International Journal of Computer Information Systems and Industrial Management Applications
ISSN 2150-7988 Volume 18(16s) 2026 pp. 743-769
https://doi.org/10.70917/ijcisim-2026-4593
Article

REVISITING THE TOURISM-LED GROWTH HYPOTHESIS IN THE PHILIPPINES: EVIDENCE FROM AUTOREGRESSIVE DISTRIBUTED LAG MODEL (ARDL) BOUNDS TESTING APPROACH

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Abstract: Tourism has emerged as one of the most dynamic sectors contributing to economic growth in many developing economies. This study revisits the tourism-led growth hypothesis in the Philippines by examining the relationship between tourism expenditure and economic growth using annual time-series data from 1980 to 2022. Employing the Autoregressive Distributed Lag (ARDL) bounds testing approach, the study investigates both the short-run and long-run dynamics between tourism expenditure and Gross Domestic Product (GDP). The results of the unit root tests reveal mixed orders of integration among the variables, justifying the application of the ARDL model. The bounds test confirms the existence of a long-run equilibrium relationship between tourism expenditure and economic growth. The long-run estimation results indicate that tourism expenditure exerts a positive and statistically significant influence on GDP, providing support for the tourism-led growth hypothesis. The error correction model further reveals a significant adjustment mechanism, indicating that deviations from long-run equilibrium are corrected over time. Moreover, the Granger causality analysis identifies a significant unidirectional causal relationship running from economic growth to tourism expenditure, suggesting that economic expansion facilitates tourism sector development. Diagnostic and stability tests confirm the robustness and reliability of the estimated model. Overall, the findings highlight the important role of tourism expenditure in supporting economic activity while demonstrating that sustained economic growth also serves as a foundation for tourism development. The study provides valuable policy insights for strengthening tourism strategies and enhancing the contribution of the tourism sector to sustainable economic growth in the Philippines. .
Keywords: Tourism-led growth hypothesis, tourism expenditure, economic growth, ARDL model, granger causality, Philippines

1. INTRODUCTION

1.1 Background of the Study

Tourism has become one of the most dynamic sectors of the global economy, contributing significantly to economic growth, employment generation, and foreign exchange earnings across both developed and developing countries. Over the past decades, international tourism has expanded rapidly, transforming into a major driver of economic development and structural transformation. The sector stimulates economic activity through direct spending by tourists, as well as indirect and induced effects across multiple industries such as transportation, accommodation, food services, entertainment, and retail (Dwyer, Forsyth, & Wong, 2000). As a result, tourism has attracted considerable attention from policymakers and scholars seeking to understand its macroeconomic implications.

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One of the most widely discussed theoretical propositions in tourism economics is the Tourism-Led Growth Hypothesis (TLGH). This hypothesis posits that the expansion of tourism activities can promote economic growth by generating foreign exchange earnings, increasing investment opportunities, creating employment, and stimulating infrastructure development. The theoretical foundation of the TLGH originates from the export-led growth hypothesis, which argues that economic growth can be achieved through the expansion of export-oriented sectors (Brida, Cortes-Jimenez, & Pulina, 2016; Perles-Ribes et al., 2017). In this framework, tourism is considered a form of invisible export because it generates foreign currency earnings through the consumption of domestic goods and services by international visitors (Brida & Pulina, 2010; Song & Wu, 2022).

The pioneering empirical study of the tourism-led growth hypothesis was conducted by Balaguer and Cantavella-Jorda (2002), who examined the long-run relationship between tourism development and economic growth in Spain. Their econometric analysis demonstrated that the expansion of international tourism contributed significantly to Spain's economic growth through multiplier effects and increased foreign exchange earnings. Their findings established tourism as a potential determinant of long-term economic development and stimulated a large body of subsequent empirical research examining the tourism growth nexus in different countries and regions .

Following this seminal contribution, numerous empirical studies have explored the relationship between tourism and economic growth using different econometric techniques, including cointegration analysis, vector autoregression (VAR), vector error correction models (VECM), and autoregressive distributed lag (ARDL) models. These studies have produced mixed findings. While some research supports the tourism-led growth hypothesis, others identify reverse causality or bidirectional relationships between tourism development and economic performance (Pablo-Romero & Molina, 2013). For instance, studies conducted by Lee and Chang (2008), Katircioglu (2009), and Tang and Tan (2015) provide evidence that tourism can significantly influence economic growth in both developed and developing economies.

Despite the growing empirical literature, the relationship between tourism expenditure and economic growth remains a subject of ongoing debate. Some studies suggest that tourism development can stimulate economic growth through increased employment, foreign exchange inflows, and infrastructure investment. Conversely, other studies argue that economic growth itself may drive tourism expansion by improving infrastructure, increasing income levels, and enhancing international competitiveness. As a result, the direction of causality between tourism and economic growth continues to be an important empirical issue in tourism economics.

In developing countries, tourism is often viewed as a strategic sector capable of accelerating economic development. Tourism can contribute to economic growth through multiple channels, including employment generation, regional development, poverty reduction, and infrastructure improvement. Furthermore, tourism activities often stimulate demand in related industries such as agriculture, construction, manufacturing, and transportation, thereby creating significant multiplier effects within the national economy (Brida, Lanzilotta, & Risso, 2010).

On the other hand, the Philippines represents a compelling case for examining the tourism-growth nexus. As an archipelagic country endowed with diverse natural landscapes, cultural heritage, and biodiversity, the Philippines possesses considerable tourism potential. The tourism industry plays a crucial role in the country's economy by contributing to employment, foreign exchange earnings, and regional development. Over the past decades, the Philippine government has implemented several initiatives aimed at promoting tourism development, including infrastructure investments, destination marketing campaigns, and policy reforms designed to attract international tourists.

