Revista Turismo & Desenvolvimento | n.º 48 | 2025 |[599-623]

DOI 10.34624/rtd.v48i0.34822

e-ISSN 2182-1453

Tourism, FDI, Renewable Energy and **Growth:** An Analysis of **ASEAN Countries**

Ha Van Trung[1] [2022171050006@whu.edu.cn; havantrung@kkumail.com]

Du Quoc Dao[2] [daodq@vhu.edu.vn]

Le Thi Anh Nguyet[3] [nguyetlta@vhu.edu.vn]

Abstract | The aim of this study is to investigate how each variable affects the economic growth of ASEAN countries between the years 2000 and 2020. The impacts of variables on economic growth were analysed using a panel ARDL approach. The foundation of this model rests on three estimators, specifically Mean Group (MG), Pooled MG (PMG) and Dynamic Fixed Effect (DFE). Studies prove that DEF estimator is superior in consistency and effectiveness. The statistical significance of the negative adjustment coefficient (error correction parameter) confirms the existence of a long-term relationship. While the short-term effect of tourism development on economic growth is negative, the long-term effect is not significant. Foreign Direct Investment (FDI) has a significant positive impact on Economic Growth in the short and long term, despite differing opinions. It lacks significance in both short and long terms. Consumption of Renewable Energy (CRE) does not significantly impact Economic Growth.

Keywords | tourism development, FDI, renewable energy consumption, economic growth, panel ARDL, sustainable development

[1] Economic and Management School, Wuhan University; Phone number: +84 349 766 972; ORCID: https://orcid.org/0000-0001-5228-1850

[2] Tourism Faculty, Van Hien university; Phone number: +84 908 599 829

[3] Tourism Faculty, Van Hien university; Phone number: +84 972 694 672

1. Introduction

In recent decades, the ASEAN region, particularly the ASEAN Economic Community (AEC), has emerged as a major competitor in the global economy, characterized by rapid economic growth and increasing integration (Ishikawa, 2021). As the region's economies grow, the importance of sectors like Foreign Direct Investment (FDI), tourism development (TOD) (with indicator is total tourist arrival (TTA) and consumption of renewable energy (CRE) becomes clearer. Understanding the relationships between these factors and economic growth (ECG) is critical for developing effective policies that can promote ASEAN's long-term development. Tourism is widely regarded as an important means of stimulating the economy and creating jobs around the world (Rasool et al., 2021). While ASEAN has traditionally focused on trade in manufactured goods, minerals, and fuels, the region's tourism sector has grown rapidly, resulting in its growing importance (Timothy, 2010). According to World Tourism Organization (UNWTO) statistics, international visitor arrivals will increase significantly, with an estimated 397 million in 2020, demonstrating an annual average growth rate of 6.5%, exceeding the global growth rate. Tourists visiting ASEAN reached 65.5 million in 2008, nearly doubling the figure from 2002 (Wong et al., 2011). Inter-regional travel is indeed important in Asian tourism (Wong et al., 2011). Thus, with their rich cultural heritage, diverse natural landscapes, and appealing destinations, ASEAN countries have seen a significant increase in tourist arrivals, highlighting the growing importance and interdependence of tourism among ASEAN nations. Tourism growth has not only provided a significant source of revenue for the region, but it has also stimulated investment, infrastructure development, and job creation.

Foreign direct investment has been critical to the economic development of ASEAN countries. They directly contributed from 4 to over 20 percent of GDP growth in the ASEAN-5 during 1987-97 and served as a stabilizing factor during the Asian financial crisis (Fan & Dickie, 2000). FDI not only facilitates resource transfer and knowledge sharing, thereby reducing costs and increasing productivity, but there is also empirical evidence of its positive impact on economic growth. However, they can lead to resource depletion, which creates a dependency on revenues from that depletion. Despite these challenges, FDI has proven to be an important source of foreign capital in times of crisis and has played a central role in the economic development of many Southeast Asian economies. Chia (2023) highlights the importance of FDI in promoting economic growth and technological progress. ASEAN countries have actively attracted FDI inflows by offering various incentives and creating favourable investment environments. The inflow of foreign capital has led to a transfer of technology, knowledge, and managerial skills,

thereby strengthening the productive capacity of domestic industry (Bhatt, 2014). Therefore, it is important to conduct more studies to reap the benefits of FDI but also manage it effectively to mitigate potential negative impacts and balance economic growth with resource conservation.

Furthermore, the use of renewable energy sources has grown in importance as a long-term solution to issues such as energy security, climate change mitigation, and environmental protection. ASEAN member countries, which have abundant renewable energy resources, have recognized the importance of shifting to cleaner energy sources. ASEAN places a high value on environmental preservation, which is why they signed the Paris Agreement (2015) and the Kyoto Protocol (1997). As a result of this recognition, ASEAN is attempting to increase its reliance on renewable sources in order to facilitate a more sustainable future. Renewable energy technologies and energy development can not only reduce greenhouse gas emissions but also create new economic opportunities and promote energy independence. It is also assumed that economic growth will promote consumption of renewable energy.

Recognizing the significant gap in research on the role of these factors in driving the economic development of ASEAN countries, we conducted this study. The primary objective of this study is to look into the link between TOD, FDI, CRE, and ECG in ASEAN countries. To be more specific, our goals are as follows: (1) use the ARDL model with three estimators of MG, PMG, and DEF and select the best estimator to study; (2) investigate the relationships between these variables; and (3) propose good policies to boost economic growth, especially in tourism field in the region based on the results of the experimental analysis.

This study contributes to the existing body of knowledge by providing empirical evidence of the interplay between TOD, FDI, CRE, and ECG in ASEAN countries. It carries significant implications for policymakers, governments, and stakeholders in the ASEAN region. The findings of this research will guide policymakers in formulating effective policies that foster sustainable tourism, attract FDI, and promote the use of renewable energy, thereby driving economic development. Furthermore, the study illuminates potential synergies and trade-offs among these factors, aiding policymakers in strategy design.

The research underscores the potential for harmonizing TOD with CRE consumption to advance eco-friendly and sustainable tourism practices. It also assists policymakers in devising strategies to attract FDI towards sustainable development goals, including the establishment of renewable energy infrastructure, technology transfer, and capacity building.

This research is poised to enrich the academic literature in several ways. It commences by presenting empirical evidence on the effects of TOD, FDI, CRE, and ECG in ASEAN countries. This is a crucial step towards gaining a comprehensive understanding of these areas. The study aims to bridge the knowledge gap concerning the interconnections between these variables within the ASEAN context. Moreover, the findings will equip policymakers and stakeholders with valuable insights for formulating strategies to leverage tourism as an engine for ECG, foster sustainable FDI, and encourage CRE. By understanding potential synergies and trade-offs among these factors, policymakers can devise comprehensive and integrated policies that maximize benefits while minimizing adverse impacts on the environment and society. Finally, the research results can guide decision-makers in developing sustainable tourism practices aligned with renewable energy objectives. This alignment can contribute to the broader sustainable development agenda in the ASEAN region by promoting ECG while reducing environmental impact.

