

How Do Macroeconomic Stability and Environmental Concerns Affect International Tourism Demand in Bangladesh? Insights from Linear and Nonlinear Approach

(Bagaimanakah Kestabilan Makroekonomi dan Kebimbangan Alam Sekitar Mempengaruhi Permintaan Pelancongan Antarabangsa di Bangladesh? Cerapan daripada Pendekatan Linear dan Tak Linear)

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ABSTRACT

This study aims to analyze the impact of income level, environmental pollution, inflation, currency rate, and crude oil price on international tourism demand in Bangladesh. Scrutinizing the quarterly data from 1995 to 2019 and using the Autoregressive Distributed Lag (ARDL) and nonlinear Autoregressive Distributed Lag (NARDL) models, this study divulges a long-run linear and nonlinear link among variables. The nonlinear model states that the positive fluctuations of inflation and oil prices harm tourism, while the positive changes in exchange rates respond positively. Conversely, the negative inflation and exchange rate shocks adversely affect tourism demand, while negative changes in oil prices affect it positively. Additionally, in both models, the visiting country's income level and Bangladesh's environmental pollution significantly affect tourist arrival. The study recommends that the Government should seek renewable engine fuels and decrease CO₂ to boost sustainable tourism demand. Besides, policymakers should keep the exchange rate stable by controlling the economy's money supply and increasing reserves by attracting remittances and alluring exports.

Keywords: Tourism demand; asymmetric relation; environmental pollution; macroeconomic factors; Bangladesh

ABSTRAK

Kajian ini bertujuan untuk menganalisis kesan pendapatan, pencemaran alam sekitar, inflasi, kadar mata wang, dan harga minyak mentah terhadap permintaan pelancongan antarabangsa di Bangladesh. Dengan meneliti data suku tahunan dari 1995 hingga 2019 dan menggunakan model Autoregresif Lat Tertabur (ARDL) dan Autoregresif Lat Tertabur Tak Linear (NARDL), kajian ini mendedahkan hubungan linear dan bukan linear jangka panjang antara pembolehubah. Model tak linear menyatakan bahawa naik turun positif inflasi dan harga minyak memburukkan pelancongan, manakala perubahan positif dalam kadar pertukaran bertindak balas secara positif. Sebaliknya, inflasi negatif dan kejutan kadar pertukaran menjejaskan permintaan pelancongan, manakala perubahan negatif dalam harga minyak memberi kesan positif. Selain itu, dalam kedua-dua model, tingkat pendapatan negara pelawat dan pencemaran alam sekitar Bangladesh memberi kesan signifikan terhadap ketibaan pelancong. Kajian ini mengesyorkan bahawa kerajaan harus mencari bahan api enjin boleh diperbaharui dan mengurangkan CO₂ untuk meningkatkan permintaan pelancongan yang mampan. Selain itu, penggubal dasar harus mengekalkan kestabilan kadar pertukaran dengan mengawal penawaran wang dalam ekonomi dan meningkatkan rizab dengan menarik kiriman wang dan eksport.

Kata kunci: Permintaan pelancongan; hubungan asimetri; pencemaran alam sekitar; faktor makroekonomi; Bangladesh
JEL: F2 F6, M2, N1, N3, N7.



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INTRODUCTION

Bangladesh is a country that varies geo-ethnically and is also rich in beauty, old legacy, and distinct cultural variety. This country has the longest Cox's Bazaar sea seashore, Saint Martin Island, the mangrove Forest -Sundarbans, the Red Fort, Ahsan Manzil, and so many remarkable spots that reflect history. UNESCO admits the Sixty Dome Mosque, Somapura Mahavihara, and the Sundarbans as heritage locations of cultural and ecological significance, making those the most popular tourist destinations in a country known for many stunning natural landmarks. Therefore, an intelligent strategy is urgently needed to investigate Bangladesh's tourism sector's potential. Islam and Farjana (2020) used the Travel Cost Method (TCM) and Contingent Valuation Method (CVM) to identify the financial potential of the world heritage sites of Bangladesh. According to their results, consumer surplus data gathered from TCM indicates that the heritage sites may earn a total yearly benefit of \$193,51 million, and based on the entrance price, the use-value assessment indicates that the two locations may provide an annual tourist benefit of around \$0.29 million.

The last few years have seen the expansion in the travel business worldwide because of its beneficence on world GDP, alleviating poverty, and inducing revenue. This growth has become possible because of the supporting nature of the residents of host countries, information technology, communication quality, and hotel management (Soares et al. 2022). In 2017, tourism achieved the third position in the world export category, with an additional \$121 billion earned from international exports than the previous year. Traveling from one country to another has become quite accessible due to air travel, advanced vehicle technology, and smooth VISA procedures. Meo et al. (2018) identified some unexpected obstacles, such as a terrorist attack, unpredictable high inflation, unethical activists, and a worldwide pandemic posing challenges for the tourism industry, and those are demanding countries to improve tourism-related infrastructure according to the respective demand in their countries. According to the WTO, the percentage of international tourist arrivals decreased by 74% in 2020 due to the Coronavirus pandemic, and about 1000 million fewer people traveled worldwide than the previous year (WTO 2020).

In Bangladesh, international tourists are mostly from South Asian countries. Indian people come to Bangladesh more than other countries of South Asia (B. Hossain & Wadood 2020). The rising economic capacity allows more to set aside a portion of their salary for leisure and vacation. As a result, there is a growing demand for domestic and international tourism, with people looking for different leisure experiences both within and outside the country's borders. This development is transforming Bangladesh's tourism industry, stimulating investments in

infrastructure and services to meet the changing demands of the expanding income group. As a result, earning capability is a vital factor in driving tourism demand and promoting development in the context of Bangladesh.

However, several challenges, such as natural calamities, including cyclones, floods, and earthquakes, are common in South Asian nations, including Bangladesh. These occurrences may alter travel plans and discourage visitors worried about their safety (Md. J. Hossain et al. 2021). Moreover, due to inflation, travel can become more expensive for visitors from nearby nations, resulting in higher costs for products and services. For South Asian travelers, the cost of travel may be impacted by an unstable currency rate. Besides, increased transportation expenses, particularly at land border crossings, can be brought on by high crude oil prices. This may have an effect on travelers coming by road from nearby nations, increasing the cost of travel.

The tourism sector might be affected by other non-economic factors also. Among non-economic factors, many remarkable aspects such as political issues, transportation quality, culture, demography, and bilateral might induce the tourism business. Realizing the importance of the touristy sector, many studies (Abbasi et al. 2022; Meo et al. 2018; Parvin 2022) tried to reveal the consequences of several drivers of demand for tourist arrivals and the market for tourism sector can be increased by being conscious regarding the influential factors. Meo et al. (2018) noted that governments or investors should identify the key factors affecting tourism before devoting money to infrastructural development, such as highways, roads, hotels, restaurants, and bridges in any country.