However, the tourism sector has also experienced significant fluctuations due to economic crises, natural disasters, and global shocks such as the COVID-19 pandemic. These disruptions highlight the importance of understanding the dynamic relationship between tourism expenditure and economic growth. Empirical evidence on this relationship can provide valuable insights for policymakers seeking to formulate effective tourism strategies and sustainable economic development policies.

Although previous studies have investigated the tourism-growth nexus in different countries, limited research has revisited this relationship in the Philippine context using modern econometric techniques such as the Autoregressive Distributed Lag (ARDL) bounds testing approach. The ARDL methodology offers several advantages in time-series analysis because it allows researchers to estimate both short-run and long-run relationships even when variables are integrated at different orders, provided that none is integrated at order two, I(2) (Pesaran, Shin, & Smith, 2001). Moreover, the ARDL framework enables the estimation of an Error Correction Model (ECM) that captures the speed at which deviations from long-run equilibrium are corrected.

Given these methodological advantages, revisiting the tourism-led growth hypothesis using the ARDL-ECM framework can provide deeper insights into the dynamic relationship between tourism expenditure and economic growth in the Philippines. By examining both short-run and long-run interactions between these variables, the study contributes to the growing literature on tourism economics and offers policy-relevant findings that may guide future tourism development strategies.

1.2 Objective of the Study

The main objective of this study is to revisit the tourism-led growth hypothesis in the Philippines by examining the relationship between tourism expenditure and economic growth from 1980 to 2022. Specifically, the study aims to:

1. Describe the trends of tourism expenditure and economic growth in the Philippines from 1980 to 2022.
2. Determine the stationarity properties of tourism expenditure and economic growth using unit root tests.
3. Examine the existence of a long-run relationship between tourism expenditure and economic growth using the ARDL bounds testing approach.
4. Estimate the short-run dynamics between tourism expenditure and economic growth using the Error Correction Model (ECM).
5. Evaluate whether tourism development contributes to economic growth in the Philippines.
6. Using the Granger causality criterion, provide empirical evidence of the relationship between Tourism Expenditure and Gross Domestic Product (GDP) and test statistically whether causality exists between variables.

1.3 Conceptual Framework

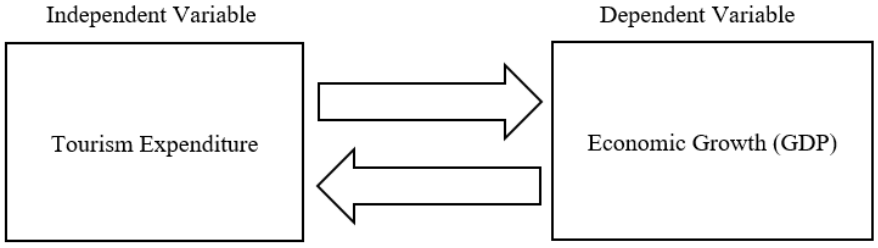

Figure 1: The Conceptual Framework of the Study

1.4 Theoretical Framework

This study is anchored on the Tourism-Led Growth Hypothesis (TLGH), which posits that tourism development can stimulate economic growth through increased foreign exchange earnings, employment generation, infrastructure development, and investment opportunities (Balaguer & Cantavella-Jordá, 2002).

According to this framework, tourism expenditure increases demand for goods and services within the domestic economy. This increased demand stimulates production, generates income for local businesses, and creates employment opportunities. Furthermore, tourism development often encourages governments to invest in infrastructure such as airports, roads, and communication networks, which can enhance economic productivity.

The theoretical foundation of the tourism-led growth hypothesis is closely related to the export-led growth theory. In this context, tourism functions as an export industry because international visitors purchase goods and services within the host country, generating foreign exchange income.

The framework suggests that increased tourism expenditure can lead to higher levels of economic output, which contributes to long-term economic growth.

1.5 Significance of the Study

The findings of this study may provide significant contributions to several stakeholders:

Government and Policymakers. The results help policymakers design effective tourism policies aimed at promoting sustainable economic growth. Understanding the relationship between tourism expenditure and economic performance can assist government agencies in allocating resources efficiently and strengthening tourism infrastructure.

Tourism Industry. The tourism sector can benefit from insights into how tourism expenditure contributes to national economic performance. This information can guide tourism stakeholders in developing marketing strategies, improving tourism services, and enhancing destination competitiveness.

Academic Researchers. The study contributes to the growing body of literature on tourism economics by revisiting the tourism-led growth hypothesis using the ARDL-ECM framework. Future researchers may build upon the findings of this study by incorporating additional variables such as tourism arrivals, exchange rates, and foreign direct investment.

Local Communities. Tourism development can generate employment opportunities and stimulate local economic activity. By providing empirical evidence on tourism's economic contribution, this study may support initiatives aimed at promoting inclusive and sustainable tourism development.

2. Review of Related Literature

2.1 Tourism and Economic Growth

Tourism has become one of the most significant sectors in the global economy, contributing to economic development through employment generation, foreign exchange earnings, and infrastructure development. Over the past several decades, the tourism industry has grown rapidly and has become an important component of national development strategies, particularly in developing economies. According to Dwyer, Forsyth, and Wong (2000), tourism stimulates economic growth through direct, indirect, and induced effects across multiple sectors such as transportation, accommodation, retail trade, and entertainment. These multiplier effects make tourism a powerful driver of economic expansion.

Tourism contributes to economic growth by increasing demand for goods and services within the domestic economy. International tourists spend on accommodation, transportation, food, and recreational services, which generates income for local businesses and stimulates production across related industries (Brida, Cortés-Jiménez, & Pulina, 2016). Additionally, tourism can generate foreign exchange earnings, which improve a country's balance of payments and provide capital for economic development (Lee & Chang, 2008).