The remainder of this paper is organized as follows: Section 2 provides an extensive review of relevant literature on the interconnection among TOD, FDI, CRE, and ECG. Section 3 details the methodology employed in this study, including data sources, variables, and econometric techniques. Section 4 presents empirical results and discusses findings in relation to research objectives. Section 5 concludes the paper by summarizing key findings, outlining policy implications, and suggesting future research directions.

2. Theoretical framework

TOD and ECG: The most salient distinction between developed and developing economies lies in the level of tourism development (Sinclair & Stabler, 1997). The disparities in the level of economic development across different regions are taken into account to ascertain if the relationship between tourism development and growth varies for developed and developing economies (Yildirim et al., 2005). In the economics field, the correlation between TOD and the ECG has been investigated in many studies, with a variety of results showing the relationship between the two. Previous research has produced three clear empirical results: a two-way causal relationship between tourism and economic growth, and a unidirectional relationship associated with either the tourism-driven growth hypothesis or the economy-driven tourism growth hypothesis. To illustrate this point, let us take a look at the study conducted by Aratuo et al. (2019), where it was found that there is a causal relationship between TOD and ECG in the US – a positive and significant effect on TOD that lasts for a long time is generated by a shock to

GDP, which is a clear indicator of the influence of changes in GDP on the level of tourism activity. According to a study conducted by Zhang and Cheng (2019) in China, tourism was found to contribute significantly to the economy, supporting the tourism-led growth hypothesis. Similarly, Tasos et al. (2019) confirmed that there is two-way causality between Asian countries and two-way causality between TOD and ECG in EU countries, and one-way causality from ECG to TOD in Central and South American countries (Ben Jebli et al., 2019).

FDI and ECG: Stimulating ECG through FDI is an important aspect, as it contributes greatly to capital formation, technology transfer, and job creation. FDI affects economic growth primarily through two channels: (i) FDI can facilitate the incorporation of new technologies into the production process via spillover effects of technological progress; and (ii) FDI can catalyse knowledge transfers that include both workforce training and skills development and the implementation of alternative management approaches and improved organizational structure (Mahembe & Odhiambo, 2014). FDI has proven crucial in fostering economic development and prosperity in underdeveloped nations. Additionally, FDI has grown to be these economies' most important single source of foreign financing. It acts as a vital channel for the transfer of knowledge from industrialized to developing countries, encourages local investment, and helps to improve the institutional structures and human resources of host countries (Mamingi & Martin, 2018). Neoclassical and endogenous growth theories serve as the foundation for the vast majority of empirical investigations on the FDI-growth nexus. The variables impacting growth, the drivers of FDI, the influence of multinational businesses on host countries, and the causality direction between FDI and growth have all been explored in respect to this relationship (Sophannak Chorn, 2017). FDI supports economic growth both directly and indirectly as a result of its interplay with other factors. The interaction of FDI and human capital has a significant beneficial impact on the economic development of emerging nations (Li & Liu, 2005). In countries that exhibit robust growth in global value chain activity and initially have low levels of human capital or financial development, there is a positive correlation between Foreign Direct Investment (FDI) and growth (Qiang et al., 2021). ASEAN countries have been the focus of several studies that sought to examine the relationship between ECG and FDI. For example, Phyoe (2015) used panel data analysis to find a positive and significant correlation between ECG and FDI in ASEAN countries. Choong and Khim-Sen Liew (2009) confirm that the economic growth of ASEAN developing countries is highly dependent on FDI. Similarly, the positive impact of FDI on ECG in Vietnam was highlighted in a study by Anwar and Nguyen (2010). To

increase ECG, invest more in education and financial markets, and bridge the technological gap between international and local companies.

CRE and ECG: The consumption of energy is seen as the cornerstone of economic development (Gyimah et al., 2022). Four well-known ideas explain the relationship between energy use and economic development, which has been established since the 1970s. The growth hypothesis emphasises the importance of energy in economic progress. The conservation theory explains how economic expansion affects energy usage. The feedback hypothesis denotes these two variables' reciprocal dependency, but the neutrality hypothesis denies any association between them (Šimelytė & Dudzevičiūtė, 2017). The global shift toward renewable energy sources is gaining traction. A thorough understanding of the benefits of sustainable development necessitates an investigation of the link between CRE and ECG. A systematic literature review of Bhuiyan et al. (2022) shows that CRE has no negative impact on ECG in either emerging or developed countries. However, consumption of renewable energy (up to a certain threshold level) has little influence on developed-country economic development. Bhattacharya et al. (2016) used panel data analysis to assess the influence of CRE on ECG in 38 different nations and found a substantial and favourable connection. Harnessing and utilising renewable energy can have a favourable (Iqbal et al., 2022) or a negative (Ben Jebli et al., 2019) impact on the economy. However, Destek (2016) found that CRE can generate both positive and negative changes in ECG in newly industrialised nations. Hence, there are still differing views regarding the effects of CRE on ECG, but most of them agree that CRE has a positive impact on ECG.

The Nexus between TOD, FDI, CRE, and ECG: While individual studies have examined the relationships between TOD, FDI, CRE, and ECG separately, such as Choong and Khim-Sen Liew (2009), Anwar and Nguyen (2010), Heidari et al. (2015), Baek (2016), Wang and Wang (2018), Ali et al. (2021), Law et al. (2022), and Iqbal et al. (2022). Previous research has explored the relationship between variables, however, there is a gap in knowledge regarding ASEAN countries. For example, Ben Jebli et al. (2019), Kongbuamai et al. (2020), Rasool et al. (2021), Dogru et al. (2020), and Kayani et al. (2023) analysed the nexus between FDI, CRE, and ECG is a critical factor that should be highlighted, particularly when examining the importance of their relationship in various regions across the world. It is crucial to highlight that research exploring the interconnectedness of these variables all at once, especially in an ASEAN countries, is scarce. Nonetheless, gaining this understanding is progressively becoming vital. Furthermore, it is important to recognise that policymakers and researchers need to have a deep understanding of the intricate relationship between TOD, FDI, CRE, and ECG in order to

produce viable strategies for sustainable development. The following table 1 summarises the findings of the studies reviewed.

Table 1: Summary of literature on the nexus between TTA, FDI, CRE, and ECG.