Several previous experiments in Bangladesh (Murshed 2018) absorbed the internal factors' impact on the tourism demand, and have examined how different aspects of Bangladesh's economy are affected by tourism, including the weather, the quality of the food and drink available, the sustainability of services provided, safety at the destination, shopping options, soil pollution, transportation options, and the cost of lodging. Because of its rich cultural heritage and natural beauty, tourism in Bangladesh holds enormous promise. However, the booming sector is being hampered by environmental challenges such as climate change, pollution, and habitat deterioration. These challenges jeopardize the country's attractions and impact tourist preferences. Besides, several non-Bangladesh-based studies (Mason et al. 2022; Qu et al. 2022) found some other international factors, national issues, shopping facilities, and safety issues in host counties, website presentation quality, and unexpected pandemics which might affect the tourism demand for a country. However, foreigners might also scrutinize these aspects before visiting any host country.

Although several studies related to the drivers of tourism demand in Bangladesh are available in the academic field, most studies overlooked the issue of

visiting countries' income levels and environmental issues. Besides, the role of other factors, such as inflation, exchange rate, and crude oil price, related to international financial markets are not adequately explored. Thus, the prime aim of this current experiment is to ascertain the power of income level, environmental pollution, exchange rate, inflation, and oil prices on international tourist arrivals in Bangladesh. Figure 1 shows the time series plots of tourist arrivals in Bangladesh, income per capita, inflation rate, exchange rate, carbon emission, and crude oil prices, where the variables exhibit some ups and downs, and trends over time. The graph of international tourist arrivals makes it clear that the number of foreign tourists arriving in Bangladesh fluctuated from year to year. It indicates a rising tendency starting in 1995, but after 2008, it clearly shows a declining trend. However, starting in 2016, Bangladesh experienced an increase in the number of visitors. It is evident from the per capita income line graph that South Asian nations' income levels follow a rising trend. Similarly, carbon emissions in Bangladesh have also increased since the beginning of 1995. The graph of the inflation rate makes clear that during the studied time period (1995–2019), there is no discernible trend in the inflation rate. The exchange rate also exhibits an upward tendency, with minor variations over time that point to the Bangladeshi currency's depreciation. Oil prices followed an increasing trend with little fluctuations until the year 2008, and then a declining trend with significant fluctuations is noticed from the graph.

Since inbound tourism demand is a global issue, currency rate, inflation, and oil prices might significantly impact international visitors more than other factors. For example, when the cost of oil price upsurges, the price of other numerous dependent components might rise (Meo et al. 2018). In addition, as crude oil is a non-renewable and expensive energy source, it is essential to know how growing oil prices might influence tourism demand while making suitable judgments. In recent years, Bangladesh's currency has been weakening while inflation is rising; therefore, it is more crucial to recognize how inflation and exchange rates affect tourist demand to take appropriate decisions. Besides, as tourism is related to the environment, a healthy atmosphere is a must for tourism demand. So, this study also investigates how carbon emission impacts tourist arrival in Bangladesh.

Moreover, in previous studies of Bangladesh (Amin et al. 2020; Murshed 2018; Rahman 2021), most researchers tried to discover the linear relationship among different drivers of tourism. But, the explanatory variables might have a nonlinear consequence on the response variable. This research study has focused on

the asymmetric effects of income level, environmental pollution, inflation, currency rate, and crude oil price on the demand for tourism. This is because the effects of various macroeconomic variables on the response variable in the actual world appear to have nonlinear properties (Golder et al. 2023). So, changes in the explanatory variables in both positive and negative directions may not always affect tourism demand at the same rate. When different macroeconomic factors and tourism demand are symmetrically related, their impact on tourism demand is equal both when they are increasing and declining. However, the size of the change in tourism demand may differ due to the positive and negative directions of the predictor variables, making the study of symmetric relationships less than ideal. The demand for tourism may be more affected by rising inflation, exchange rates, and oil prices than by falling prices, or vice versa. Therefore, it is essential for policymakers in Bangladesh to grasp the asymmetrical relationship since different government policies will be implemented if the degree of effect on both circumstances is not equal.

Therefore, this study intends to determine whether the relationship is symmetric or asymmetric. Here, concerned parties might be able to understand the possible outcomes of both positive and negative shocks of the chosen factors. Hopefully, the outputs of this study could convey a novel avenue for future researchers, analysts and academics to address the vacuum in the tourism literature, and when these factors are highlighted, the tourism industry might thrive even more. Besides, this study might also benefit visitors from other countries who carefully assess the status of the studied factors before traveling to Bangladesh to budget for a vacation.

Moreover, this study also helps realize the Sustainable Development Goals (SDGs) objectives. The SDGs offer a framework for nations to work towards a more sustainable and equitable future and are intended to address a wide range of social, economic, and environmental concerns. By generating employment opportunities in the tourism sector, building infrastructure, and preserving Bangladesh's special natural resources, international tourism demand may help Bangladesh's economy thrive and support the SDGs. So, this study will help policymakers take necessary steps to control carbon emissions, inflation, crude oil prices, etc., that will work as a catalyst to achieve SDGs in the long run.

The following is how the remainder of this investigation is laid out. Section 2 shows a detailed literature discussion, while sections 3 and 4 exert details of the methodology and results with discussion, respectively. Section 5 represents suggestions, policy implications, and conclusions of the study.

