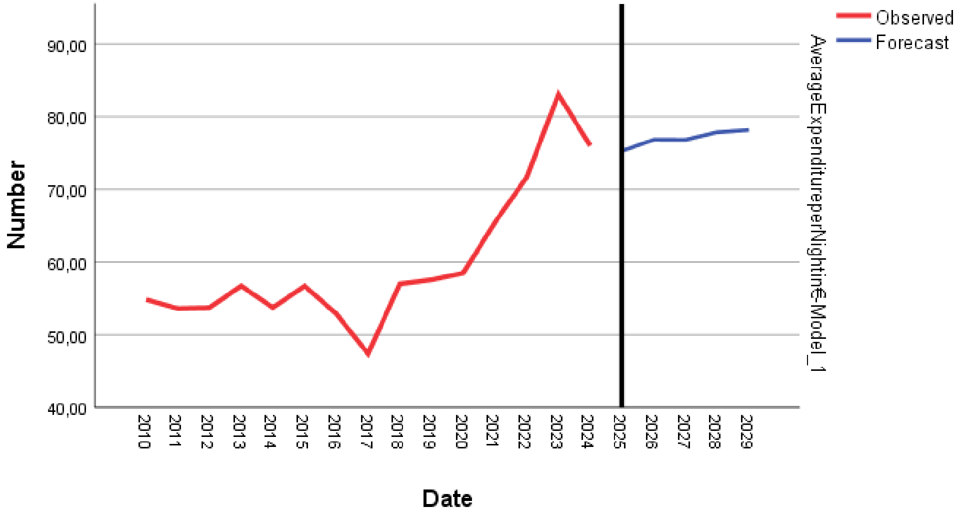

Figure 97. Forecast of inbound tourism per night expenditure for the Czech Republic.

The United Kingdom has a stable but declining trend, from €92.01 in 2025 to €89.54 in 2029. The less favorable model fit (Stationary $R^2 = 0.352$) would indicate that macroeconomic external factors, such as inflationary pressures and exchange rates, could have an influence on consumption behavior. British tourists are still one of the most profitable source markets for Greece, with regular travel and stable spending on accommodation and recreation activities, nonetheless. The decline is smooth and indicates moderate price elasticity and a shift in consumption behavior towards more, but shorter vacations.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	92,01	92,46	90,79	90,58	89,54
	UCL	109,22	110,36	112,09	112,76	113,31
	LCL	74,79	74,57	69,49	68,41	65,76

Table 94. Forecasted inbound tourism per night expenditure for the United Kingdom.

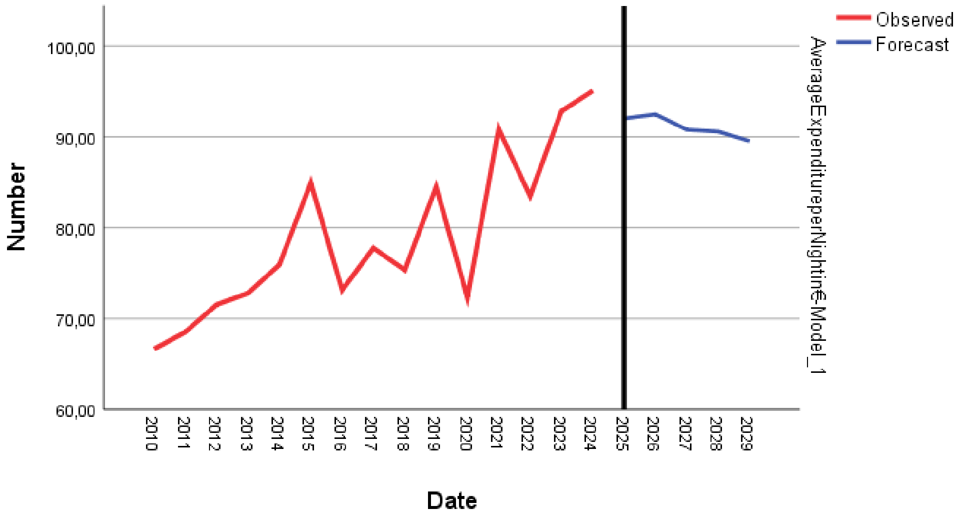

Figure 98. Forecast of inbound tourism per night expenditure for the United Kingdom.