Authors	Period & Countries	Variables	Methods	Findings
(Choong & Khim-Sen Liew, 2009)	1974 to 2005, five ASEAN countries	FDI volatility and ECG	ARDL procedure	The ECG of ASEAN countries heavily dependent on FDI.
(Anwar & Nguyen, 2010)	1996–2005, 61 provinces of Vietnam	FDI and ECG	Simultaneous equations model	Two-way linkage between FDI and ECG.
(Heidari et al., 2015)	Five ASEAN (Indonesia, Malaysia, Philippines, Singapore, and Thailand)	ECG, CO2 emissions, and energy consumption	Panel smooth transition regression (PSTR) model	ECG escalates environmental harm; energy use boosts CO2.
(Phyoe, 2015)	1991-2013, selected ASEAN nations (Myanmar, Singapore, Thailand, Malaysia, and Indonesia)	FDI and ECG	ARDL approach	FDI impact positively on GDP.
(Baek, 2016)	1981-2010, five ASEAN countries	FDI, ECG, energy consumption, CO2 emissions	PMG estimator of dynamic panels	FDI boosts CO2 emissions; ECG and energy use hinder CO2 reduction.
(Bhattacharya et al., 2016)	1991-2012, 38 top CRE countries	CRE and ECG	Panel estimation techniques	CRE has a significant positive impact on ECG.
(Destek, 2016)	1971-2011, newly industrialized countries	CRE and ECG	Asymmetric causality approach	Negative CRE shocks lead to positive ECG in South Africa and Mexico, but negative ECG in India.
(Wang & Wang, 2018)	1995-2014, 35 OECD countries	CO2 emission, TOD, income, energy use, CRE, energy efficiency	Panel fixed effect model	The EKC hypothesis was validated between TOD and CO2. Two-way causality (TOD and CO2).
(Ben Jebli et al., 2019)	1995–2010, 22 Central and South American countries	CRE, TOD, CO2 emissions, ECG, FDI, and trade	Panel data analysis	Short-term: CRE affects CO2 and trade; TOD influences trade and FDI; ECG impacts CRE and TOD. Long-term:

				Mutual causality among CRE, TOD, FDI, trade, and emissions.
(Aratuo et al., 2019)	Monthly data from January 1996 to March 2016, the USA	TOD and ECG	Bounds test, Granger causality test, impulse response functions and generalized variance decomposition	GDP causes long-term changes in TOD in the USA, while a shock to GDP effect on TOD.
(Zhang & Cheng, 2019)	2008–2016, China	TOD and ECG	Panel threshold regression technique	TOD significantly contributes to ECG.
(Tasos et al., 2019)	1995 to 2011, Asian and European countries	TOD and ECG	The Pedroni cointegration approach	Long-term ties and reciprocal causality are present among Asian nations and between Europe's TOD and ECG.
(Kongbuamai et al., 2020)	1974-2016, Thailand	Ecological footprint, TOD, trade openness, ECG	ARDL bound test, VECM	TOD resulted in a lower ecological footprint. A one-way causality exists from the ecological footprint, ECG, trade, and energy use to TOD.
(Dogru et al., 2020)	2020, OECD countries	TOD, ECG, CRE, CO2 emissions	Bootstrap panel cointegration technique and augmented mean group estimator	TOD negatively impacts CO2 emissions in Canada, Czechia, and Turkey, but positively in Italy, Luxembourg, and the Slovak Republic.
(Rasool et al., 2021)	1995–2015, five BRICS countries	TOD, financial development and ECG	Panel ARDL cointegration test	TOD, financial development, and ECG have long-term cointegration. The causality between TOD and ECG is two-way.
(Ali et al., 2021)	1995–2009, Top 48 tourism-based countries	CO2 emission, TOD, GDP per capita, urbanization	VECM, FMOLS	TOD led to a rise in CO2 in the top 48 tourist countries,

				except those in Europe.
(Ali et al., 2021)	1995 to 2019, 47 high-income, 33 upper-middle-income, 35 lower-middle-income, and 13 low-income countries	TOD, CRE, ECG, trade openness, urbanization, and cultural globalization, ecological footprints	A panel data analysis	CRE, urbanization, and cultural globalization lessened ecological footprints, whereas ECG, trade, and urbanization heightened them in certain countries.
(Law et al., 2022)	1995-2018, Cambodia, Laos, Myanmar and Vietnam	Air transport, TOD, ECG	ARDL model	Two-way causality between air passenger traffic and ECG in the long run.
(Iqbal et al., 2022)	2000-2018, BRICS countries	CO2 emissions, CRE, FDI, exports and ECG	ARDL, PMG, MG, Dumitrescu Hurlin panel causality tests	Carbon emissions, CRE, exports, FDI, and savings significantly boost ECG in the long run.
(Kayani et al., 2023)	2000 to 2019, most polluted nations	ECG, CRE, Urbanization, and TOD, FDI, and Carbon Emissions	Panel unit root tests LLC and IPS	CRE slightly harms FDI but significantly benefits CE, along with ECG, TOD, and urbanization.

Source: Author's Elaboration

This literature review concludes that the ARDL model, PMG estimator, panel data analysis and panel unit root tests have been mainly used in the current research. In this context, this paper addresses the gaps in the literature by using the above methods. To overcome the limitations of these methods, we used the ARDL panel model using the PMG, MG, and DEF estimators developed by Johansen and Juselius (1990), Pesaran and Smith (1995), Pesaran et al. (1999) and Blackburne and Frank (2007). Most studies used small sample sizes for both developed and developing countries within the same region with panel data with unbalanced income distribution. However, our work focuses on a balanced panel for both countries in the ASEAN region to ensure a balanced and accurate result while avoiding possible misinterpretation. The ARDL panel model allows us to assess the short- and long-term effects of the explanatory variables on economic growth. This study employs MG, PMG, and DEF estimators for policy analysis, a significant improvement from prior research that only focused on either short-run or long-run effects.

3. Methods

Data and Variables

The aim of the present study is to investigate the relationship between TOD, FDI, CRE and ECG in the short and long term. We use the Autoregression Distribution Lag (ARDL) proposed by Nkoro and Uko (2016) as an econometric model to investigate whether the factors TTA, FDI and CRE contribute to ECG in ASEAN countries. The nexus between deserves investigation, given its potential importance. Three estimators form the basis for this type of model: the mean group (MG), the pooled mean group (PMG), and the dynamic fixed effect (DFE). Each country's ECG is represented by the primary proxy, GDP per capita (GDPP) (Faisal et al., 2021). The primary proxy used to represent each country's tourism growth is the number of international tourist arrivals (TTA). In addition, data from the period 2000-2020 were used from the World Bank (2023). The parameters for ASEAN countries are chosen based on data availability for analysis. Table 2 illustrates all information used in the study.