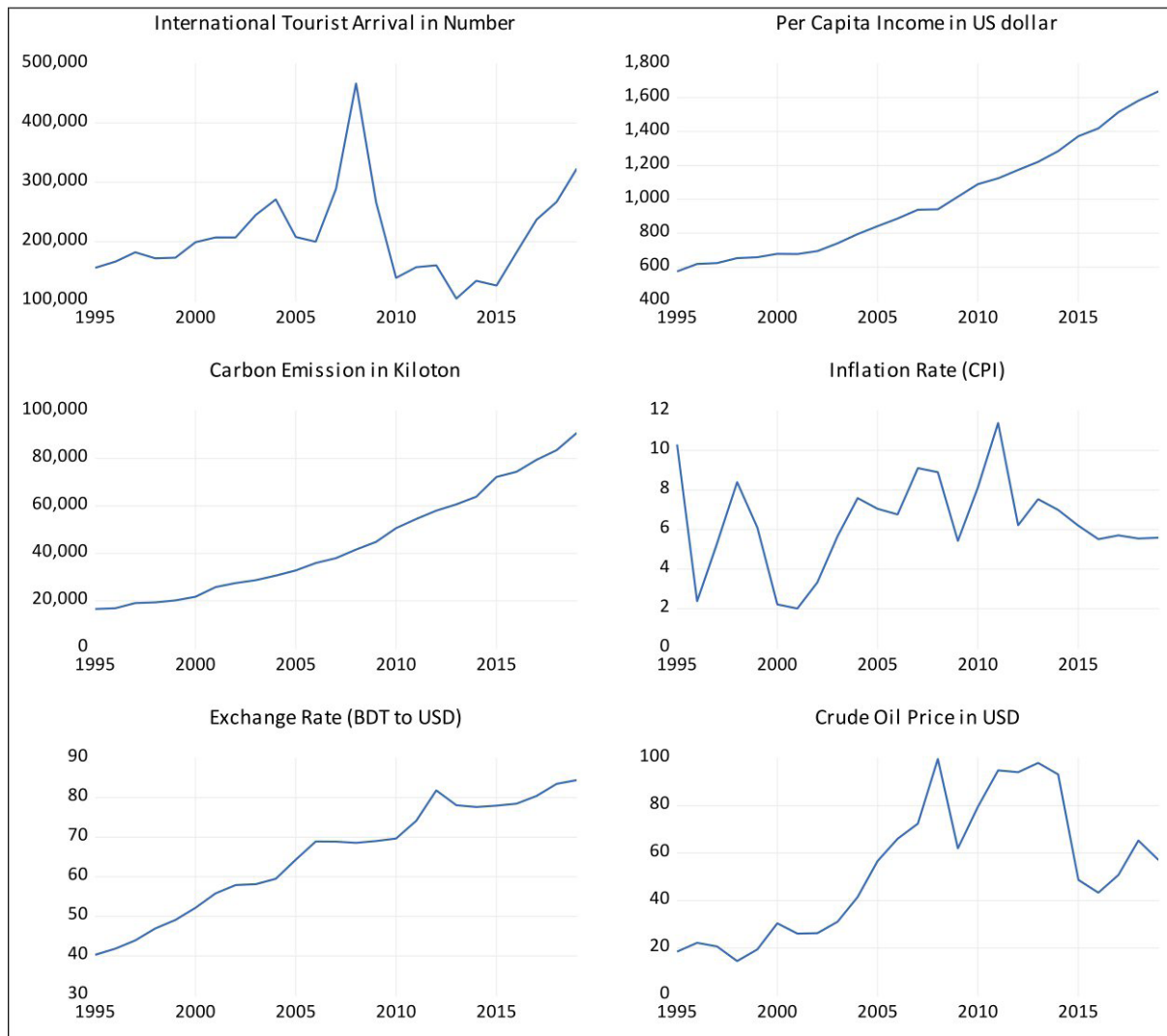


FIGURE 1. The time series plots of tourist arrival in Bangladesh, per capita income, carbon emission, Inflation rate, exchange rate, and crude oil price.

LITERATURE REVIEW

A theoretical and empirical paradox exists regarding the relationship between tourism demand and macro variables such as inflation rate, oil prices, carbon emissions etc. With empirical outcomes, numerous possible theoretical explanations exist for factors affecting tourism demand. A destination’s initial attractiveness to foreign travelers could be increased slightly because of decreasing inflation. However, if inflation increases, both domestic and foreign tourists’ money might lose some of its real value. Tourism may be discouraged more if travelers perceive the rise in inflation as a sign of economic instability (Meo et al. 2018). As a result, there might be an asymmetric link between inflation and international tourist arrivals since visitors might have varying responses to low, moderate, and high inflation rates. Moreover, the depreciation of the local currency might make a place inexpensive to international tourists, thereby increasing arrivals. However, when the currency depreciates highly, it might become excessively weak, raising economic concerns

and potentially discouraging tourists. Likewise, a weaker currency might initially stimulate tourist arrivals, but in a different scenario, the appreciation of the host country’s currency might noticeably demotivate them more because of the increasing cost of traveling. So, the influence of currency valuation on tourist arrivals may be nonlinear.

On the other hand, the tendency of residents to spend money on travel as their per capita income rises or decreases could vary due to their personal observation or facilities received from host countries. The marginal gain in arrivals might begin to level off after a particular income level is achieved. Besides, increased oil prices could raise travel costs, thereby discouraging tourists considerably. However, the effect might not be proportional; rises in oil prices might have a strong influence, but a lesser decrease in oil prices might not motivate travelers so strongly. Thus, the impact of oil price falls or rises on tourist arrivals might not be linear, and a small decrease in oil price might not have a big impact on tourism, but a slight increase might have a more noticeable impact. Nowadays, people prefer to travel more, and they are now more aware

of the environment. Travelers who are concerned about the environment might avoid a place with high carbon emissions and weak sustainability standards. A location with low emissions that actively supports sustainability might draw more visitors. As emissions decrease and sustainability efforts increase, there might be a point at which the impact on tourist arrivals becomes more pronounced. Because of the complicated interactions, including tourist perceptions, preferences, tipping points, etc., these economic and environmental factors might not linearly impact the number of foreign visitors arriving in a country. Moreover, these nonlinear effects also occur due to complex economic behavior. In these circumstances, the relationship might show complex patterns that are difficult to sum up in a straightforward and linear picture.

Agiomirgianakis et al. (2015) discovered a consequence of the currency rate variation on tourist arrivals. According to the findings, Exchange Rate Volatility (ERV) has a detrimental impact on tourism in both nations. It implies that prospective vacationers respond to variations in the currency exchange rate. The study recommends that decision-makers consider ERV's implications when formulating tourist policy. Most importantly, countries that receive a significant amount of tourists from a diverse array of foreign markets should steer clear of opening up markets that have the potential to be susceptible to ERV disruptions. On a different note, Foreign direct investment (FDI) is also no longer out of the box of the influencers on tourism demand. Amin et al. (2020) find in the investigation that an increase of one million U.S. dollars in foreign direct investment will result in an increase of 0.065 million U.S. dollars in tourism receipts.

Most countries have seen faster economic growth due to the global industrial revolution. Strong economic growth leads to increased energy use, leading to more carbon emissions (Golder 2021). Maximum activities related to tourism need fossil fuel as energy which adds the level of carbon dioxide (CO₂) in the environment. Tong et al. (2022) conclude that increasing CO₂ emissions reduces the demand for vacation travel. In addition, according to Wang et al. (2018), natural disasters, pollution, and climate change all impact a country's tourist demand. The authors conclude that a worsening climate discourages foreign visitors' entrance into the host country. Likewise, Su and Lee (2022) scrutinize data from 1996 to 2018 from 99 countries and get a strong relationship between air quality and tourism demand. The study also urges maintaining a healthy and stable climate to attract more international visitors and advocate for international cooperation.

The income level of the tourist and the cost of traveling considerably impact the tourism demand of a host country. Zhang et al. (2021) analyze the tourism demand in Hong Kong, and the authors find that their income influences the expanding capacity of visitors, and they view overseas travel as a luxury. Moreover, Barman and Nath (2019) examine the influences of several factors

of 18 visiting countries on India. They notice that the income level of the visitors, relative expenses, and the quality of India's infrastructure are the most crucial factors in determining tourist interest in visiting India. According to Figini and Patuelli (2022), GDP also positively impacts the decision on foreign tours. The author gets the result by analyzing the connection between the GDP of EU countries and the tendency to spend on international tours. Moreover, Fang et al. (2021) examine data from a few chosen developing countries using an equilibrium model to fix the consequence of tourism on alleviating poverty and find that those with higher incomes reap the advantages more than those with lower incomes.