In developing economies, tourism is often considered a strategic sector capable of accelerating economic growth. Tourism development can reduce unemployment, improve infrastructure, and stimulate regional development. According to Croes and Vanegas (2008), tourism development may lead to increased productivity and capital accumulation, which contribute to long-term economic growth. Moreover, tourism has the potential to reduce poverty by creating income opportunities for local communities, particularly in rural areas where alternative economic activities may be limited (Scheyvens, 2007).

However, tourism development can also generate economic challenges. Scholars have pointed out that tourism-dependent economies may face issues such as seasonal employment, income inequality, and environmental degradation (Hunter & Green, 1995). Furthermore, excessive reliance on tourism can make economies vulnerable to external shocks such as financial crises, natural disasters, and global pandemics (Hall, Scott, & Gössling, 2020).

Despite these challenges, tourism remains a key sector in many national development strategies. As a result, the relationship between tourism and economic growth has become an important research topic in tourism economics.

2.2 Tourism-Led Growth Hypothesis

One of the most widely discussed theoretical perspectives explaining the relationship between tourism and economic growth is the Tourism-Led Growth Hypothesis (TLGH). This hypothesis suggests that tourism expansion can stimulate economic growth through several mechanisms, including foreign exchange earnings, employment generation, investment in infrastructure, and increased government revenue (Brida & Pulina, 2010).

The tourism-led growth hypothesis is derived from the export-led growth theory, which posits that economic growth can be driven by the expansion of export-oriented industries (Balaguer & Cantavella-Jordá, 2002). Tourism can be considered an export sector because international tourists consume domestic goods and services, generating foreign exchange income for the host country (Song & Wu, 2022).

Balaguer and Cantavella-Jordá (2002) conducted one of the earliest empirical studies testing the tourism-led growth hypothesis using Spain as a case study. Their findings revealed that tourism development contributed significantly to economic growth in the long run. The study demonstrated that tourism could stimulate economic expansion through increased foreign exchange earnings and employment opportunities.

Similarly, Lee and Chang (2008) examined the relationship between tourism development and economic growth across 55 countries using panel data analysis. Their results indicated that tourism development had a positive and significant effect on economic growth, particularly in non-OECD countries. The authors concluded that tourism plays a crucial role in economic development, especially in developing economies where tourism revenues represent a substantial share of national income.

Brida, Lanzilotta, and Risso (2010) also investigated the tourism-led growth hypothesis in Uruguay and found evidence of a long-run relationship between tourism development and economic growth. Their findings suggested that tourism can act as a catalyst for economic development by stimulating investment and increasing economic productivity.

Despite substantial evidence supporting the tourism-led growth hypothesis, empirical findings across countries remain mixed. Some studies have found evidence of reverse causality, suggesting that economic growth may stimulate tourism development rather than the other way around (Oh, 2005). In other cases, researchers have found bidirectional relationships between tourism and economic growth, indicating a mutually reinforcing relationship between the two variables (Tang & Tan, 2015).

2.3 Economic-Driven Tourism Growth Hypothesis

In contrast to the tourism-led growth hypothesis, the Economic-Driven Tourism Growth Hypothesis (EDTG) suggests that economic growth itself can stimulate tourism development. According to this perspective, improvements in infrastructure, income levels, and technological development resulting from economic growth may enhance a country's ability to attract tourists (Oh, 2005).

Economic growth can influence tourism development by improving transportation networks, hospitality infrastructure, and tourism facilities. Higher income levels also increase domestic tourism demand and improve the quality of tourism services offered to international visitors (Katircioglu, 2009).

For example, Oh (2005) examined the relationship between tourism and economic growth in South Korea and found that economic growth drove tourism expansion rather than tourism leading economic growth. Similarly, Payne and Mervar (2010) found that economic development played a key role in tourism growth in Croatia.

2.4 Feedback Hypothesis

Another perspective explaining the relationship between tourism and economic growth is the feedback hypothesis, which suggests that tourism and economic growth influence each other simultaneously. In this framework, tourism development stimulates economic growth, while economic growth also contributes to tourism expansion.

Empirical studies supporting the feedback hypothesis have been conducted in several countries. For instance, Dritsakis (2004) found evidence of bidirectional causality between tourism development and economic growth in Greece. Similarly, Kim, Chen, and Jang (2006) reported a reciprocal relationship between tourism expansion and economic growth in Taiwan.

The feedback hypothesis implies that tourism and economic growth reinforce each other, creating a virtuous cycle of economic development and tourism expansion.

2.5 Empirical Studies on Tourism and Economic Growth

Numerous empirical studies have examined the tourism-growth relationship using different econometric approaches. These studies have produced diverse findings depending on the country context, time period, and methodology used.

Lee and Chang (2008) conducted a panel study covering 55 countries and found that tourism development significantly influenced economic growth, particularly in developing countries. Their study emphasized the importance of tourism as a strategic sector for economic development.

Tang and Tan (2015) examined the tourism-growth nexus in Malaysia using the ARDL bounds testing approach and found evidence supporting the tourism-led growth hypothesis. Their results indicated that tourism development had both short-run and long-run effects on economic growth.

Similarly, Katircioglu (2009) investigated the tourism-growth relationship in Turkey using the ARDL model and found that tourism development contributed to long-term economic growth.

Brida et al. (2016) conducted a comprehensive review of tourism-growth studies and found that the majority of empirical research supports the tourism-led growth hypothesis. However, they also noted that the direction of causality may vary across countries depending on economic conditions and tourism development levels.

2.6 Tourism and Economic Growth in the Philippines

Tourism plays a vital role in the Philippine economy by generating employment, foreign exchange earnings, and investment opportunities. The country's rich natural resources, cultural heritage, and biodiversity make it an attractive destination for international tourists.