Table 2: Variable's description

Acronyms	Variable description	Measurement	Logarithm form	Source
TTA	International tourism receipts	Current US$	Yes	World Bank (2023)
FDI	Foreign direct investment	BoP, current US$	Yes	World Bank (2023)
GDPP	GDP per capita	Current US$	Yes	World Bank (2023)
CRE	Renewable energy consumption	% of total final energy consumption	No	World Bank (2023)

Source: Author's Elaboration

Empirical methodology

When attempting to ascertain the long-term relationship between non-stationary series, the use of Granger (1981) techniques has grown in popularity. Analysis using the bound test of cointegration, the ARDL cointegration technique, and Pesaran et al. (2001) and Ohansen and Juselius (1990) allow for parameterisation to the Error Correction Model (ECM). Despite the difficulties in estimating the relationship between nonstationary variables, the cointegration

technique is a useful way to reconcile short-term dynamics and long-term equilibrium. It seems that most researchers still prefer the conventional method of estimation, although it is important to test the cointegration between variables. Most researchers are unfamiliar with the situations that require the use of cointegration tests and the proper interpretation of the results, leading to erroneous conclusions. This technique is applicable and helpful when all variables under consideration initially have non-stationary properties of order I(0) and become stationary only after the first difference, I(1), is formed. It is a different situation, though, when the underlying variables are a mix of I(0) and I(1). According to Johansen and Juselius (1990), the cointegration approach is not applicable in this situation, and the results of the estimated model may lead to fictitious model complications, inefficient estimation, and impractical use in practice. The advanced econometric model then has the advantage of being applicable even when the underlying variables are only I (0), I (1), or mutually cointegrated (Pesaran & Shin, 1999). However, it is critical that none of the variables be I(2) because this methodology provides more accurate approximations than the cointegration approach (Johansen & Juselius, 1990). Furthermore, when there are numerous long-term associations between the underlying variables, the ARDL bounds approach cannot be applied. As opposed to Pesaran and Shin (1999) and Johansen and Juselius (1990) 's approaches are more appropriate. However, in contrast to other scenarios, the efficiency of the ARDL error correction representation will be comparatively higher if there is only one long-term association and the time series data or sample size is small or finite (Nkoro & Uko, 2016).

Our fundamental model considers the variables' definitions and the investigation of the extended effects of the number of international tourist’s arrivals (TTA), the consumption of renewable energy (CRE), and the inflow of foreign direct investment (FDI), as shown below:

$$GDPP_{it} = f(TTA_{it}, CRE_{it}, FDI_{it}) \quad (1)$$

The variables in this study are also converted into their natural logarithms to lessen the possibility of heteroscedasticity in our estimates. With the aid of natural logarithms, the functional form of the model can be rewritten as follows:

$$lnGDPP_{it} = f(lnTTA_{it}, lnCRE_{it}, lnFDI_{it}) \quad (2)$$

$$LGDPP_{it} = \beta_0 + \beta_1 TTA_{it} + \beta_2 CRE_{it} + \beta_3 FDI_{it} + \varepsilon_{it} \quad (3)$$

In this equation, $GDPP_{it}$ stands for gross domestic product per capita, TTA_{it} for the number of international tourists, CRE_{it} for consumption of renewable energy, FDI_{it} for foreign direct investment, and ε_{it} for the error term for country i in year t.

Our primary goal is to perform a thorough analysis that investigates the relationship between a dependent variable and a range of independent variables. In order to understand how these variables affect both short-term fluctuations and long-term correlations, we carry out an analysis. In our study, cointegration based on multiple linear regression, as defined in equation (3), has been added to the ARDL bounds approach model. This enables us to rewrite models that have a structure that enables them to be converted into ARDL models, as demonstrated below.

$$\Delta lnGDPP_{it} = \beta_1 + \sum_{j=1}^{k} \delta_1 \Delta lnTTA_{i,t-j} + \sum_{j=1}^{k} \delta_2 \Delta lnCRE_{i,t-j} + \sum_{j=1}^{k} \delta_3 \Delta lnFDI_{i,t-j} + \gamma_1 lnGDPP_{i,t-1} + \gamma_2 lnTTA_{i,t-1} + \gamma_3 lnCRE_{i,t-1} + \gamma_4 lnFDI_{i,t-1} + \mu_{it} \quad (4)$$

The sequence i=1, 2,..., N defines the total number of nations, which we'll denote as N; Time is represented by the variable t, which has the values 1, 2,..., T; The variable j can be used to represent the quantity of lags; The symbol Δ can be used to represent the operator for the first difference; Each model's constant coefficients are represented as β_0, β_1, β_2, and β_4, respectively; The symbol " μ_{it} " indicates that the process is using white noise. The lag length is indicated by the notation k. The coefficients for the short run and long run are represented by δ_n, and γ_n, respectively.

The ARDL Bounds test uses the F-statistic to examine cointegration. To determine the significance of the value of the F-statistic, we must estimate it and then query the upper and lower bounds of the critical values. The determination of a long-term relationship between the variables can be conclusively made if the statistical value of the F-test exceeds the corresponding upper critical values. When the critical values are greater than the value of the F-statistic, the null hypothesis of no cointegration cannot be rejected. The following model was developed specifically to evaluate the relationship between GDPP, TTA, CRE, and FDI:

$$\Delta lnGDPP_t = \beta_1 + \sum_{i=1}^{k} \delta_1 \Delta lnTTA_{t-i} + \sum_{i=1}^{k} \delta_2 \Delta lnCRE_{t-i} + \sum_{i=1}^{k} \delta_3 \Delta lnFDI_{t-i} + \mu_t \quad (5)$$

Pesaran et al. (1999) presented the PMG approach using the panel ARDL framework. As an intermediate process, the PMG approach is often used to combine the MG and DFE approaches. The method used in the study is driven by the null hypothesis of homogeneity. To test this hypothesis, a Hausman test is performed. To test this hypothesis, one can evaluate and compare the MG-estimator and the PMG-estimator or alternatively the DFE-estimator and the PMG-estimator. If the null hypothesis cannot be rejected, the PMG estimator is the most efficient estimation option and should be used for best results. Two statistical approaches that can be used are the PMG and MG methods, which provide flexibility in terms of intercept, short-term coefficients, and error variances. The PMG and DFE methods are similar in that they both assume that the long-run coefficients are the same in all groups. Pesaran et al. (1999) in their study propose the PMG technique as a suitable approach for fitting an ARDL model to data in dynamic heterogeneous panels. To analyse the data, we used the ARDL heterogeneous panel regression model, which was first proposed by Pesaran et al. (1999).

The pooled mean group estimator

According to PMG, the long-run coefficients must be the same for all nations whereas the short-run coefficients and error variances might differ depending on the nation (Pesaran et al., 1999). When a country or group of nations assumes that long-term equilibrium connections between variables are the same, it is applicable. Due to different vulnerability needs for validity, consistency, and efficiency, country-specific short-term adjustments are required.

The mean group estimator

The MG method was first developed by Pesaran & Smith (1995), and since then this approach has gained popularity. In this method, the regressions are estimated separately for each nation and the coefficients are calculated as the average of the estimated coefficients for each nation. We are truly fortunate that this condition does not impose any restrictions on us. The model considers both long- and short-term changes and the heterogeneity of all coefficients. Nevertheless, it is crucial to recognise that the time series dimension, which is of great scale, has a major impact on the technique's soundness and believability.