Using the NARDL model, Kisswani et al. (2020) investigate nineteen randomly selected international destinations from 1995 to 2015 to clarify the asymmetrical association between the arrival of tourists and oil prices. The authors noticed different impacts on the dependent variable when the predictor variables increased or decreased. They noted that the economy's complicated behavior is the primary cause of this asymmetry. Moreover, the impact might vary due to the concept of lagged effects and the dynamic nature of many real-world systems. During the investigation, the study finds that all nations, except Finland, have an unbalanced influence over the long term. Consequently, the designated authority, organizations related to traveling, and enterprises need to exercise extreme caution when analyzing shocks in the cost of oil. Besides, it is also proved that an escalation in oil price pushes inflation simultaneously to rise, and the inflation reduces the tourism demand ultimately (Jammazi et al. 2015; Meo et al. 2018). Khan et al. (2020) explore a significant linkage between Institutional Quality (IQ) and the arrival of tourists. However, Meo et al. (2018) find in the investigation that increasing or decreasing the IQ situation can always increase tourism demand. Hesami et al. (2020) find that the increasing cost of oil considerably influences Spain's inflation, indirectly reducing tourism demand. Walking on the same street, Kanwal et al. (2020) investigate the impact of inflationary pressures caused by the rising cost of oil using the structural vector autoregression model and find a connection between the price of oil and rising costs for other goods and services, which is denoted by inflation. However, studies have shown that monetary policy improvements and an increase in the domestic exchange rate can reduce inflation while there is an upward in the cost of oil, which is demonstrated by the evidence. Kisswani et al. (2020) reveal that tourism depends on oil availability in the context of New Zealand based on ten indicators. On a different note, Chatziantoniou et al. (2013) investigated four European countries and uncovered that rising oil prices negatively affect the tourism industry. Likewise, Tang and Lau (2021) investigate the association between tourist arrivals and many other factors using the Generalized Method of Moments (GMM) model in the background of Malaysia. The study shows that inflation, political atmosphere, and climate issues greatly impact tourist arrivals. The study

indicates that Malaysian authorities should stick with their plan to attract foreign tourists to keep the economy afloat during the regional economic crisis. Lean and Tang (2010) also advise that to ensure Malaysia’s economic progress, strategies relating to the development of Malay tourist destinations should be put into effect. Meo et al. (2018) also scrutinize the relationship between inflation and tourist arrivals in Pakistan using the NARDL model. Moreover, In order to identify demand and supply factors in the Malaysian tourism industry, Kosnan et al. (2013) used panel data spanning from 1998 to 2009. They reveal that the exchange rate and cost of living play equal but different roles because the depreciation of the Ringgit Malaysia (RM) and the lower cost of living draw more tourists to Malaysia.

Although nonlinear features are seen in numerous macroeconomic indicators, prior studies in Bangladesh (Amin et al. 2020; Murshed 2018; Rahman 2021; Roy & Roy 2015) identifying tourism demand relies on linear models to assess visitors’ demand. However, most economic interactions appear to have nonlinear characteristics, and the tourism demand may not necessarily coincide in the same way with the positive and negative changes in the inflation rate, exchange rate, and oil price (Meo et al. 2018). In this study, the author believes that the NARDL technique may be relevant since the interactions between the factors of tourism demand (such as inflation rate, exchange rate, and oil price) and tourism demand itself are not linear but rather reflect nonlinear patterns. Another recent study by Parvin (2022) also uses the same methodology and implies that complex interactions between variables are a common feature of economic systems. NARDL models are useful in circumstances where variables have complicated

interdependencies because they can accommodate these complexities. Although the author tries to identify the asymmetric link between oil price, inflation, exchange rate, institutional quality, and trade balance on tourist demand in Bangladesh, it does not pay any attention to the income capacity of the visiting country which is considered as one of the most influencing determinants of tourism demand (Barman & Nath 2019). Another significant gap of Parvin (2022) might be the non-consideration of environmental issues for the arrival of international tourists; thus, it might face omitted variable bias, and our current study tries to fill the gaps. So, our recent study attempts to fill the gaps mentioned above in the previous literature and explores towards searching for the influence of the most influential drivers impacting the tourism demand of Bangladesh.

METHODOLOGY

Data and techniques used to carry out this investigation are described here. The following factors are being examined based on the existing experiential literature.

VARIABLES

The influence of the income level of the visiting country, environmental pollution, inflation, currency rate, and oil price on Bangladesh’s inbound tourism demand is examined using time series figures. The variables adopted in this study are all recorded in detail in Table 1. Information on tourism demand, income level, environmental pollution, currency exchange rates, and oil prices are transformed into natural logarithms to minimize large and severe value bias.

TABLE 1. Variable’s description summary

Variables	Symbols	Explanation and measurement Scale
Tourism demand	TOUR	Number of foreign tourists visiting Bangladesh
Income level	PCI	National income per capita of South Asia in constant 2015 U.S. dollar
Environmental Pollution	CO ₂	Carbon dioxide emissions in kiloton
Inflation rate	INF	Consumer price index
Exchange rate	ER	Local currency values to the U.S. dollar
Oil price	OIL	Crude oil spot price in U.S. dollar

Source: Authors’ compilation.

MODEL SPECIFICATION

Equation (1) below illustrates the possible influence of income level, environmental pollution, inflation, exchange rate, and oil price on the inbound tourism demand of Bangladesh. Travelers’ disposable money might be a key factor in tourism industry, and the environment of the destination country might also be equally essential to international visitors (Su & Lee 2022). The purchasing power of the people of a nation

might be adversely affected by inflation (Lean & Tang 2010). Besides, increases in fuel costs might have an immediate impact on the transportation industry by forcing fare hikes and thereby impacting tourist demand (Chatziantoniou et al. 2013). Based on the previous study of income level, environmental pollution, inflation, exchange rate and crude oil price on inbound tourism demand, we use Equation 1 to establish the long-term drivers of international tourism demand in Bangladesh.

$$\text{TOUR}_t = \beta_0 + \beta_1(\text{PCI}_t) + \beta_2(\text{CO}_{2t}) + \beta_3(\text{INF}_t) + \beta_4(\text{ER}_t) + \beta_5(\text{OIL}_t) + \epsilon_t \quad (1)$$

Where TOUR, PCI, CO₂, INF, ER, and OIL represent inbound tourism demand, income level, environmental pollution, inflation rate, exchange rate, and oil price, respectively. In time series regression frameworks, the coefficients stay unchanged and presume naturally that an alteration in the explanatory driver conveys an identical impact throughout the period, which may not be practical in some circumstances. However, certain well-known techniques for co-integration presuppose an adjustment speed that may not always be practical. As a result, linear models might be unsuitable and cause wrong policy findings if misused (Galadima & Aminu 2019). However, The NARDL technique, proposed by Shin et al. (2014), captures the long-term consequences of the explanatory

variables' influences on the response variable. Thus, this study also allows for an examination of the constructive and adverse consequences where short-term and long-term asymmetry are adopted via positive and negative fractional sum breakdown of the predictor variables. Assuming the asymmetric nature of currency rates, oil prices, and inflation, the functional variants of this model are shown below.

$$\text{TOUR} = (\text{PCI}, \text{CO}_2, \text{INF}^+, \text{INF}^-, \text{ER}^+, \text{ER}^-, \text{OIL}^+, \text{OIL}^-) \quad (2)$$

Taking into account the fact that the dealings amid the factors are not linear, this analysis uses the following model (Equation 3):

$$\text{TOUR}_t = \delta_0 + \delta_1(\text{PCI}) + \delta_2(\text{CO}_2) + \delta_3(\text{INF}_t^+) + \delta_4(\text{INF}_t^-) + \delta_5(\text{ER}_t^+) + \delta_6(\text{ER}_t^-) + \delta_7(\text{OIL}_t^+) + \delta_8(\text{OIL}_t^-) + \mu_t \quad (3)$$