Several studies have examined the economic impact of tourism in the Philippines. Dollery and Peiris (2000) highlighted the contribution of tourism to employment generation and economic development. Their study emphasized the importance of tourism infrastructure and government support for sustainable tourism development.

More recent research has also examined the relationship between tourism development and economic growth in the Philippines. Baltazar (2019) conducted a time-series analysis and found evidence of a causal relationship between tourism expenditure and economic growth. Similarly, Cruz, Baltazar, and Cruz (2019) found that tourism development significantly contributed to employment creation and economic expansion in the country.

Despite these findings, empirical research on the tourism-growth nexus in the Philippines remains relatively limited compared to other countries. Moreover, few studies have revisited the tourism-led growth hypothesis using modern econometric techniques such as the ARDL bounds testing approach.

2.7 Synthesis of Literature and Research Gap

The existing literature suggests that tourism development can contribute significantly to economic growth. Numerous empirical studies support the tourism-led growth hypothesis, indicating that tourism expansion can stimulate economic development through increased foreign exchange earnings, employment opportunities, and infrastructure development.

However, empirical findings remain mixed across countries. Some studies support the tourism-led growth hypothesis, while others find evidence of reverse causality or bidirectional relationships between tourism and economic growth.

In the Philippine context, empirical research on the tourism-growth nexus remains limited. Although previous studies have examined the relationship between tourism development and economic growth, few studies have revisited this relationship using modern econometric techniques such as the ARDL bounds testing approach.

Therefore, this study aims to fill this research gap by revisiting the tourism-led growth hypothesis in the Philippines using the ARDL-ECM framework. By examining both short-run and long-run relationships between tourism expenditure and economic growth, the study provides updated empirical evidence that may inform tourism policy and economic development strategies.

3. METHODOLOGY

3.1 Research Design

This study adopts a quantitative explanatory research design using time-series econometric techniques to investigate the dynamic relationship between tourism expenditure and economic growth in the Philippines. Quantitative research designs are appropriate for studies that aim to test economic relationships using numerical data and statistical modeling (Creswell, 2014). In the context of macroeconomic analysis, econometric models are widely used to evaluate causal relationships and long-run equilibrium interactions among economic variables (Gujarati & Porter, 2009).

The present study specifically employs the Autoregressive Distributed Lag (ARDL) bounds testing approach, which allows the estimation of both short-run and long-run relationships between variables. The ARDL framework is particularly suitable for time-series datasets with relatively small sample sizes and variables integrated at different orders, provided that none of the variables is integrated of order two, I(2) (Pesaran, Shin, & Smith, 2001).

This methodology has been widely applied in empirical tourism-growth studies because it enables researchers to identify equilibrium relationships while simultaneously capturing short-run adjustments through an Error Correction Model (ECM) (Tang & Tan, 2015; Katircioglu, 2009). By adopting this framework, the study revisits the tourism-led growth hypothesis in the Philippine context and provides empirical evidence on the long-run and short-run interactions between tourism expenditure and economic growth.

3.2 Data Sources

The study utilizes annual secondary time-series data covering the period 1980–2022. The selection of this time frame is based on the availability of consistent macroeconomic data for both tourism expenditure and economic growth in the Philippines.

Two variables are included in the analysis:

Economic Growth (GDPG). Economic growth is measured using the annual growth rate of Gross Domestic Product (GDP). GDP growth is one of the most widely used indicators of macroeconomic performance because it reflects the expansion of economic activity within a country (Barro & Sala-i-Martin, 2004). Data for GDP growth were obtained from the World

Bank's World Development Indicators (WDI) database. Tourism Expenditure (TE). Tourism development is proxied by tourism expenditure, which represents the total spending of tourists within the destination economy. Tourism expenditure captures the economic contribution of tourism activities because it includes spending on accommodation, transportation, food services, and recreational activities (UNWTO, 2022). Data on tourism expenditure were obtained from the World Tourism Organization (UNWTO) database.

These sources are widely recognized for their reliability and have been extensively used in empirical tourism research (Lee & Chang, 2008; Brida et al., 2016).

3.3 Data Gathering Procedure

The data gathering process followed a systematic procedure to ensure accuracy and consistency.

First, the researcher accessed the World Bank World Development Indicators (WDI) database to retrieve the annual GDP growth rate of the Philippines from 1980 to 2022. Second, the tourism expenditure data were obtained from the World Tourism Organization (UNWTO) database for the same period.

After collecting the data, the researcher organized the dataset into a structured time-series format using spreadsheet software. Data cleaning procedures were conducted to verify the consistency of measurement units and eliminate potential data entry errors. Missing values were checked and cross-verified using alternative official sources to ensure completeness of the dataset.

Finally, the dataset was imported into econometric software for statistical analysis. Prior to estimation, preliminary descriptive analysis and graphical inspection were conducted to observe the trends and patterns of the variables across time.

3.4 Data Validation

To ensure the reliability and credibility of the research procedures, the study adopted an expert validation approach. Expert validation is commonly used in academic research to evaluate the appropriateness of research instruments, methodological procedures, and analytical frameworks (Hair et al., 2019).

In this study, the research design, variable selection, and econometric modeling approach were reviewed by experts in econometrics, tourism economics, and statistical analysis. The experts evaluated the methodological framework to determine whether the chosen models and statistical techniques were appropriate for addressing the research objectives.

The validation process focused on the following aspects:

- Appropriateness of the selected variables in explaining the tourism-growth relationship
- Suitability of the ARDL bounds testing approach for the time-series dataset
- Correct specification of econometric equations
- Adequacy of diagnostic tests to ensure model validity

Feedback from the expert reviewers was incorporated into the final research design. This process helped strengthen the methodological rigor of the study and ensured that the econometric procedures were aligned with established research standards.