The group of *"Other European countries outside the Eurozone"* shows an increasing curve from €75.63 in 2025 to €82.12 in 2029. The goodness of fit of the model (Stationary $R^2 = 0.738$) is represented in the good fit of the curve. The aggregated markets represent an intra-European indicator for the exchange rate stability, accessibility, and affordability that underpins spend. The continuous increase represents an extended normalization process after several decades of external shocks to achieve record levels of balanced and sustainable growth in average expenditure per night.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	75,63	77,26	78,89	80,50	82,12
	UCL	83,56	85,19	86,81	88,43	90,03
	LCL	67,71	69,34	70,96	72,58	74,20

Table 95. Forecasted inbound tourism per night expenditure for the group "Other European countries outside the Eurozone".

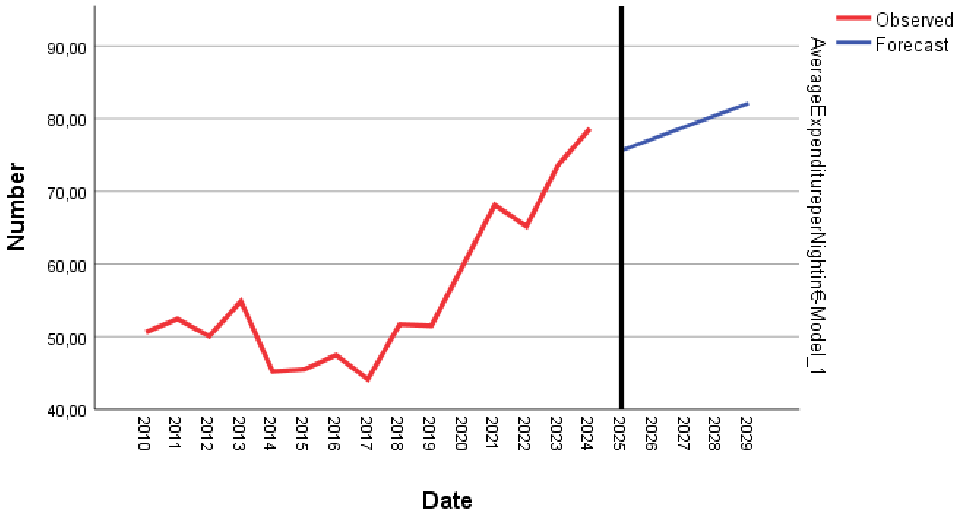

Figure 99. Forecast of inbound tourism per night expenditure for the group "Other European countries outside the Eurozone".

Moving on to long-haul and non-European markets, the per night expenditure behavior is predominantly more elevated and unstable than in European markets. These ranges reflect the luxury nature of long-distance travel, the predominance of upper-spending segments, and the responsiveness of these markets to macroeconomic conditions, exchange rate volatility, and air transport fees.

Australia experiences a volatile yearly trend of evening expenditure, beginning in 2025 at €113.95, dipping to €95.83 in 2026, and then fluctuating on and ending on €96.15 in 2029. The model performs reasonably well (Stationary $R^2 = 0.710$), with stable but quite unstable expenditure patterns. Instability is explained by the volatility of air travel, currency movements, and shifting long-haul travel behavior. Despite the mix, Australia receives the highest per-night expenditure of the destinations, consistent with its long-haul flying niche and high-spending visitor segment, which tends to be longer-staying and more affluent in accommodation.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	113,95	95,83	103,48	94,37	96,15
	UCL	152,00	136,14	153,37	147,74	155,40
	LCL	75,90	55,51	53,58	41,00	36,90

Table 96. Forecasted inbound tourism per night expenditure for Australia.