Where, δ_i symbolizes long-run coefficients. The nonlinear consequence of the inflation, currency rate, and oil price is adopted by positive variations INF⁺, ER⁺, OIL⁺ and negative variations INF⁻, ER⁻, OIL⁻, separately. While INF⁺, INF⁻, ER⁺, ER⁻, OIL⁺, and OIL⁻ are the fractional sums of positive and negative variations in the

inflation rate, currency rate, and oil price. However, to estimate a linear model, it is not enough to use Equation (1) as it only offers information on the long-term influence of predictors. So, the following is an error correction representation specification of Equation (1) in this study:

$$\Delta \text{TOUR}_t = \vartheta_0 + \sum_{j=1}^p \vartheta_{1j} \Delta \text{TOUR}_{t-j} + \sum_{j=1}^p \vartheta_{2j} \Delta \text{PCI}_{t-j} + \sum_{j=1}^p \vartheta_{3j} \Delta \text{CO}_{2t-j} + \sum_{j=1}^p \vartheta_{4j} \Delta \text{INF}_{t-j} + \sum_{j=1}^p \vartheta_{5j} \Delta \text{ER}_{t-j} + \sum_{j=1}^p \vartheta_{6j} \Delta \text{OIL}_{t-j} + \rho_1 \text{TOUR}_{t-1} + \rho_2 \text{PCI}_{t-1} + \rho_3 \text{CO}_{2t-1} + \rho_4 \text{INF}_{t-1} + \rho_5 \text{ER}_{t-1} + \rho_6 \text{OIL}_{t-1} + \pi_t \quad (4)$$

Here, ϑ_0 denotes constant. Δ and p symbolize the 1st difference operator and lag orders, respectively. $\rho_1 - \rho_6$ are the long-term shock of predictor variables on the response variable. Besides, $\sum_{j=1}^p \vartheta_{2j} - \sum_{j=1}^p \vartheta_{6j}$ estimate the short-run impacts of predictor variables on the measured variable. Equation (4) proposes that predicted variables have a symmetrical connection. Besides, this

review also focuses on the nonlinear properties of oil prices, currency rates, and inflation on Bangladesh's tourist demand. This study uses the following nonlinear cointegrating Equation to understand the asymmetric effect further. The following Equations from (5) - (10) are the fractional sums of positive and negative variations in inflation, currency rate, and oil price.

$$\text{INF}^+ = \sum_{r=1}^t \Delta \text{INF}_r^+ = \sum_{r=1}^t \max(\Delta \text{INF}_r, 0) \quad (5)$$

$$\text{INF}^- = \sum_{r=1}^t \Delta \text{INF}_r^- = \sum_{r=1}^t \min(\Delta \text{INF}_r, 0) \quad (6)$$

$$\text{ER}^+ = \sum_{r=1}^t \Delta \text{ER}_r^+ = \sum_{r=1}^t \max(\Delta \text{ER}_r, 0) \quad (7)$$

$$\text{ER}^- = \sum_{r=1}^t \Delta \text{ER}_r^- = \sum_{r=1}^t \min(\Delta \text{ER}_r, 0) \quad (8)$$

$$\text{OIL}^+ = \sum_{r=1}^t \Delta \text{OIL}_r^+ = \sum_{r=1}^t \max(\Delta \text{OIL}_r, 0) \quad (9)$$

$$\text{OIL}^- = \sum_{r=1}^t \Delta \text{OIL}_r^- = \sum_{r=1}^t \min(\Delta \text{OIL}_r, 0) \quad (10)$$

Now, this study replaces INF, ER, and OIL in Equation (4) by INF⁺, INF⁻, ER⁺, ER⁻, OIL⁺, and OIL⁻

variables. Thus the formation of NARDL is completed in Equation (11).

$$\Delta \text{TOUR}_t = \delta + \sum_{j=1}^p \delta_j \Delta \text{TOUR}_{t-j} + \sum_{j=1}^p \delta_j \Delta \text{PCI}_{t-j} + \sum_{j=1}^p \delta_j \Delta \text{CO}_{2t-j} + \sum_{j=1}^p \delta_j \Delta \text{INF}_{t-j}^+ + \sum_{j=1}^p \delta_j \Delta \text{INF}_{t-j}^- + \sum_{j=1}^p \delta_j \Delta \text{ER}_{t-j}^+ + \sum_{j=1}^p \delta_j \Delta \text{ER}_{t-j}^- + \sum_{j=1}^p \delta_j \Delta \text{OIL}_{t-j}^+ + \sum_{j=1}^p \delta_j \Delta \text{OIL}_{t-j}^- + \rho_1 \text{TOUR}_{t-1} + \rho_2 \text{PCI}_{t-1} + \rho_3 \text{CO}_{2t-1} + \rho_4 \text{INF}_{t-1}^+ + \rho_5 \text{INF}_{t-1}^- + \rho_6 \text{ER}_{t-1}^+ + \rho_7 \text{ER}_{t-1}^- + \rho_8 \text{OIL}_{t-1}^+ + \rho_9 \text{OIL}_{t-1}^- + \pi_t \quad (11)$$

After estimating the Equation of NARDL, Shin et al. (2014) used the bound-testing procedure established by Pesaran et al. (2001) to assess the Equation for NARDL in this study, which simultaneously works on both ARDL and NARDL models.

DATA

This study uses data from four macroeconomic factors (e.g., Per Capita Income of visiting countries, inflation rate, exchange rate, and crude oil price) and one environmental factor, e.g., carbon emission. It also uses international tourist arrivals data, and all the data ranged from 1995 to 2019. About 80% of Bangladesh’s tourists are Indian, and the rest are from other Asian countries. Thus, this study evaluates the impact of the national income per capita of South Asian countries to understand the demand for tourism in Bangladesh. As there is limited data for the study, the annual data are transformed into quarterly data employing the quadratic match-sum approach, which has been utilized in several prior studies (Çitak et al. 2021; Shahbaz 2018). Data on inflation and

the currency rate are collected from the International Monetary Fund (IMF). We collected the per capita income of South Asia from the World Bank. We turned to the World Tourism Organization (UNWTO) database for information on tourist arrivals and used the World Energy Survey pricing data to measure the crude oil price.

DATA SUMMARY

The data summary of the study variables is accessible in Table 2, demonstrating that the variables are normally skewed, and the distributions are symmetric around their mean except tourism demand which has a long right tail and higher values than 209520. Besides, the distribution of tourism demand is leptokurtic and has higher values than the sample mean. However, income level, carbon dioxide, inflation, currency rate, and the oil price clearly play platykurtic and have lower values than 989.8746, 44247.20, 6.3738, 65.2564, and 53.2492, respectively. The Jarque-Bera test also confirms the normality of all studied variables except tourist arrivals.

TABLE 2. Summary statistics

	TOUR	PCI	CO ₂	INF	ER	OIL
Mean	209520	989.874	44247.200	6.373	65.256	53.249
Median	199000	937.755	37990	6.194	68.874	50.800
Maximum	467000	1637.827	90740	11.395	84.453	99.670
Minimum	104000	573.887	16550	2.007	40.278	14.420
Std. Dev.	76681.220	333.383	23078.830	2.347	13.904	28.333
Skewness	1.558	0.508	0.518	-0.035	-0.350	0.285
Kurtosis	6.150	1.990	2.007	2.871	1.876	1.777
Jarque-Bera	20.459	2.140	2.147	0.022	1.827	1.895
Probability	0.000	0.342	0.341	0.988	0.401	0.387

Source: Authors’ computations.