3.5 Statistical Model

A. Autoregressive Distributed Lag (ARDL) Model

To examine the relationship between tourism expenditure and economic growth, the study employs the Autoregressive Distributed Lag (ARDL) model proposed by Pesaran, Shin, and Smith (2001). The ARDL approach allows the estimation of both short-run and long-run dynamics between variables regardless of whether they are integrated at level I(0) or first difference I(1).

The general ARDL(p,q) model can be expressed as:

$$\boldsymbol{GDPGt} = \propto_{\mathbf{0}} + \sum_{i=1}^{P} \propto_{i} \boldsymbol{GDPG_{t-i}} + \sum_{j=0}^{q} \boldsymbol{\beta_j}\ \boldsymbol{TE_{t-j}} + \boldsymbol{\varepsilon_t}$$

Where;

GDPG = Economic growth (GDP growth rate)

TE = Tourism expenditure

P = lag length for the dependent variable

q = lag length for the independent variable

$\boldsymbol{\varepsilon}$ = error term

The ARDL model captures both the lagged effects of economic growth and tourism expenditure over time.

B. Unit Root Test

Before estimating the ARDL model, the stationarity properties of the variables must be examined to ensure that none of the series is integrated of order two, I(2). This study uses the Augmented Dickey-Fuller (ADF) unit root test developed by Dickey and Fuller (1981).

The ADF regression equation is expressed as:

$$\Delta \boldsymbol{Y}_t = \alpha + \boldsymbol{\beta}_t + \gamma \boldsymbol{Y}_{t-1} + \sum_{i=1}^{k} \boldsymbol{\delta_i}\ \Delta \boldsymbol{Y_{t-i}}\ \boldsymbol{\varepsilon_t}$$

Where:

$\Delta \boldsymbol{Y}_t$ = First difference of the variable

t = time trend

k = lag length

$\boldsymbol{\varepsilon}$ = white noise error term

The null hypothesis of the ADF test is:

$$\boldsymbol{H}\text{o} : \gamma = 0$$

which indicates that the series contains a unit root. If the null hypothesis is rejected, the series is considered stationary.

Unit root testing is an essential step in time-series analysis because non-stationary variables may lead to spurious regression results (Gujarati & Porter, 2009).

C. ARDL Bound Test for Cointegration

Once the order of integration is determined, the study applies the ARDL Bounds Testing Approach to test for the existence of a long-run equilibrium relationship between tourism expenditure and economic growth.

The unrestricted error correction representation of the ARDL model is written as:

$$\Delta \boldsymbol{GDPG}_t = \propto_{\mathbf{0}} + \sum_{i=1}^{P} \propto_{i} \boldsymbol{GDPG_{t-i}} + \sum_{j=0}^{q} \boldsymbol{\beta_j}\ \Delta \boldsymbol{TE_{t-j}} + \boldsymbol{\gamma_1 GDPG_{t-1}} +$$

$$\boldsymbol{\gamma_2 GDPG_{t-1}} + \boldsymbol{\varepsilon_t}$$

The null hypothesis of no cointegration is:

$$Ho = \gamma_1 - \gamma_2 = 0$$

The alternative hypothesis is:

$$H_1 = \gamma_1 \neq 0 \; or \; \gamma_2 \neq 0$$

The calculated F-statistic is compared with the critical bounds values provided by Pesaran et al. (2001). If the computed F-statistic exceeds the upper bound critical value, the null hypothesis of no cointegration is rejected.

D. Error Correction Model (ECM)

If cointegration exists, the short-run dynamics are estimated using the Error Correction Model (ECM). The ECM captures the speed at which deviations from long-run equilibrium are corrected.

The ECM specification is given as:

$$\Delta GDPG_t = \propto_0 + \sum_{i=1}^{P-1} \propto_i \Delta GDPG_{t-i} + \sum_{j=0}^{q-1} \beta_j \Delta TE_{t-j} + \lambda_1 ECM_{t-1} + \varepsilon_t$$

Where:

ECM_{t-1} = lagged error correction term derived from the long-run equation

λ = speed of adjustment coefficient

The coefficient λ must be negative and statistically significant to confirm that the system converge towards long-run equilibrium (Engle & Granger, 1987).

E. Diagnostic Tests

To ensure the reliability and stability of the ARDL-ECM model, several post-estimation diagnostic tests are conducted.

Serial Correlation Test (Breusch-Godfrey LM Test)

Serial correlation occurs when error terms are correlated across time periods. The Breusch-Godfrey LM test is used to detect autocorrelation in the residuals (Breusch, 1978).

Heteroskedasticity Test (White Test)

The White test is employed to examine whether the variance of the residuals remains constant across observations (White, 1980). Heteroskedasticity may lead to inefficient parameter estimates and biased standard errors.

Model Stability Tests (CUSUM and CUSUMSQ)

Model stability is evaluated using the CUSUM (Cumulative Sum of Recursive Residuals) and CUSUMSQ (Cumulative Sum of Squares) tests developed by Brown, Durbin, and Evans (1975). These tests examine whether the estimated coefficients remain stable throughout the sample period.

Granger Causality Test

When conducting economic analysis, it is critical to understand whether changes in one variable will affect changes in other variables. The Granger causality test will be used in this study to investigate this phenomenon. Granger's (1969, 1980) standard Granger causality test is widely used to determine whether past changes in one variable help explain current changes in other variables.