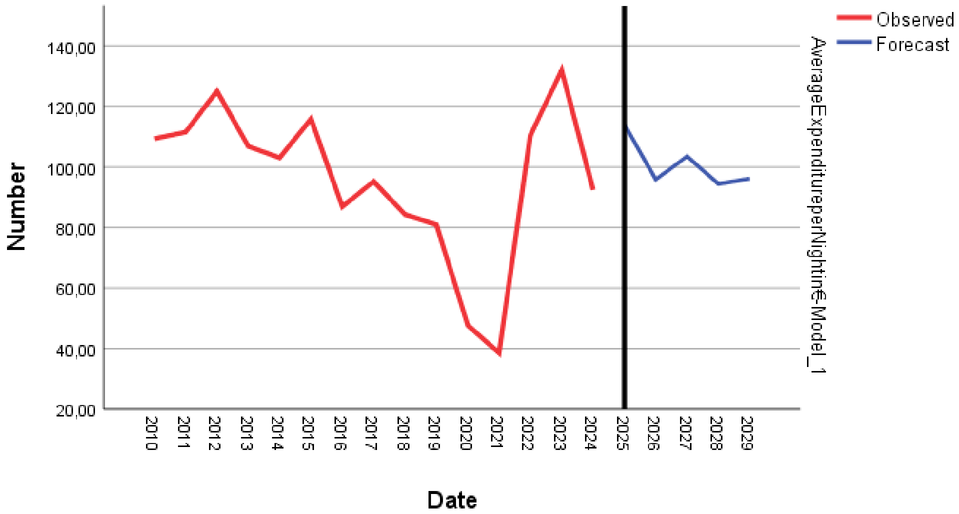

Figure 100. Forecast of inbound tourism per night expenditure for Australia.

The United States has stable per night expenditure levels with a forecast of €89 for the year 2025 and €94.71 for the rest of the years through 2029. The level of adequacy is moderate (Stationary $R^2 = 0.529$), which could be an indication of external forces such as exchange rates and air transport costs. However, US travelers continue to be among the biggest spenders in the visitation segments, as has been the trend with long-haul travel. This stability is a testimony to the existence of the quality long-haul segment.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	89,00	94,71	94,71	94,71	94,71
	UCL	108,90	121,95	121,95	121,95	121,95
	LCL	69,10	67,48	67,48	67,48	67,48

Table 97. Forecasted inbound tourism per night expenditure for the USA.

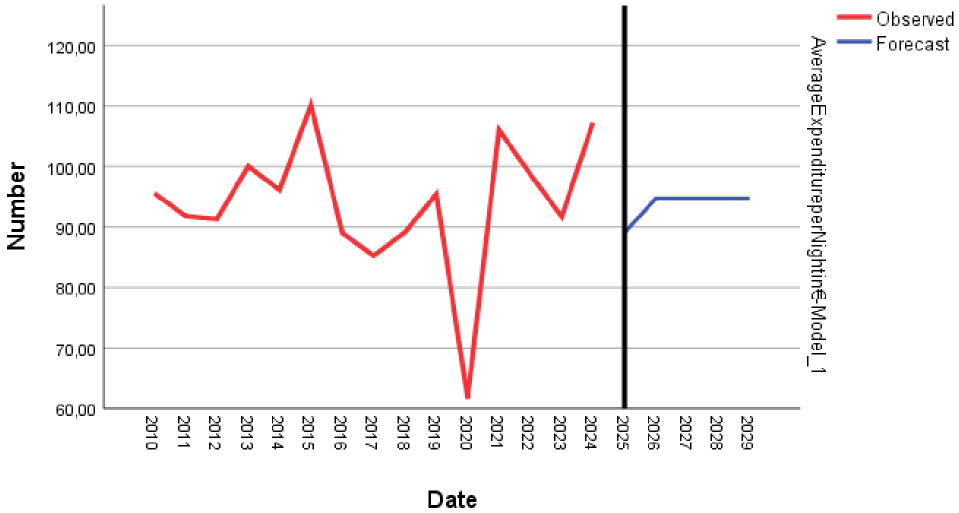

Figure 101. Forecast of inbound tourism per night expenditure for the USA.

The average per night spending forecasts for Canada indicate low volatility, with the value for 2025 being at €84.89, increasing to €87.04 in 2026, and then declining steadily to €74.28 in 2029. The good fit of the model (Stationary $R^2 = 0.697$) indicates that while there is short-term variability, the spending is in an equilibrium range. The declining end-of-period spending may reflect the reverse of exchange rate depreciation or expenditure trends, perhaps with Canadian visitors staying longer at lower rates of per night spending.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	84,89	87,04	79,95	79,50	74,28
	UCL	108,95	112,03	111,46	112,64	111,38
	LCL	60,84	62,04	48,44	46,35	37,18

Table 98. Forecasted inbound tourism per night expenditure for Canada.