The dynamic fixed effect estimator

The Dynamic Fixed Effects (DFE) estimator and the Pooled Mean Group (PMG) estimator are notably similar, as they both necessitate the equality of the slope coefficient and error variances

across all countries over a long-term period. A notable limitation of the DFE model is the requirement that the adjustment coefficient and the short-run coefficient be identical. Nevertheless, the model remains effective because of the country-specific intercepts. Blackburne and Frank (2007) introduced a cluster option for the DFE that allows estimation of the intra-group correlation in conjunction with the standard error, making it a valuable tool for researchers.

Endogenous growth, tourism-led growth hypothesis (TLGH), FDI-growth nexus, and the renewable energy-growth

Applying the theories of endogenous growth, tourism-led growth hypothesis (TLGH), FDI-growth nexus, and the renewable energy-growth relationship provides a comprehensive framework for analysing the economic growth of ASEAN countries as presented in the paper. The endogenous growth theory by Howitt (2010) suggests that internal factors, such as human capital and innovation driven by FDI, are critical for economic growth, which aligns with the paper's finding that FDI has a significant positive impact on both short-term and long-term economic growth. The TLGH posits that tourism is a key driver of economic development; however, the paper's results showing a negative short-term effect and an insignificant long-term impact of tourism development on growth suggest the need to reassess the context-specific factors affecting tourism's role in ASEAN countries (Adnan Hye & Ali Khan, 2013; Balaguer & Cantavella-Jordá, 2002; Brida et al., 2016; Nunkoo et al., 2020; Raifu & Afolabi, 2024; Tang & Tan, 2017). The FDI-growth nexus by Borensztein et al. (1998) underscores the benefits of FDI, such as technology transfer and increased productivity, consistent with the paper's conclusions about FDI's positive impact (Iamsiraroj, 2016). Finally, the renewable energy-growth relationship, first mention by Apergis and Payne (2010), explores how renewable energy consumption affects economic growth; the paper's findings that renewable energy consumption does not significantly impact growth highlight the complex dynamics and potential for indirect effects, such as environmental sustainability and energy security, which may not be immediately evident in economic indicators.

4. Results and discussion

Stationarity tests

In order to estimate the ARDL model as a panel, the analytical process must first check that the variables are stationary across the entire sample. The autoregressive vector (VAR) model is used to estimate short-term dynamics when handling I(0) series. By treating the series as level, we

proceed to estimate the panel ARDL model if the series are either I(0) and I(1) or just I(1). Table 3 lists the outcomes of tests used to determine stationarity, including Fisher-Augmented Dickey Fuller (Fisher-ADF) and Phillips Perron (PP). An empirical literature review of the various unit root tests used will be covered in the section that follows. Two series at level, specifically GDPP, TNN, CRE, and FDI, show evidence of stationarity, according to the analysis's findings. In the case of CRE, stationarity in the first difference is observed. This makes it possible for us to use the panel ARDL model.

Table 3: Stationarity for each variable

variable		GDPP	TNN	CRE	FDI
Fisher-ADF Statistic I(0)	P	45.1035**	62.9987*	22.9552	42.4748**
	p-value	(0.0011)	(0.0000)	(0.2910)	(0.0024)
	Z	-3.7827*	-5.2399*	1.3127	-3.0607**
	p-value	(0.0001)	(0.0000)	(0.9054)	(0.0011)
	L*	-3.6673*	-5.3866*	1.7109	-3.1719**
	p-value	(0.0003)	(0.0000)	(0.9536)	(0.0012)
	Pm	3.9692*	6.7985*	0.4673	3.5536*
	p-value	(0.0000)	(0.0000)	(0.3202)	(0.0002)
Fisher-PP Statistic I(0)	P	6.5107	13.9566	4.5834	26.7709
	p-value	(0.9980)	(0.8327)	(0.9999)	(0.1418)
	Z	2.3447	0.3322	4.6905	0.5710
	p-value	(0.9905)	(0.6301)	(1.0000)	(0.7160)
	L*	2.2576	0.3293	5.4901	0.5233
	p-value	(0.9860)	(0.6284)	(1.0000)	(0.6986)
	Pm	-2.1328	-0.9555	-2.4376	1.0706
	p-value	(0.9835)	(0.8304)	(0.9926)	(0.1422)
Fisher-ADF Statistic I(1)	P	136.4916*	56.2144*	66.9420*	177.5652*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	Z	-9.6404*	-4.7948*	-4.0725*	-11.4031*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L*	-12.0089*	-4.7953*	-5.0264*	-15.6263*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	Pm	18.4189*	5.7260	7.4222*	24.9132*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Fisher-PP Statistic I(1)	P	101.7151*	111.8217*	74.9084*	439.5817*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	Z	-7.8254*	-8.2305	-4.0226*	-19.3143*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	L*	-8.9270*	-9.8026*	-5.1733*	-38.6862*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	Pm	12.9203*	14.5183*	8.6818*	66.3417*
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note:
* P ⩽ 1%
** P ⩽ 5%
*** P ⩽ 10%

Source: Author’s Elaboration

The optimal lag selection

The primary goal of this optimal lag selection is to identify the optimal lag number for the ARDL (p, q, q, q) model, which requires a comprehensive data analysis. To advance our research, we rely on the interpretation of results from various estimators, such as MG, PMG, and DFE. The optimal lags for the ASEAN countries are documented in Table 4 and can be used for reference. These lags are the most common among the chosen countries. To ensure precision in selecting the most frequently occurring number across all countries and variables, we referred to the AIC criterion in our decision-making process. After thoughtful evaluation, we chose (2 1 1 1) as the ARDL model.

Table 4: The optimal lag selection

Variables	**GDPP**	**TTA**	**CRE**	**FDI**
	ARDL(p,q,q,q)			
Countries				
Brunei Darussalam	1	0	0	0
Cambodia	1	0	1	0
Indonesia	1	1	0	1
Lao PDR	2	0	0	0
Malaysia	1	0	0	0
Myanmar	2	1	1	0
Philippines	1	0	1	0
Singapore	1	0	0	1
Thailand	2	0	0	0
Vietnam	1	1	1	0

Source: Author's Elaboration

Empirical Results

This study employs three estimators, MG, PMG, and DEF, to analyse the long-run relationship between TTA, CRE, FDI, and GDPP. The analysis is based on a panel dataset of 10 ASEAN countries over the period 2000-2020. Table 5 is the designated table for the presentation of these results.