4. RESULTS AND DISCUSSION

4.1 Presentation of Time Series Data of Gross Domestic Product (growth rate) from the Period 1980 – 2022

Figure 1 presents the time series trend of the Gross Domestic Product (GDP) growth rate of the Philippines from 1980 to 2022. The trajectory of GDP growth over the period reveals several episodes of economic expansion and contraction that reflect both domestic structural changes and global economic shocks. Overall, the figure illustrates a long-term upward trend in economic growth punctuated by significant downturns during periods of economic crisis.

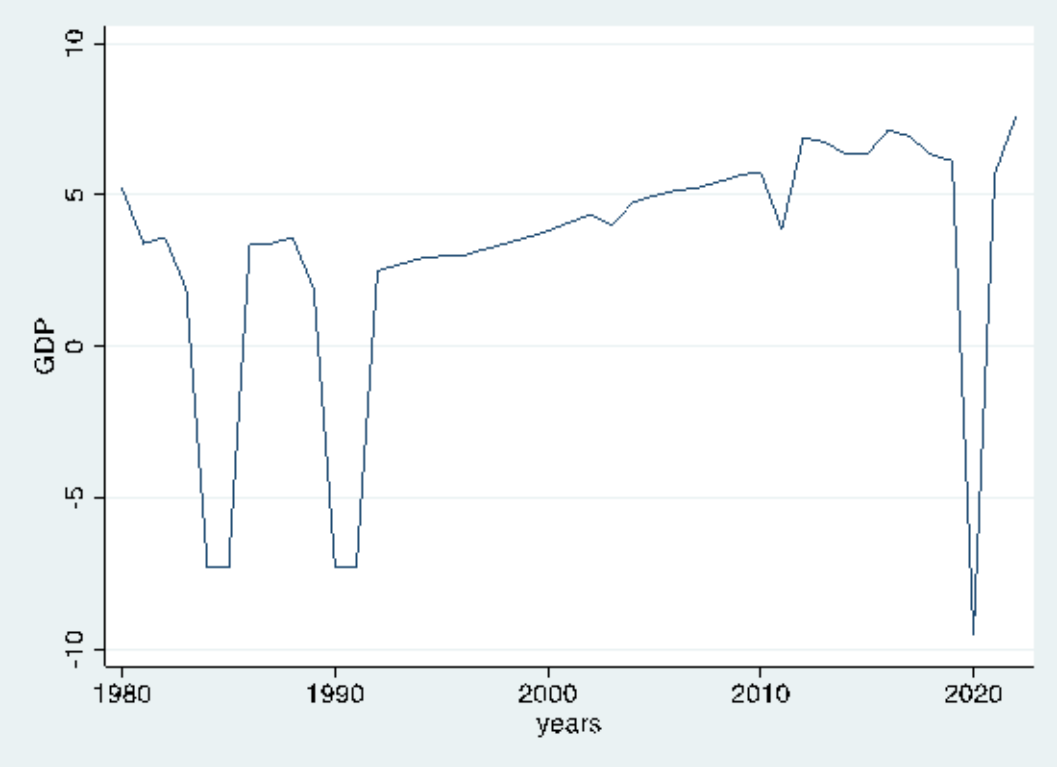

Figure 1. Time Series Data of Gross Domestic Product from the 1980-2022

During the early 1980s, the Philippine economy experienced moderate growth, with GDP growth rates fluctuating between approximately three and five percent. However, a sharp economic contraction occurred around 1984–1985, where the GDP growth rate dropped significantly into negative territory. This downturn corresponds to the Philippine economic crisis during the final years of the Marcos administration, characterized by political instability, rising external debt, and declining investor confidence. The debt crisis and macroeconomic imbalances triggered a severe recession, which resulted in a substantial decline in economic output during this period (Balisacan & Hill, 2003).

Following the political transition after the 1986 People Power Revolution, the Philippine economy gradually recovered. The late 1980s and early 1990s show a period of economic stabilization, although another decline in growth is observed around 1991–1992. This contraction can be partly attributed to several adverse economic shocks, including the 1990 Luzon earthquake, the 1991 eruption of Mount Pinatubo, and persistent power supply shortages that significantly disrupted economic activity (Cororaton & Abeysinghe, 2005). These events contributed to a temporary slowdown in economic production and investment.

In addition, from the mid-1990s to the early 2000s, the Philippine economy exhibited a steady recovery and moderate growth trajectory. Economic reforms, trade liberalization, and structural adjustments contributed to improving macroeconomic performance during this period. Growth continued to strengthen through the early 2000s as the country benefited from increased foreign investment, expansion of the services sector, and rising remittances from overseas Filipino workers, which became an important driver of domestic consumption (Balisacan, 2007).

While, a temporary decline in GDP growth is also observable around 2008–2009, which corresponds to the global financial crisis. Although the Philippine economy was less severely affected than many advanced economies, the global downturn reduced external demand, slowed investment flows, and created uncertainty in financial markets, leading to a moderate slowdown in economic growth (Asian Development Bank, 2010).

The Philippine economy entered a period of relatively strong growth between 2010 and 2019, where GDP growth consistently remained above five percent and peaked at around six to seven percent in several years. This period of sustained expansion was largely driven by strong domestic consumption, improvements in macroeconomic stability, rapid growth in the services sector, and increased infrastructure investment under government development programs (World Bank, 2019). Tourism, business process outsourcing (BPO), and remittances from overseas workers played a crucial role in supporting economic expansion during this period.

The most pronounced decline in the figure occurs in 2020, where GDP growth dropped sharply into negative territory. This contraction reflects the severe economic impact of the COVID-19 pandemic, which disrupted global supply chains, restricted mobility, and significantly reduced economic activity across multiple sectors, including tourism, transportation, and retail services. The Philippine economy experienced one of its deepest recessions in decades due to strict lockdown measures and reduced international travel (International Monetary Fund, 2021).