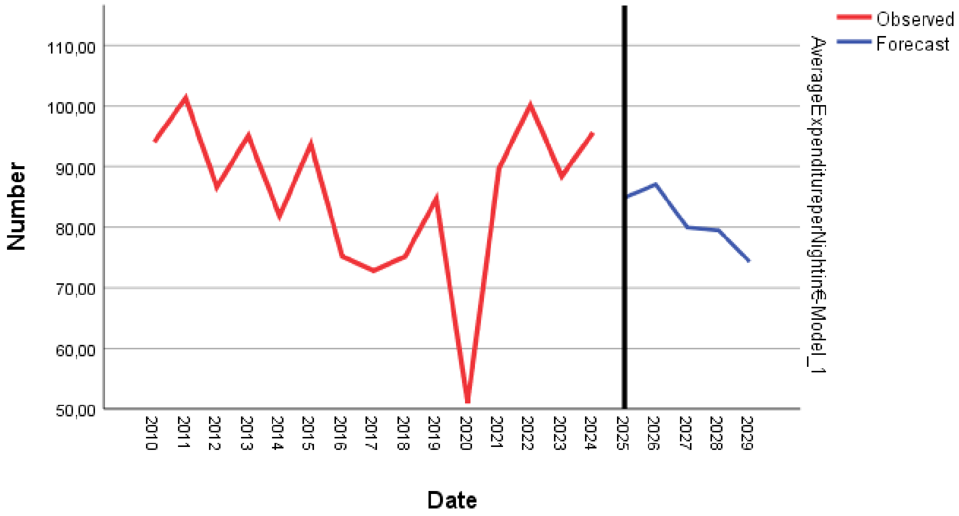

Figure 102. Forecast of inbound tourism per night expenditure for Canada.

Russia shows highly inconsistent results, ranging from €71.85 in 2025 to €111.97 in 2026, and then falling back to €68.56 in 2029. The results are quite accurate (Stationary $R^2 = 0.732$), meaning that although the results are accurate in terms of data fit, the inconsistency is due to external factors. The inconsistency is most likely due to geopolitical issues, sanctions, and the disruption of air travel that affected the affordability and accessibility of tourism to other countries. Nonetheless, there is hope for recovery based on the trend.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	71,85	111,97	70,42	104,31	68,56
	UCL	97,02	137,17	104,91	138,80	109,35
	LCL	46,68	86,76	35,94	69,82	27,77

Table 99. Forecasted inbound tourism per night expenditure for Russia.

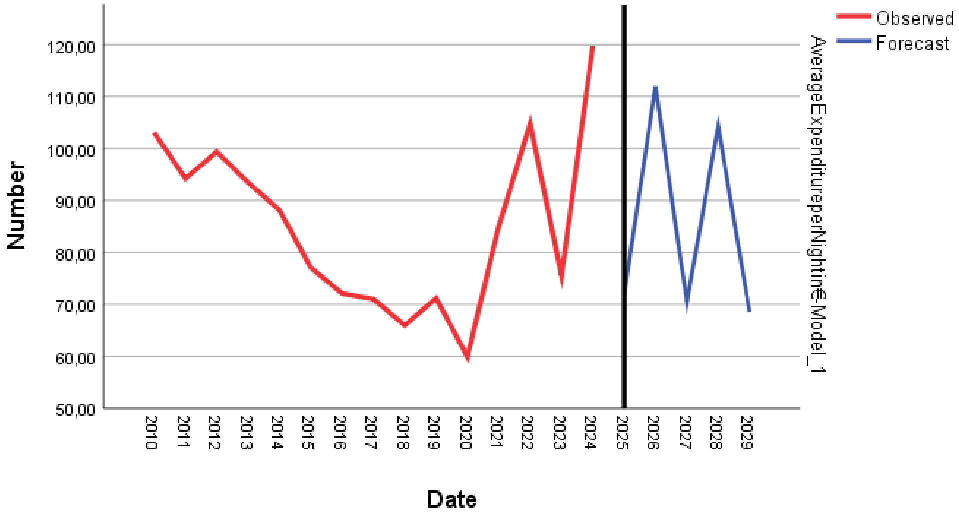

Figure 103. Forecast of inbound tourism per night expenditure for Russia.

The series of *"Other non-European countries"* has a steady growth pattern with growth estimates rising from €99.90 in 2025 to €106.41 in 2029. The excellent model fit (Stationary $R^2 = 0.712$) verifies that there is a steady growth pattern. This is an indication of a steady revival of most long-haul and emerging markets such as Asia and the Middle East, where rising incomes and better air links facilitate steady growth in average per night expenditure.