Table 5: MG, PMG and DEF estimators: empirical results

Variables	Economic growth: GDPP (dependent variables)		
	MG	PMG	DEF
Long-Run Coefficients			
ln(TTA)	-1.3034 (0.271)	-0.0255 (0.237)	0.0535 (0.410)
ln(CRE)	-5.4903 (0.444)	-0.0798 (0.883)	0.796 (0.592)
ln(FDI)	19.9082 (0.290)	0.6693* (0.000)	0.7803** (0.039)

Hausman test	1.68 (0.6414)	0.06 (0.9960)	
ECM	-0.1860*	-0.1085*	-0.0539*
Phi	(0.009)	(0.001)	(0.001)
Short-Run Coefficients			
Dln(TTA)	-0.0602 (0.354)	0.0123 (0.203)	-0.0078** (0.026)
Dln(CRE)	5.7304 (0.379)	4.6863 (0.406)	0.4278 (0.622)
Dln(FDI)	0.1752** (0.035)	0.1991*** (0.064)	0.0473** (0.028)
Constante	3.5352 (0.257)	-0.5757* (0.002)	-0.6633 (0.273)

Note:
* P ⩽ 1%
** P ⩽ 5%
*** P ⩽ 10%

Source: Author's Elaboration

The results reveal a long-run relationship between the variables. The adjustment coefficient (or error correction parameter) is negative and statistically significant at the 1% level, providing strong evidence of the model's reliability. The Hausman test is used to verify the homogeneity of the long-run coefficients. The results indicate that the DEF estimator is superior in terms of consistency and efficiency compared to other estimators. Furthermore, the Hausman test is not statistically significant when comparing the MG, PMG, and DFE estimators, suggesting that the choice between these methods may not be critical. Therefore, the DEF estimator is used to interpret the data and analyse the long-term impacts. The results show that FDI has a positive and statistically significant impact on GDPP in the long run. More specific, an increase of 1% in FDI is associated with a corresponding rise of 0.7803% in GDPP. This relationship indicates that as FDI inflows increase, they contribute to higher economic growth and improved productivity, leading to an overall rise in the GDPP. The significance of this impact underscores the importance of FDI in driving sustainable economic development. By analysing the data, it can be concluded that TTA has a negative impact on GDPP in the short run, but the effect is only significant for a limited period. In conversely, the FDI has a positive impact on GDPP in the short run. Obviously, a 1% increase in TTA and FDI results in decreasing 0.0078% and increasing 0.0473% in ECG, respectively. The TTA can have a negative impact on Gross Domestic Product per capita (GDPP) in the short run, this may be due to the initial strain on local resources and infrastructure, higher costs associated with accommodating a sudden influx of tourists, and potential crowding out of local economic activities. These short-term challenges can outweigh the immediate economic benefits of increased tourism, leading to a temporary decline in GDPP. In summary, the DEF estimator is the most appropriate estimator for analysing

the long-run relationship between TTA, CRE, FDI, and GDPP in ASEAN countries. The findings suggest that FDI is an important driver of long-run ECG in the region, while TTA and FDI have a slightly mixed impact on ECG in the short-run.

It is worth to note that, while the short-term impact of TOD on ECG is unfavourable and negligibly small (-0.0078%, almost zero), the long-term impact is negligible. Increasing tourist spending could potentially spur economic growth by injecting more money into the local economy. This increase in spending can boost revenue for businesses, create jobs, and stimulate further investment in infrastructure and services. The multiplier effect of tourism spending can lead to broader economic benefits, promoting overall economic development and growth. This is contrary to what was found in numerous earlier studies from parts of the world (Scarlett, 2021). Compared with previous studies on ASEAN countries, this observation is dissimilar of those of Öztürk et al. (2019), Tasos et al. (2019), and Li and Sohail (2023). In addition, Aratuo et al. (2019) in the USA, Zhang and Cheng (2019) in China, and Rasool et al. (2021) in five BRICS (Brazil, Russia, India, China and South Africa) countries are just a few of the previous studies mentioned in the literature review section that lack evidence to support the presence of the ECG led by tourism.

Moreover, the relationship between tourism and economic growth among ASEAN countries is complex and multifaceted. This is affirmed by the literature, with tourism acting as a catalyst for economic development. However, this relationship is nuanced, with factors such as foreign investment, inflation, and environmental considerations playing a role in shaping the overall economic impact of tourism (Minoura, 2017; Öztürk et al., 2019b; Pratoomchat, 2020; Saboori & Sulaiman, 2013). Tourism can have a significant positive impact on GDPP, and its contribution can vary widely depending on a variety of factors, including the diversification of the economy, seasonality, reliance on low-skilled labor, income inequality, infrastructure limitations, environmental and cultural concerns, competitive markets, government policies, global influences, and marketing effectiveness. Therefore, it is crucial for policymakers to develop strategies that address these factors and maximise the positive impact of tourism on GDPP while minimising potential negative effects. To achieve this goal, policymakers can implement targeted policies that support sustainable tourism development. Achieving sustainable and inclusive growth through tourism requires policymakers to strike a delicate balance between its benefits and challenges. To enhance the beneficial influence of tourism on economic development, ASEAN countries need to develop comprehensive strategies that

address the following key areas: (1) Invest in infrastructure and provide incentives for eco-friendly practices, (2) Improve service quality through staff training, (3) Promote sustainable practices, (4) Diversify tourism offerings, (5) Enhance regional cooperation, (6) Provide government support, (7) Attract foreign investment, (8) Implement effective marketing strategies and (9) Conduct ongoing research and monitoring. By taking these steps, ASEAN countries can build a more resilient and enduring tourism sector that makes a substantial contribution to regional economic development. In other words, tourism is not a silver bullet for economic growth. ASEAN countries need to carefully consider their unique circumstances and develop tailored strategies to maximise the benefits of tourism while minimising its negative impacts.

The GDPP of the ASEAN countries has been positively impacted by Foreign Direct Investment (FDI). This leads to significant growth due to the infusion of foreign capital, technology transfer, job creation, and improved access to global markets (Fan & Dickie, 2000). FDI fosters efficiency and innovation through increased competition, boosts infrastructure development, and serves as a stable, long-term investment source (Khin & Kim, 2022). This is consistent with the findings of Choong and Khim-Sen Liew (2009), Anwar and Nguyen (2010) and Nguyen (2022) in the literature review section. Nonetheless, it lacks significance in the long-term and short-run. Moreover, government incentives often attract FDI. However, the degree of impact can vary among ASEAN nations depending on their specific circumstances and the quality of their institutions and infrastructure. Effective policies and regulations are crucial to harness FDI's benefits while mitigating potential risks (Thomsen, 1999). ASEAN governments should actively attract and facilitate FDI by providing incentives, streamlining regulations, and creating an investor-friendly environment. This will ensure a consistent flow of foreign capital into their economies, fostering economic growth while boosting technology transfer and job creation. Monitoring and regulation mechanisms should also be in place to manage potential negative impacts and ensure transparency and accountability in FDI processes.