Following this downturn, the figure shows signs of economic recovery in 2021–2022, as GDP growth rebounded strongly. This recovery was supported by the gradual reopening of the economy, increased vaccination coverage, improved consumer confidence, and the resumption of domestic and international economic activities. Government fiscal stimulus measures and infrastructure investments also contributed to the recovery of economic growth during the post-pandemic period.

Overall, the time series pattern depicted in Figure 1 highlights the resilience of the Philippine economy despite periods of significant economic disruption. The long-term upward trend suggests that structural economic reforms, expanding service industries, and increasing integration with the global economy have played an important role in sustaining economic growth over the past four decades.

4.2 Presentation of Time Series Data of Tourism Expenditure from the Period 1980 – 2022

Figure 2 illustrates the time series trend of tourism expenditure in the Philippines from 1980 to 2022. The figure reveals a generally upward trajectory in tourism spending over the four-decade period, reflecting the gradual expansion of the tourism sector as an important component of the Philippine economy. However, the pattern also exhibits several fluctuations that correspond to both domestic events and global economic conditions affecting tourism demand.

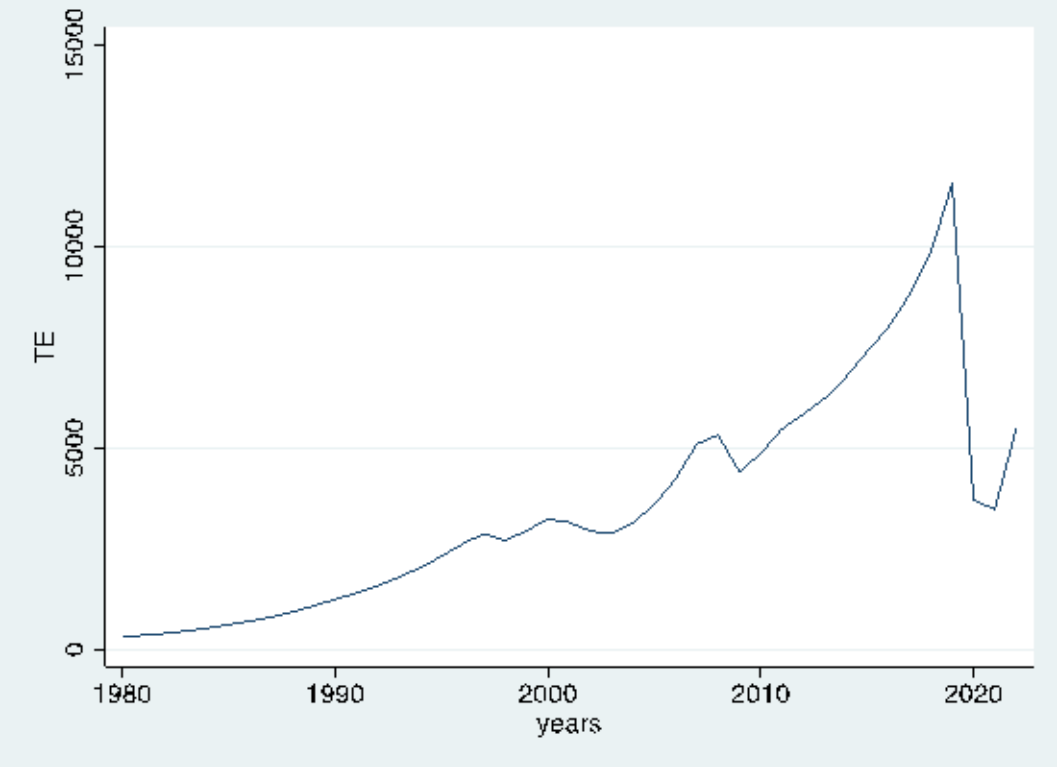

Figure 1. Time Series Data Tourism Expenditure from the 1980-2022

In the early years of the observation period, particularly from 1980 to the late 1980s, tourism expenditure remained relatively low and increased only gradually. This limited growth can be attributed to the relatively underdeveloped tourism infrastructure and the political and economic instability that characterized the Philippines during the early 1980s. During this period, the country experienced economic recession and political unrest associated with the debt crisis and the transition of political leadership in the mid-1980s. These conditions discouraged international travel and investment in tourism-related industries, resulting in modest tourism spending levels (Balisacan & Hill, 2003).

Beginning in the 1990s, tourism expenditure started to increase steadily as the Philippine government initiated several tourism development initiatives aimed at promoting the country as an international travel destination. Improvements in transportation infrastructure, hotel capacity, and tourism promotion campaigns contributed to the gradual expansion of tourism activity. The growth of the global tourism industry during the 1990s also supported the increase in tourism spending across many developing countries, including the Philippines (World Tourism Organization, 2019).

A noticeable increase in tourism expenditure can be observed during the late 1990s and early 2000s, reflecting the continued development of the Philippine tourism industry and the rising importance of international travel. During this period, tourism benefited from increased globalization, improvements in air travel connectivity, and the growing middle class in several Asian economies, which stimulated regional tourism demand. Despite this general upward trend, minor fluctuations appear around the early 2000s, which may be associated with global economic uncertainties and security concerns that temporarily affected international tourism flows.

The figure shows a more pronounced acceleration in tourism expenditure beginning in the mid-2000s and continuing through the 2010s. This period corresponds with the strengthening of the Philippine tourism sector and the implementation of national tourism promotion strategies such as the “It’s More Fun in the Philippines” campaign, which significantly enhanced the country’s international tourism visibility. The rapid growth in tourism spending

during this period was also supported by improvements in airport infrastructure, increased international flight routes, and the expansion of hospitality and tourism services (World Bank, 2019). As a result, tourism expenditure reached its highest level around 2019, reflecting a peak in tourism activity prior to the global health crisis.