Forecast

Model		2025	2026	2027	2028	2029
Average Expenditure per Night (in €)-Model_1	Forecast	99,90	101,59	103,20	104,80	106,41
	UCL	108,76	114,49	119,17	123,35	127,21
	LCL	91,04	88,68	87,22	86,26	85,61

Table 100. Forecasted inbound tourism per night expenditure for the group "Other non-European countries".

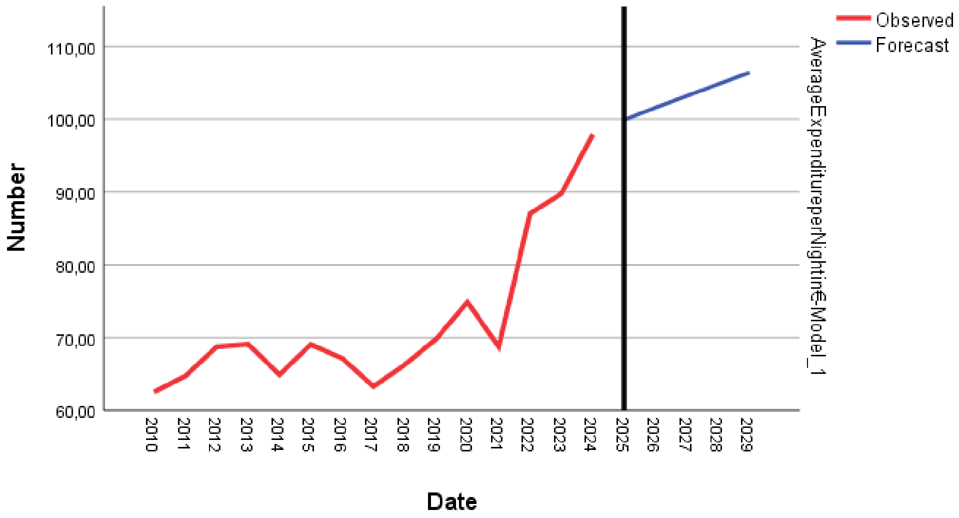

Figure 104. Forecast of inbound tourism per night expenditure for the group "Other non-European countries".

This figure shows clear structural differences between the source markets in question. Eurozone economies record outstanding stability, the product of mature patterns of demand and retained purchasing power. Austrian, French, and Italian travelers, along with visitors from smaller Eurozone economies, maintain spend at the €80-€115 per night mark, reflecting sound mid- and upper-class ranges of accommodation demand. The exceedingly high Stationary R^2 values across for countries such as Austria (0.832), Italy (0.919), and Cyprus (0.984) indicate the model fitness as well as the forecasting of these mass tourism countries. The trend is entirely consistent with per capita and total spending data, both of which point to Eurozone markets as the most stable and reliable source of Greece's tourist incomes.

In contrast, the European markets outside the Eurozone are less stable but within modest ranges. Denmark, Sweden, and Switzerland exhibit a relatively stable nightly spend pattern with economic stability and strong model fits. Romania and the Czech Republic are more unstable with greater price elasticity and temporary traveler trends typical of Central and Eastern Europe. The emerging convergence pattern in the levels of spending in those markets reflects the ongoing harmonization of the patterns of consumption of tourism and travel spending in the overall European tourism complex. The United States, Canada, and Australia, being remote markets, have a distinct spending profile with respect to higher per-night spending and medium volatility.

The results of this group confirm the high-end character of long-distance travel to Greece, as visitors are typically price inelastic and possess lasting willingness to pay for quality experience and accommodation services. The comparatively low Stationary R^2 values for the U.S. (0.529) and Canada (0.697), however, confirm that macroeconomic determinants and exchange rates continue to be significant in shaping expenditure behavior.

Finally, Russia and the combined *"Other countries"* group complete the global expenditure profile concerning inbound tourism to Greece. The high volatility of the Russian market reflects the general turmoil in the geopolitical and economic environment of Russia, while the constant growth of the other countries is indicative of the increasing significance of new, non-European markets for the Greek tourism industry.

On a general level, the series of average expenditure per night results serve as a complement to the analysis of per capita and total expenditure, thus contributing to the perception of a diversified and balanced tourist demand structure. The Greek tourist demand is revealed to be based on a diversified and balanced foundation of mature and stable European markets, combined with dynamic and sensitive to prices, but increasing their high spending levels, international markets.