Nonetheless, it lacks significance in the long-term and short run of CRE on GDPP. The outcomes imply that the impact of CRE on ECG is not significant. CRE's impact on GDPP in ASEAN countries can be less pronounced due to various factors. Many of these nations still heavily rely on fossil fuels, and the transition to renewables may be gradual. Additionally, high initial investment costs, subsidies for fossil fuels, energy efficiency priorities, and infrastructure challenges can hinder the immediate economic benefits of renewable energy. The effectiveness

of policies and regulatory frameworks, alongside external factors like global energy prices, further influence the relationship. While the short-term impact may be limited, the long-term benefits, such as reduced energy costs, enhanced energy security, job creation, and environmental sustainability, highlight the importance of pursuing renewable energy strategies in the region. Numerous studies such as Bhattacharya et al. (2016), Iqbal et al. (2022) and Kayani et al. (2023) have demonstrated an abundance of evidence that the use of renewable energy has significant positive effects on economic development. As a result, Southeast Asian nations should develop appropriate policies that are tailored to their specific circumstances in order to encourage the use of renewable energy sources and decrease the consumption of fossil fuels. These policies should prioritise efficiency, cost optimisation, research, technological innovation, human resource development, and funding.

5. Conclusion

The primary objective of this paper is to conduct a thorough analysis of the interactions between TTA, CRE, and FDI and how they affect GDPP. The panel ARDL model is used in our study to examine the impact of different variables on ECG over the short- and long term. Our panel consists of a number of nations from the ASEAN community that we have given careful consideration. This particular time period that we are talking about spans from 2000 to 2020.

The statistical significance of the negative error correction parameter in the findings supports the existence of a long-term relationship. Additionally, it has been demonstrated that the DEF estimator outperforms the other estimators in our study in terms of consistency and effectiveness. The findings show that while the short-term impact of TOD on ECG is unfavourable and negligibly small, the long-term impact is negligible. FDI has a significant positive impact on ECG both in the long run and the short run. The impact of CRE on ECG is not significant. This analysis concludes that FDI is a significant long-term driver of ECG in the region, but TTA has an insignificant mixed influence on ECG and FDI has slightly impact on ECG in the short run.

References

Ali, Q., Yaseen, M. R., Anwar, S., Makhdum, M. S. A., & Khan, M. T. I. (2021). The impact of tourism, renewable energy, and economic growth on ecological footprint and natural resources: A panel data analysis. *Resources Policy*, *74*, 102365.

https://doi.org/10.1016/J.RESOURPOL.2021.102365

Anwar, S., & Nguyen, L. P. (2010). Foreign direct investment and economic growth in Vietnam. Asia Pacific Business Review, 16(1–2), 183–202. https://doi.org/10.1080/10438590802511031

Aratuo, D. N., Etienne, X. L., Gebremedhin, T., & Fryson, D. M. (2019). Revisiting the tourism-economic growth nexus: evidence from the United States. *International Journal of Contemporary Hospitality Management*, *31*(9), 3779–3798. https://doi.org/10.1108/IJCHM-08-2018-0627

Baek, J. (2016). A new look at the FDI–income–energy–environment nexus: Dynamic panel data analysis of ASEAN. *Energy Policy*, *91*, 22–27. https://doi.org/10.1016/J.ENPOL.2015.12.045

Ben Jebli, M., Ben Youssef, S., & Apergis, N. (2019). The dynamic linkage between renewable energy, tourism, CO_2 emissions, economic growth, foreign direct investment, and trade. *Latin American Economic Review*, *28*(1), 1–19. https://doi.org/10.1186/s40503-019-0063-7

Bhatt, P. R. (2014). Foreign direct investment in ASEAN countries, 1990–2012. *Revista Galega de Economía: Publicación Interdisciplinar da Facultade de Ciencias Económicas e Empresariais*, *23*(4), 133–144. https://dialnet.unirioja.es/servlet/articulo?codigo=6957713&info=resumen&idioma=ENG

Bhattacharya, M., Paramati, S. R., Ozturk, I., & Bhattacharya, S. (2016). The effect of renewable energy consumption on economic growth: Evidence from top 38 countries. *Applied Energy*, *162*, 733–741. https://doi.org/10.1016/j.apenergy.2015.10.104

Bhuiyan, M. A., Zhang, Q., Khare, V., Mikhaylov, A., Pinter, G., & Huang, X. (2022). Renewable Energy Consumption and Economic Growth Nexus—A Systematic Literature Review. *Frontiers in Environmental Science*, *10*, 878394. https://doi.org/10.3389/fenvs.2022.878394

Blackburne, E. F., & Frank, M. W. (2007). Estimation of nonstationary heterogeneous panels. *Stata Journal*, *7*(2), 197–208. https://doi.org/10.1177/1536867x0700700204

Chia, S. Y. (1993). Foreign direct investment in ASEAN economies. *Asia-Pacific Development Journal*, *11*(1), 60–102. https://doi.org/10.1142/S011611059300003X

Choong, C.-K., & Khim-Sen Liew, V. (2009). Impact of foreign direct investment volatility on economic growth of asean-5 countries. *Economics Bulletin*, *29*(3), 1829–1841.

Chorn, S., & D. S. (2017). The impact of foreign capital inflow on economic growth in developing countries. *Journal of Finance and Economics*, *5*(3), 128–135. https://doi.org/10.12691/JFE-5-3-5

Destek, M. A. (2016). Renewable energy consumption and economic growth in newly

industrialized countries: Evidence from asymmetric causality test. *Renewable Energy*, *95*, 478–484. https://doi.org/10.1016/J.RENENE.2016.04.049

Dogru, T., Bulut, U., Kocak, E., Isik, C., Suess, C., & Sirakaya-Turk, E. (2020). The nexus between tourism, economic growth, renewable energy consumption, and carbon dioxide emissions: contemporary evidence from OECD countries. *Environmental Science and Pollution Research*, *27*(32), 40930–40948. https://doi.org/10.1007/S11356-020-10110-W/METRICS

Faisal, F., Rahman, S. U., Chander, R., Ali, A., Ramakrishnan, S., Ozatac, N., Ullah, M. N., & Tursoy, T. (2021). Investigating the nexus between GDP, oil prices, FDI, and tourism for emerging economy: Empirical evidence from the novel fourier ARDL and hidden cointegration. *Resources Policy*, *74*(October), 102368. https://doi.org/10.1016/j.resourpol.2021.102368

Fan, X., & Dickie, P. M. (2000). The contribution of foreign direct investment to growth and stability: A post-crisis ASEAN-5 review. *ASEAN Economic Bulletin*, *17*(3), 312–323. https://doi.org/10.1355/ae17-3f

Granger, C. W. J. (1981). Some properties of time series data and their use in econometric model specification. *Journal of Econometrics*, *16*(1), 121–130. https://doi.org/10.1016/0304-4076(81)90079-8

Gyimah, J., Yao, X., Tachega, M. A., Sam Hayford, I., & Opoku-Mensah, E. (2022). Renewable energy consumption and economic growth: New evidence from Ghana. *Energy*, *248*, 123559. https://doi.org/10.1016/J.ENERGY.2022.123559