ESTIMATION METHODS

This study adopts time-series data estimators to figure out the answers to Equations (4) and (11). It employs the ARDL model introduced by Pesaran et al. (2001) and the NARDL model proposed by Shin et al. (2014) for Equations (4) and (11), respectively, determining both the linear and nonlinear relationship among the variables. Moreover, we have shown a graphical presentation of our dataset of the desired variables where we observe that there exist both ups and downs and trending situations over the period of time. So, we wanted to know whether the situations of both peaks and valleys impact linearly or not in our study. When we suspect that the relationship between variables is asymmetric, NARDL is a valuable tool for analyzing. Moreover, it has the ability to capture both short-run and long-run nonlinear interactions. A rise in income, for example, may have a different impact on tourism demand than a loss in income. This is particularly important in economic environments where the impact of positive and negative shocks varies.

In addition, because of having some advantageous perspectives, traditional approaches such as the Johansen co-integration test (Johansen 1991) and the Engle and Granger methodology (Engle & Granger 1987) are not favored here. Among the situations under which ARDL is relaxed, it is critical to highlight that not all existing variables must be integrated into the equivalent form. Instead, those variables can be combined in the order of zero, one, or a mixture of zero and one. This methodology also applies to small sample sizes and calculates the short-term and long-term coefficients of the exogenous variables. However, one constraint of the model is that the findings cannot be valid if any variables are integrated beyond order one. The ARDL and NARDL models in this study develop in succeeding periods. Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests are used to verify the stationarity of all variables in the initial phase of the analysis. The outcomes are cross-validated using both techniques and although the ARDL and NARDL models do not need stationarity

verification, it is executed to decide if any of the model's variables are unified in the second or higher order. The model's co-integration test is carried out in the following stage of the analysis process. The ARDL bounds testing strategy is used in this work, and the NARDL approach also incorporates the results of ARDL bound testing. This is due to various benefits over other conventional cointegration strategies. In the third stage, the F-statistics of the bound test are compared with the two critical values of lower bound $I(0)$ and upper bound $I(1)$ proposed by Pesaran et al. (2001). As long as the F-statistic surpasses the upper limits, it indicates a long-term link between variables and validates the cointegration. However, if the estimated F-statistic is smaller than the critical standard of the lower limits, this analysis agrees that the variables cannot cointegrate. In the fourth step, if the cointegration among variables is confirmed, it is necessary to determine the long-run association of the selected variables. If the cointegration among variables is established, it is necessary to identify the long-term connotation of the

designated variables. Lastly, diagnostic tests like serial correlation, heteroskedasticity, the Ramsey RESET test, CUSUM, and CUSUM sqrt are run to check how well the model fits.

RESULTS AND DISCUSSION

Table 3 exhibits the outcomes of the two-unit root tests. In this study, the optimal lags, including constant and constant with trend terms of unit root equations for the ADF and PP approach, were calculated using the AIC. As per Table 3, no variables are stationary at $I(0)$ in the ADF unit root test, while all variables are stationary at $I(1)$. According to the PP unit root test, all the selected variables are stationary at $I(1)$, excluding carbon dioxide and inflation, which are stationary at $I(0)$ at constant and constant with the trend. Additionally, it is seen that none of the variables is integrated at $I(2)$. So, it is possible to use the bounds testing strategy forward.

TABLE 3. Unit root test

Tests	TOUR	PCI	CO ₂	INF	ER	OIL
ADF						
I(0)	-1.332	-3.075	-2.417	-2.304	-1.076	-0.655
I(1)	-3.281*	-4.152***	-4.325***	-4.015**	-4.317***	-4.499***
PP						
I(0)	-1.953	-1.740	-4.672***	-4.599***	-1.454	-1.341
I(1)	-4.837***	-5.356***	-5.734***	-5.268***	-4.749***	-5.032***

Notes: Significance level: ***1%, **5%, and *10%.

Source: Authors' computations.

The studied variables' significance and their relationship have been evaluated using a simple bound test in this study. However, it is crucial to figure out the optimum number of lags for the study, and consistent with Bahmani-Oskooee and Bohl (2000), the long-term association among variables is dependent on the model's optimal lag section. If fewer lags are used, the models cannot capture essential information; alternatively, using more lags causes the models to 'over-fit.' Lag six was revealed to be the most effective in this study as the maximum selection criteria support it. Table 4 displays the outcomes of the bound test, including F statistics, where the upper and the lower values at 5% and 1%

significance levels have been used as the critical value. The F statistics value of the linear ARDL model is 7.64, which is upper than the 1% and 5% upper bound values indicating cointegration in the long run.

Conversely, under NARDL, the value of F-Stat. is 10.73, and the upper bound values at both 1% and 5% significance levels are 3.77 and 3.15, respectively. Thus, F-statistics over the upper bound reveal cointegration between the variables under consideration, and the findings show that it is not always true that an increase or decrease in one variable would have a similar consequence on the predicted variable. So, the nonlinear ARDL model might also be used to go forward.

TABLE 4. Bound test

Methods	Models		F- Stat.	Outcomes
ARDL	TOUR/(PCI, CO ₂ , INF, ER, OIL)		7.64	Cointegration
NARDL	TOUR/CO ₂)		10.73	Cointegration
Critical values	1% lower	1% upper	5% lower	5% upper
ARDL	3.06	4.15	2.39	3.38
NARDL	2.62	3.77	2.11	3.15

Source: Authors' computations.

To specify the final models, Equations (4) and (11) using the general to specific methodology have been estimated. As insignificant lags may offer incorrect results and introduce clutter to the system, the maximum lag of six has been utilized in conjunction with deleting any irrelevant predictors from the model to meet the needed specification.

The first panel of Table 5 shows the long-run results without asymmetry. Here, we find that income level affects tourism positively and significantly, indicating a 1% upsurge in per capita income boosts the tourism demand by 13.06%. The main reason for the positive relation is that when the income level of people increases, people transfer themselves from inferior goods to luxury goods and try to recreate more than before. Moreover, when people have additional income, they try to get refreshments and spend time visiting with near and dear ones in different countries. So, tourism demand for host countries also increases. On a different note, we find a negative and significant long-run association between CO₂ emission and tourism, indicating that a 1% increase in environmental pollution decreases tourism demand by 11.21%. When tourists plan to visit any country, they try to find out the environmental conditions of that country and if any chosen country is found to be highly polluted, they might not get motivated to visit those countries (Wang et al. 2018). Bangladesh is also suffering from this situation. Because of environmental pollution and carbon emissions, sometimes tourists feel demotivated, and it dwindles the growth of the tourism industry (Y. Islam et al. 2023). Air quality, weather, natural freshness, and other factors significantly impact where travelers choose to go. Therefore, it seems sensible that tourists will be discouraged from visiting that country where the environment is filthy. Table 5 reports that the exchange rate has a significant and positive effect on tourism demand, where a 1% increase in the exchange rate induces the tourist by 10.83%, which implies a depreciation of the host country's currency. Lastly, Oil price expresses a significant adverse effect on tourism demand indicating a 1% increase in oil price reduces the

tourism demand by 1.07%. This situation makes tours expensive as increasing oil prices raise transportation costs.