3.3. Discussion

The empirical analysis that preceded, based on annual time series data for the years 2010-2024 and projections until 2029 using ARIMA models, reveals a multilateral scenario of the course of incoming tourism to Greece. The findings reflect the stabilizing course of the mature European markets, as well as the rising dynamics of the chosen emerging markets, at the same time revealing the partial but decisive role of the long-haul markets. The quantitative aspect of the projections, as well as the qualitative analysis of the findings, enable the construction of a comprehensive economic and methodological picture of the trends of Greek tourism.

The analysis of the arrival projections indicates that the majority of the Euro area countries, such as Austria, Belgium, France, Spain, Cyprus, and the Netherlands, present a positive but slow growth, which is in line with the theoretical course of mature tourism demand. The stability of these markets, with small fluctuations and relatively narrow confidence intervals, reflects the degree of institutional and economic maturity, as well as the high connectivity of these countries with Greece. The results empirically confirm the tourism economics view that mature markets are resilient to exogenous shocks and quickly return to equilibrium after crises such as the COVID-19 pandemic (Arshad et al., 2023; Gunter & Önder, 2016).

In contrast, non-Eurozone countries, such as the United Kingdom, Romania, the Czech Republic and Albania, show greater heterogeneity and variation. The projected steady growth of arrivals from the United Kingdom highlights the resilience of a traditionally strategic market, despite its exit from the European Union and the ensuing monetary and transport challenges. In contrast, Albania shows higher growth rates, but with differentiated qualitative characteristics, which are mainly short-term, cross-border visits with relatively lower average spending, which directly affects the tourism performance index. The Czech Republic and Romania, which seem to be intermediate cases between mature and emerging markets, contribute with a gradual increase and a stabilizing effect to the regional tourist flow to South-Eastern Europe.

In long-haul markets, such as Canada and the United States, the stability observed in the forecasts confirms the existence of a tourist base with high purchasing power and low price elasticity, which is however more influenced by exogenous factors, such as air ticket prices and the international currency exchange rate. In contrast, the Russian market demonstrates the complete destabilization of demand due to the war in Ukraine, international sanctions and restrictions on air connections. The negative sign of the ARIMA(0,1,1) model forecasts for Russia lacks any real meaning but is purely indicative of unpredictability, underlining the limitations of statistical forecasting in the light of geopolitical uncertainty.

In the context of overnight stays, the forecasts underline a crucial difference between the quantity and quality of tourist demand. The Eurozone countries, and more specifically Germany, France, and Austria, are leaders in absolute overnight stays, which are indicative of longer stay duration and tourist activity. The accuracy of these forecasts assumes a particular importance from the macroeconomic perspective, as overnight stays have a direct impact on tourism employment, seasonality, and demand for tourism infrastructure. In contrast, the forecasted stabilization of overnight stays from sources such as Canada or Cyprus confirms that these are quantitative but qualitatively equal market segments. In the context of tourism expenditure, the forecasts underline a crucial trend of consolidation within the overall tourist stream, with the Eurozone countries consistently performing and non-Eurozone European countries exhibiting higher levels of diversification. The expenditure stability of nations such as Austria and France is a proof of mature holidaying behavior and high average purchasing power. Cyprus, being a small market, has a highly estimated total expenditure, due to the focal point of tourist activity in the Mediterranean area, as well as the high average price per tourist. On the other hand, the lower spending estimates for countries such as Albania or the Czech Republic are consistent with the short-term nature of stays and the limited consumption behavior of these tourists.

At the per capita expenditure level, the results also validate the differentiation between mature Western European markets and long-haul or emerging markets. The United States and Canada consistently exhibit the highest expenditure per person as an indicator of the quality or premium status of long-haul travel. On the other hand, the Central and Eastern European nations have considerably lower prices and thus greater potential price sensitivity but also room to develop by expanding the tourist base as compared to increasing average spending. These differences confirm the principle that long-haul markets act as complements to closer markets, balancing out fluctuations in overall tourism demand. At a methodological level, the application of ARIMA models allowed for the consistent assessment of long-term trends in a controlled manner, without the need to resort to more complex modeling. These models proved to be particularly effective for annual series without strong seasonality, while the stationarity test, the selection of parameters through the Box–Jenkins procedure and the introduction of a dummy variable for the years of the pandemic enhanced the reliability of the forecasts. However, the results also show the limitations of the method: in markets where exogenous geopolitical or monetary factors are considered, the predictive power is lower, as shown by the lower Stationary R^2 in some markets (for example, Cyprus or Belgium).