Heidari, H., Turan Katircioğlu, S., & Saeidpour, L. (2015). Economic growth, CO_2 emissions, and energy consumption in the five ASEAN countries. *International Journal of Electrical Power & Energy Systems*, *64*, 785–791. https://doi.org/10.1016/J.IJEPES.2014.07.081

Iqbal, A., Tang, X., & Rasool, S. F. (2022). Investigating the nexus between CO_2 emissions, renewable energy consumption, FDI, exports and economic growth: Evidence from BRICS countries. *Environment, Development and Sustainability*, *25*(3), 2234–2263. https://doi.org/10.1007/s10668-022-02128-6

Ishikawa, K. (2021). The ASEAN Economic Community and ASEAN economic integration. *Journal of Asian Economic Integration*, *10*(1), 24–41. https://doi.org/10.1080/24761028.2021.1891702

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration — With applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, *52*(2), 169–210. https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x

Kayani, U. N., Sadiq, M., Aysan, A. F., Haider, S. A., & Nasim, I. (2023). The impact of investment, economic growth, renewable energy, urbanisation, and tourism on carbon emissions: Global evidence. *International Journal of Energy Economics and Policy*, *13*(1), 403–412. https://doi.org/10.32479/IJEEP.14042

Khin, T. A., & Kim, H. (2022). Foreign direct investment effect on economic growth in selected Asian countries. *Journal of Korea Research Association of International Commerce*, *22*(6), 121–138. https://doi.org/10.29331/jkraic.2022.12.22.6.121

Kongbuamai, N., Zafar, M. W., Zaidi, S. A. H., & Liu, Y. (2020). Determinants of the ecological footprint in Thailand: the influences of tourism, trade openness, and population density. *Environmental Science and Pollution Research*, *27*(32), 40171–40186. https://doi.org/10.1007/S11356-020-09977-6/METRICS

Law, C. C. H., Zhang, Y., Gow, J., & Vu, X. B. (2022). Dynamic relationship between air transport, economic growth and inbound tourism in Cambodia, Laos, Myanmar and Vietnam. *Journal of Air Transport Management*, *98*, 102161. https://doi.org/10.1016/J.JAIRTRAMAN.2021.102161

Li, P., & Sohail, S. (2023). Does tourism productivity respond to economic growth and CO2 emissions asymmetrically in Asian countries? The implication for sustainability. *Environmental Science and Pollution Research*, *30*(11), 31077–31084. https://doi.org/10.1007/S11356-022-23950-5/METRICS

Li, X., & Liu, X. (2005). Foreign direct investment and economic growth: An increasingly endogenous relationship. *World Development*, *33*(3), 393–407. https://doi.org/10.1016/j.worlddev.2004.11.001

Mahembe, E., & Odhiambo, N. M. (2014). Foreign direct investment and economic growth: A theoretical framework. *Journal of Governance and Regulation*, *3*(2).

Mamingi, N., & Martin, K. (2018). *Foreign direct investment and growth in developing countries: Evidence from the countries of the Organisation of Eastern Caribbean States*. United Nations Economic Commission for Latin America and the Caribbean (ECLAC). https://hdl.handle.net/11362/43952

Miller, A. T., & Kim, A. B. (n.d.). *Defining Economic Freedom*. 19–27.

Nguyen, M. L. T. (2022). Foreign direct investment and economic growth: The role of financial development. *Cogent Business & Management*, *9*(1), 2127193. https://doi.org/10.1080/23311975.2022.2127193

Nkoro, E., & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric Methods*,

5(4), 63–91.

Öztürk, M., Ihtiyar, A., & Aras, O. N. (2019). The Relationship Between Tourism Industry and Economic Growth: A Panel Data Analysis for ASEAN Member Countries. *Perspectives on Asian Tourism*, *Part F184*, 35–58. https://doi.org/10.1007/978-981-13-2463-5_3/COVER

Pesaran, M. H., & Shin, Y. (1999). An Autoregressive Distributed-Lag Modelling Approach to Cointegration Analysis. *Econometrics and Economic Theory in the 20th Century*, 371–413. https://doi.org/10.1017/CCOL521633230.011

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/JAE.616

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621–634. https://doi.org/10.2307/2670182

Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics 68*(1). https://doi.org/10.1016/0304-4076(94)01644-F

Qiang, C. Z., Liu, Y., & Steenbergen, V. (2021). *An investment perspective on global value chains*. https://doi.org/10.1596/978-1-4648-1683-3

Rasool, H., Maqbool, S., & Tarique, M. (2021). The relationship between tourism and economic growth among BRICS countries: a panel cointegration analysis. *Future Business Journal 7*(1), 1–11. https://doi.org/10.1186/S43093-020-00048-3

Scarlett, H. G. (2021). Tourism recovery and the economic impact: A panel assessment. *Research in Globalization*, *3*, 100044. https://doi.org/10.1016/J.RESGLO.2021.100044

Šimelytė, A., & Dudzevičiūtė, G. (2017). Consumption of renewable energy and economic growth. *Cogent Business & Management, 4*(1), 1-10. https://doi.org/10.3846/cbme.2017.048

Sinclair, M. T., & Stabler, M. (1997). *The economics of tourism*. https://doi.org/10.4324/9780203195437

Tasos, S., Sarwar, M., & Waqas, M. (2019). The tourism growth nexus in European and Asian countries: A panel data analysis. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, *43*(2), 151–163. https://gssrr.org/index.php/JournalOfBasicAndApplied/article/view/9775

Phyoe, S. (2015). *International Journal of Business and Administrative Studies*, *1*(4). https://doi.org/10.20469/IJBAS.10002-4

Thomsen, S. (1999). *Southeast Asia: The role of foreign direct investment policies in*

development (1). https://doi.org/10.1787/431857742281

Timothy, D. J. (2010). Supranationalist alliances and tourism: Insights from ASEAN and SAARC. *Tourism Geographies, 6*(3), 250–266. https://doi.org/10.1080/13683500308667956

Wang, M. C., & Wang, C. S. (2018). Tourism, the environment, and energy policies. *Tourism Management, 24*(7), 821–838. https://doi.org/10.1177/1354816618781458

Wong, E. P. Y., Mistilis, N., & Dwyer, L. (2011). A model of Asean collaboration in tourism. *Annals of Tourism Research*, *38*(3), 882–899. https://doi.org/10.1016/j.annals.2010.12.008

Yildirim, J., Sezgin, S., & Öcal, N. (2005). Military expenditure and economic growth in Middle Eastern countries: A dynamic panel data analysis. *Defence and Peace Economics, 16*(4), 283–295. Taylor & Francis Journals. https://doi.org/10.1080/10242690500114751

Zhang, J., & Cheng, L. (2019). Threshold effect of tourism development on economic growth following a disaster shock: Evidence from the Wenchuan Earthquake, P.R. China. *Sustainability, 11*(2), 371. https://doi.org/10.3390/su11020371