The second panel of Table 5 reveals the long-run results with asymmetry. Like the linear model, our result shows that raising income levels significantly increases tourism demand. As one would expect, we find that carbon emissions significantly and negatively affect tourism demand in Bangladesh. Table 5 reports that rising inflation in Bangladesh decreases the demand for tourism, where a 1% positive shock on inflation reduces tourism demand by 1.02%. As inflation directly consorts with the purchasing power of a country, and the purchasing power decreases when inflation speeds up, foreigners do not want to spend money in the countries facing higher inflation because those countries are costly for them to be relaxed (Lean & Tang 2010). If visitors find traveling and living costs very high, they might be demotivated and keep searching for countries where they could travel, utilizing their money to maintain frugality. Additionally, the high cost brought on by Bangladesh's high inflation deters tourists, and in this situation, the overall cost may be higher than the maximum tourist's budget. Due to this issue, the tourism industry struggles to contribute significantly to the GDP (Khanna & Sharma 2023). Alternatively, a negative shock in inflation might also decrease tourist demand, indicating that a 1% negative inflation shock also negatively affects Bangladesh's tourism demand by 0.56%, and the finding is supported by Meo et al. (2018). The possible reason might be that inflation's impact on tourism demand may not be instantaneous and can vary depending on how quickly the fall in inflation is reflected in the general economy and consumer behavior. However, after a more extended period in the future, everyone might expect to experience increased tourist arrivals in the long run. Conversely, a decrease in inflation means appreciation of the host country's currency. So, the tourist program became costly for foreigners at that time. From all the outputs, it is evident that there is an asymmetric relation between tourism demand and inflation.

TABLE 5. Long-run symmetric and asymmetric relationship

Variables	Without asymmetry (ARDL)			With asymmetry (NARDL)		
	Coef.	Std. Error	T-ratio	Coef.	Std. Error	T-ratio
PCI	13.057	3.106	4.203***	4.085	1.394	2.929***
CO ₂	-11.205	2.516	-4.452***	-2.065	1.042	-1.981*
INF	-0.163	0.287	-0.569			
INF ⁺				-1.024	0.170	-6.019***
INF ⁻				0.562	0.158	3.539***
ER	10.826	2.647	4.089***			
ER ⁺				14.658	2.234	6.561***
ER ⁻				15.717	4.654	3.376***
OIL	-1.071	0.389	-2.749***			
OIL ⁺				-1.428	0.489	-2.919***
OIL ⁻				-0.517	0.263	-1.968*

Notes: Significance level: ***1%, and *10%.

Source: Authors' computations.

The outcome of the exchange rate explains that a 1% positive change in it enhances tourism demand by 14.66% (see Table 5), indicating that if the exchange rate increases, the tourism sector will also elevate demand. An upsurge in the currency rate translates to a devaluation in the host country's currency, and when a host currency depreciates, foreigners benefit as they get more money to spend in the visiting country while remaining thrifter than before. In the context of Bangladesh, when the currency depreciates, foreigners are allowed to spend their free time more wisely by making smaller investments. (M.F.H. Khan 2021). In contrast, the output reveals that a negative shock in the currency rate will decrease the tourism demand, signifying that a 1% intensification in the currency rate will reduce tourism demand by 15.72%, indicating an asymmetric influence of positive and negative shock of exchange rate on the demand of tourism. When the currency rate of a host country appreciates, foreign tourists might spend money in their own country as it becomes costly to arrange

an international tour for them. These results concur with those of Parvin (2022), who also highlighted that increased money value discourages unauthorized travel.

On the other hand, when there is a positive change in oil price, the result of Table 5 shows an adverse concern between oil price and tourism demand, signifying a 1% positive shock in oil price, lessening tourism demand by -1.43%. It notifies that if the oil price is intensified, tours in a host country might become very expensive because the oil price has the power to work as a leader to uplift other costs such as food, generation, and transportation costs, and when people face traveling more expensive, they might try to avoid the tour. Alternatively, when oil price decreases, other related costs are less expensive. By this time, the outcome of Table 5 discloses that if the oil price decreases by 1%, the demand in the tourism sector will increase by 0.52%. The possible region might be that the tour could be less costly, and it could be possible to move from one place to another at a reasonable price for national and international tourists.

TABLE 6. Diagnostic testing

Tests	χ^2 (p-value)		Outcomes
	ARDL	NARDL	
Serial correlation	0.412	0.646	Absent
Heteroscedasticity	0.992	0.437	Absent
Ramsey RESET test	0.652	0.487	Properly specified

Source: Authors' computations.

Before concluding, various diagnostic testing methods have assessed the appropriateness of dynamic specifications. More specifically, Breusch-Godfrey LM, Breusch-Pagan-Godfrey, and Ramsey RESET tests seek to identify the model’s serial correlation, heteroscedasticity, and mis-functionality, where in all cases, the p-value is more than 5% (see Table 6), signifying the absence of serial correlation, heteroscedasticity, and mis-functionality in the models. Figure 2 checks

the models’ stability through the CUSUM and CUSUM Square tests. For the NARDL model, the blue lines are inside the two red dotted lines identifying the model’s stability. Besides, the CUSUM test of the ARDL model also signifies the model’s stability. However, in the case of ARDL, the blue line for the CUSUM Square test is outside the two red dotted lines, identifying that the nonlinear model is more stable than the linear model.