From an economic point of view, the findings can be interpreted in the light of the theory of tourism demand and international consumption. The projected increases in arrivals and expenditures reinforce the hypothesis that Greek tourism has entered a phase of maturation with characteristics of stability and diversification of sources. At the same time, the stable course of distant markets and the recovery of European markets, especially those of the Eurozone, substantiate the position that tourism demand for Greece now functions as a normal good with relatively low income elasticity.

Lastly, the results paint a broad picture of the tourism sustainability of the nation. Reconciliation between old and stable markets and new and dynamic sources offers the potential for resistance to external crisis, while an increase in overall expenditure per tourist and per overnight stay indicates slow adjustment to an elevated value-added model of mass tourism. Adjustment is, however, contingent upon continued international flows monitoring and flexibility of the nation's positioning on competitive market segments.

The examination of the forecasts for the years 2025-2029 confirms the main trends for the strategic planning of Greek tourism both in terms of public policy and in terms of business practice. The distinction between mature markets and emerging markets, as it emerges from the time series of arrivals, stays, and expenditure, requires specific interventions that reconcile stability with flexibility.

The first noteworthy implication pertains to the management of the mature economies of the Eurozone, which, according to the results, are expected to continue their modest upward trend up to 2029. Stability within these markets offers long-term potential for planning and allows for a focus on strategies to maximize value per visitor rather than the quantitative increase in visitor numbers. Target policy for these markets would include extending the tourist season, improving access through sustainable transport infrastructure and diversification into value-added products such as cultural, gastronomic and theme tourism. At a business level, stability in these markets provides certainty for long-term investment in accommodation renovation, quality of service and sustainable operating practices.

The second category of policies concerns emerging and non-Eurozone European markets, such as Romania, the Czech Republic and Albania, with higher volatility but substantial expansion opportunities. All of these markets must be addressed with flexibility and with a differentiated communication strategy, given that consumers in these markets are even more price conscious, responsive to transport connection opportunity and macroeconomic forces. The creation of special tourist advertisement campaigns, the strengthening of coastal and road connections, and the establishment of regional resorts near the borders can be helpful in allowing tourists from these countries to flow into Greece. At the same time, the advertisement of small- and medium-sized businesses in these resorts will be helpful in responding to these travelers' preferences.

Conversely, long-haul markets such as Canada and the United States require another type of strategic approach. Forecasts suggest great per capita expenditure levels, but relative stability regarding arrivals. It suggests that such markets function more qualitatively, rather than quantitatively, as pillars of Greek tourism. Refinement in air connections, cooperation with foreign tour operators, and investment in marketing by high-end digital platforms could increase the flow of such visitors. The stability of long-distance markets helps to balance the cyclicality of European markets and sustain high revenue levels during European recessions.

Particular attention is required for geopolitically unstable markets, such as Russia, where the forecast results indicate complete destabilization. The occurrence of negative values in the ARIMA model forecasts for Russia is not to be taken literally but serves as an indicator of high levels of uncertainty. In this regard, the logic of policy-making must shift from recovery to resilience and market substitution. Attracting visitors from other markets in Eastern Europe, the Middle East, or Asia could help mitigate the loss of tourist traffic from the Russian market. However, from a business perspective, product and marketing strategies must also shift to diversify and hedge against a single high-risk market.

From a macroeconomic perspective, the forecasts for total spending and per capita spending confirm the requirement to shift from a volume strategy to a value strategy. The growth in total tourism expenditures is no longer driven by the total number of visitors but by the average length of stay, product diversification, and the enhancement of experiences associated with the willingness to spend. The fusion of visitor arrivals, overnight stays, and expenditures from ARIMA models reveals that high-value markets (USA, Canada, Austria, and France) are critical support pillars for economic sustainability, even if the absolute number of visitors is low.

In addition, the results can offer insights for investment and business policies. The regions that can achieve a sustainable increase in overnight stays and expenditures, such as Crete, the Dodecanese, and the Cyclades, can be considered as hubs for sustainable development of tourism. Investment in hospitality facilities of high standard, digital restructuring of tourism services, and the use of forecasting data can improve the competitiveness of businesses and make them less dependent on seasonality flows. For young and smaller countries, there should be a focus on the development of thematic and off-season tourism, which can serve as a seasonality balancer and product diversifier. Finally, the projections have clear policy implications. The development of a long-run national tourism strategy should be based upon empirically grounded assessments like those of ARIMA models, including uncertainty scenarios as well as possible external shocks. Use of forecast tools among policymakers may assist in ensuring better resource allocation, infrastructure development and the resilience of the sector to crises. In concrete terms, use of quantitative indicators of forecasts in the decision-making process may lead to more specialized, anticipatory and responsive policies, both at the national and regional level.

Conclusion

This study aimed to analyze, interpret and forecast the future patterns of incoming tourism in Greece in 2025–2029 based on annual statistics for arrivals, overnight stays and expenditures from 22 countries of origin. By applying the ARIMA methodology, an effort was made to develop a credible projection of future tourist demand based on the dynamics of each market and external factors driving its behavior. The outcomes of the predictions paint a multi-faceted picture of Greek tourism, where the strength of established Western European markets, the growing importance of emerging European nations and the value but volatility of long-haul markets overlap.

Overall, the strength of the predictions for the Eurozone countries confirms the long-term resilience of Greece as a tourist product. Most markets' Stationary R^2 indicators (e.g. Austria, Belgium, Italy, Spain) show high statistical adjustment, which reinforces the accuracy of the estimates. The markets seem to develop in smooth, consistent lines, without sudden changes, which points to the maturity of demand and the stable position of Greece in the European tourism map. This stability, however, comes at the cost of lower opportunities for explosive growth and requires a transition from quantitative growth policies to qualitative diversification policies.

In contrast, the Eastern European and non-Eurozone countries' markets are less uncertain and diversified in terms of arrivals and expenditures. Romanian, Czech Republic and Albanian markets will keep supplying Greek tourist market, but with deeper fluctuations. Their extremely high sensitivity to economic and social changes requires more flexible management and promotion strategies. At the same time, the prospective contribution of a renewed influx of tourists from the Balkans and Middle East can also act as a buffer against the fluctuation introduced by sensitive or geopolitically charged markets such as Russia.

In regard to long-distance markets, forecasts for the United States and Canada predict uniformly high spending levels per tourist, confirming the value of these markets as high-value generators. However, the relative lack of flatness in arrival volumes and the low Stationary R^2 measures on certain models (i.e. the U.S.A. and Russia) affirm that there are still significant influences on demand via external determinants, such as exchange rates, air connections, and geopolitical tension. These markets, despite being price-insensitive, are relatively more susceptible to macroeconomic factors and global events and thus the need for strategic diversification as a policy measure.

Methodologically, the dependency on the application of ARIMA models has proved the effectiveness of quantitative forecasting in tourism flow studies. While the models, on the whole, were a good fit, the differences in the levels of Stationary R^2 across markets indicate the impact of extraneous factors that cannot be accounted for by univariate models. For such studies, the methodology can be extended to multivariate models such as ARIMAX or VAR models, including proxy variables such as economic activity, income, inflation, exchange rates, or even geopolitical events. Further, the application of non-linear models, such as machine learning models or neural networks, may provide alternative solutions for markets that are extremely unstable or non-normal.

In addition to the methodological stance, the results have a great deal of significance to the theory and wisdom concerning the economy of tourism. The findings of this research have proved the existence of the widespread two-fold stability of demand for tourism in Greece, which is stable at the level of mature markets, but unstable for secondary and distant geographic zones. The evolution of these factors forms a harmonious but dynamic system, which has to be regulated on a constant basis, adjusted, and re-evaluated in policy tools.

In general, this research work emphasizes the significance of scientific forecasting as a strategic business and governance decision-making process. The forecasts derived from the implementation of ARIMA models are not only statistical forecasts but also a successful model in unearthing trends and reducing uncertainties. Further research in the area of ensemble forecasting and the utilization of qualitative indicators, such as consumer confidence, environmental policies, and technological innovation, could further improve the efficiency of future models.

By monitoring and updating forecasts, the Greek tourism industry will be able to adjust to changes in the international environment and remain competitive while continuing to contribute to the economy.

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DYNAMICS OF INBOUND TOURISM IN GREECE
ДИНАМИКА НА ВХОДЯЩИЯ ТУРИЗЪМ В ГЪРЦИЯ

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