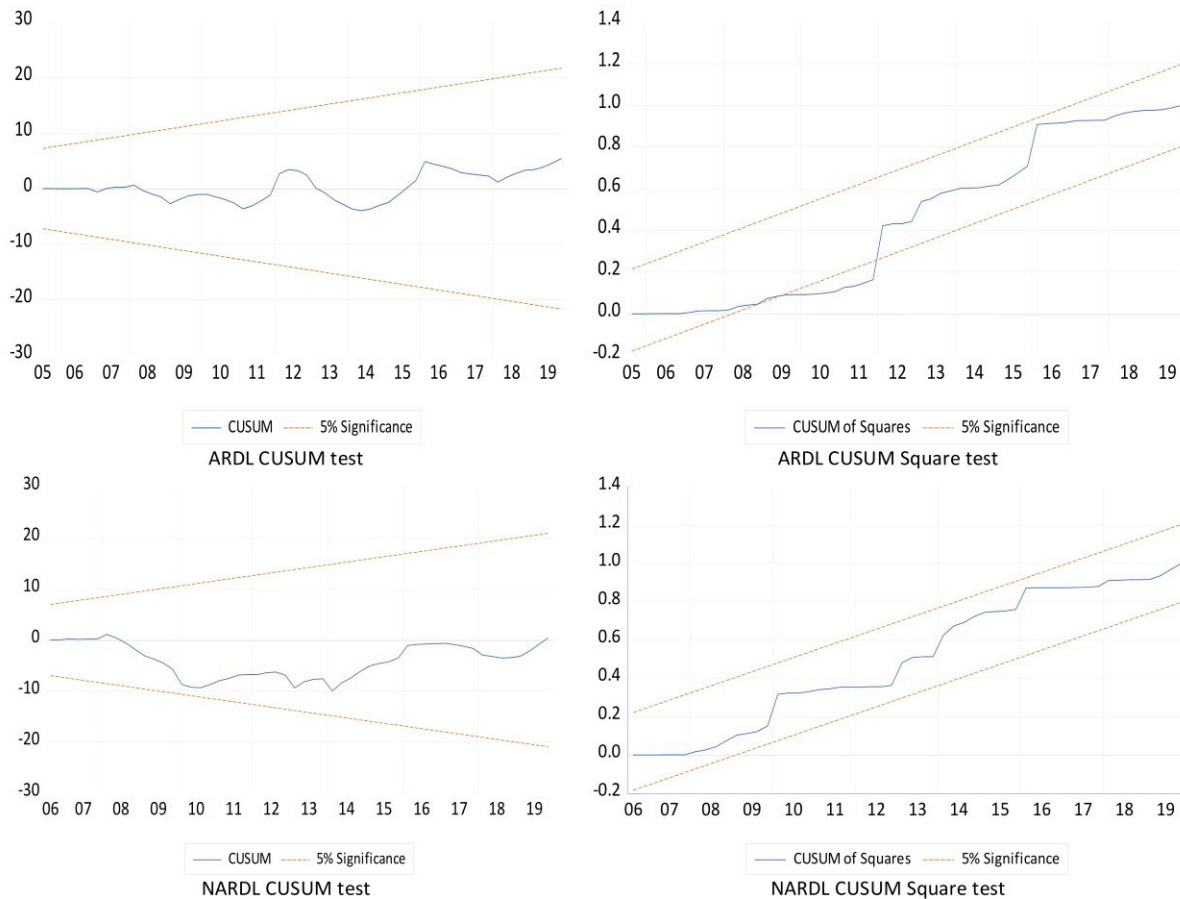


FIGURE 2. Stability check

CONCLUSION

Using time series quarterly data of Bangladesh from 1995 to 2019, this study analyzes the impact of income level, environmental pollution, inflation, exchange rate, and crude oil price on international tourism demand in Bangladesh. In contrast to the earlier studies, which merely assumed a symmetric link between international tourism demand and its drivers, this study considers the probable asymmetrical link. Asymmetries may exist in the connection between the demand for tourism and its drivers. As a result, both the symmetric and asymmetric techniques are utilized to demonstrate the probable relationship between international tourism demand and some of its selected drivers.

The nonlinear findings postulate that inflation fluctuation, whether a rise or a drop, has substantial and detrimental consequences on tourist arrivals in Bangladesh. Moreover, the influence of positive changes outweighs the effect of negative changes. On the other hand, a positive change in the currency rate upsurges tourism demand, whereas a negative shock decreases international tourism demand. Furthermore, an upsurge in oil prices reduces tourism demand, and a fall in oil prices increases it. Besides, the visiting country’s per capita income and Bangladesh’s environmental degradation increase and decrease the international tourism demand, respectively. The results of the linear model support the nonlinear model when it has a positive shock in terms of impact but the extent of shock is different. However, the

negative shocks of the nonlinear model tell some different stories than the linear one because the linear model thinks that the alternative situation will impact the response variable to a similar extent at the same percentage, but the situation is different. When asymmetric impact is considered, the negative waves imply different extents of shocks. These different scenarios may reveal more critical situations or situations to be relaxed. This outcome might help the policymakers to think in another way because if they think symmetrically, the observation would be wrong. When the direction of shocks is opposite, the policymakers will be able to make timely decisions realizing the nature of shocks. A rise in income, for example, may have a different impact on tourism demand than a loss in income. They would be more conscious of the critical situation. Likewise, according to the nonlinear approach, if the exchange rate increases, it stimulates tourism demand and vice versa. The increase in the currency rate is preferable in this regard, but policymakers should continue to consider other economic factors also. Regarding oil costs, falling demand for travel results from price increases. Therefore, policymakers should endeavor to lower the prices or look for more suitable substitutes. Additionally, both an increase in inflation and a fall in inflation reduce travel demand, but the positive shock is more detrimental as per the determinant's coefficients. Therefore, policymakers ought to work to lower the inflation rate.

In the end, we conclude that imposing a linear model to investigate the drivers of inbound tourism demand in Bangladesh might potentially exclude some important economic insights and lead to incorrect conclusions. Applying the asymmetric ARDL approach significantly fortifies the accurate comprehension of the nonlinear dynamics underlying the relationship between tourist demand and some of its selected drivers. The results suggest that the Bangladesh government should control inflation by imposing proper monetary and fiscal policy to cultivate tourism demand. Control over prices and money supply can also be the tools to check inflation. Moreover, the government should also implement a proper exchange rate policy to boost tourism demand, and finally, initiatives should be taken to find alternative renewable sources of engine fuel for sustainable tourism growth in Bangladesh.

As tourism demand is highly dependent on several national and international factors, issues such as international turmoil, worldwide pandemic, inflation, income level of visitors, transportation costs, and price hikes might influence the ultimate demand for tourism. Some recent international issues (e.g. Russia-Ukraine war, the US-China trade war, and the COVID-19 pandemic) have made Bangladesh afraid regarding their demand for tourism. Because of the aforementioned issues, the expenses of visiting countries have increased. The worldwide pandemic (COVID-19) has concerned people about tourism because it has become somewhat risky for their lives. Moreover, the Russia-Ukraine war

has made the international market vulnerable as many valuable natural resources arrive from those countries. This war has increased crude oil prices, which have raised transportation costs.

Moreover, carbon emission is increasing daily, which is a big reason for environmental pollution. Dhaka, the capital of Bangladesh, is frequently cited as the most polluted city in the world and faces various ecological problems (Hasan & Mulamoottil 1994; The Daily Star 2022). Thus, Bangladesh may face a crisis in foreign tourist arrival as they scrutinize these matters before arriving in any country. This study might help people be conscious of macroeconomic factors and environmental issues. It might work as a bridge between theory and practice because the benefits from increasing tourism demand help to create employment opportunities, ensure eco-friendly accommodations and transportation options, and reduce carbon footprint. This study might also be helpful in making people conscious regarding the drivers of international tourism demands, and controlling the drivers might lead to achieving SDG goals within the 2030s.

To get rid of these situations, we recommend some policies. Firstly, the government of Bangladesh and the related authorities should have to search for a less costly substitute to crude oil, and the dependency on the international market should have to be reduced. Secondly, the government could provide short-run subsidies on oil imports and reduce the taxes on importing oil. Thirdly, proper precautionary activities should be taken to reduce the emission of CO₂ and tourist spots should be kept neat and clean. For this purpose, proper implementation of environmental laws and transferring industrial areas to remote places could be helpful. Finally, to attract foreign tourists, the government of Bangladesh should offer lucrative tour packages. It might support gaining foreign currency and help the exchange rate stabilize and reduce the current dollar crisis.

However, the main concern of this study is that our experiential analysis is only conducted based on the data from Bangladesh, which might prevent the findings from being generalized to another country. Moreover, the NARDL is a data-hungry method, but we suffered from limited data on tourist arrivals in Bangladesh. It is feasible to conduct further research in this area and to add more data when it becomes available, considering both linear and nonlinear approaches. Moreover, we focused on the data of tourist arrivals from the South Asian region, but a comparison adopting the same model between South Asian and non-South Asian nations would be possible to specify. Using the asymmetric panel ARDL approach, potential future research might broaden the scope of our investigation to include a more significant number of nations, ultimately leading to a more in-depth comprehension of the demand for tourism. Likewise, international tourism demand could be affected by a variety of other internal factors that were not considered in the study, such as geopolitical events, natural

catastrophes, government policies, health crises around the world, marketing systems, and transportation systems. The limitations of our study may open the door for further research utilizing the elements affecting tourism demand listed above.

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