A dramatic decline in tourism expenditure occurs in 2020, representing one of the most significant disruptions in the history of the tourism sector. This sharp drop corresponds to the global outbreak of the COVID-19 pandemic, which severely restricted international travel and tourism activities worldwide. Border closures, travel restrictions, and lockdown measures resulted in an unprecedented collapse in tourism demand, affecting both domestic and international tourism markets (International Monetary Fund, 2021; United Nations World Tourism Organization, 2021). The Philippine tourism sector experienced substantial losses during this period as travel bans and mobility restrictions halted tourism operations.

Following this decline, the figure indicates a partial recovery in tourism expenditure in 2021 and 2022, suggesting the gradual reopening of the tourism sector as global travel restrictions were eased and vaccination programs were implemented. The recovery of tourism expenditure reflects the resilience of the tourism industry and the gradual restoration of consumer confidence in international travel. Government initiatives aimed at reviving the tourism sector, along with the reopening of tourism destinations and the resumption of international flights, contributed to the rebound in tourism spending during the post-pandemic period.

Overall, the long-term upward trend observed in Figure 2 highlights the growing importance of tourism expenditure as a contributor to economic activity in the Philippines. The expansion of tourism spending over time reflects the increasing integration of the Philippine tourism industry into the global tourism market and its potential role as a driver of economic growth. The fluctuations observed in the figure also demonstrate the sensitivity of tourism expenditure to external shocks such as economic crises, natural disasters, and global pandemics, which can significantly influence tourism demand and economic performance.

4.3 Descriptive Statistics

Table 1. The Descriptive Statistics Results of Variances

Variable	Mean	Std. Dev	Minimum	Maximum
GDP	3.144884	4.268786	-9.5	7.6
TE	3556.093	2740.767	298	11557

The descriptive statistics provide preliminary insights into the behavior of the variables across the sample period. GDP represents the level of economic activity in the country, while tourism expenditure reflects spending generated by tourism activities. Tourism is widely recognized as a major driver of economic activity, particularly in developing economies where tourism receipts contribute to foreign exchange earnings, employment creation, and infrastructure development (Balaguer & Cantavella-Jordá, 2002).

4.4 Test of Stationarity (Unit Root Test)

Before estimating the ARDL model, it is necessary to examine the stationarity properties of the variables. Time-series variables often exhibit stochastic trends, which can lead to spurious regression results if not properly addressed. To determine the order of integration, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests were employed. These tests are widely used to examine whether a variable contains a unit root (Dickey & Fuller, 1981; Phillips & Perron, 1988).

Table 2. Unit Root Test Results

Variable	ADF Level	ADF First Diff	PP Level	PP First Diff	Order

GDP	-2.698	-5.045***	-3.950***	-8.580***	1(0) | 1(1)
lnTE	-2.653	-2.057	-2.535	-5.539***	1(1)

*** *significant at 1%*.

The results indicate that GDP is stationary at level according to the Phillips-Perron test, while tourism expenditure becomes stationary after first differencing. Consequently, GDP is integrated of order zero I(0) while tourism expenditure is integrated of order one I(1). The mixed order of integration satisfies the conditions required for applying the Autoregressive Distributed Lag model, which allows variables to be integrated at I(0) or I(1) but not I(2) (Pesaran, Shin, & Smith, 2001).

4.5 Lag Length Selection Model

Table 3. Lag Length Selection Criteria

Lag	Log Likelihood	AIC	HQIC	SBIC	FPF
0	-148.879	7.737	7.768	7.823	7.859
1	-88.695	4.856	4.948	5.112*	0.441
2	-82.688	4.753	4.906	5.180	0.399
3	-75.280	4.578	4.793	5.176	0.336
4	-69.628	4.494*	4.769*	5.262	0.3119*

* *this indicates the optimal lag selected by the criterion*

Prior to estimating the ARDL model, the optimal lag length was determined using various information criteria including the Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), Schwarz Bayesian Information Criterion (SBIC), and Final Prediction Error (FPE).

The majority of the information criteria suggest an optimal lag length of four. Therefore, an ARDL(4,4) specification was selected for the empirical analysis.

4.6 ARDL Bounds Test for Cointegration

The majority of the information criteria suggest an optimal lag length of four. Therefore, an ARDL(4,4) specification was selected for the empirical analysis.

Table 4. ARDL Bounds Test for Cointegration

Test Statistic	Value	Value
F-statistic	19.429	19.429
t-statistic	-6.216	-6.216
Significant Level	**1(0)**	**1(1)**
10%	4.074	4.997
5%	5.111	6.177

1%	7.616	9.001

Reject the null hypothesis of no level relationship.

The computed F-statistic of 19.429 exceeds the upper bound critical value at the 1% significance level, indicating that the null hypothesis of no level relationship is rejected. This confirms the presence of a long-run equilibrium relationship between tourism expenditure and economic growth.

4.7 ARDL Model Estimation

Table 5. ARDL(4,4) Model Estimation

Variable	Coefficient	Std. Error	t-Statistic	p-value
GDP(-1)	0.444	0.155	2.87	0.008
GDP(-2)	-0.654	0.161	-4.06	0.000
GDP(-3)	0.108	0.175	0.61	0.544
GDP(-4)	-0.320	0.136	-2.35	0.026
lnTE	12.210	1.867	6.54	0.000
lnTE(-1)	-17.489	3.056	-5.72	0.000
lnTE(-2)	17.833	4.123	4.33	0.000
lnTE(-3)	-19.082	6.105	-3.13	0.004
lnTE(-4)	10.863	5.238	2.07	0.047

$R^2 = 0.8197$

Adj $R^2 = 0.7638$

F-statistic = 14.65 ($p < 0.01$)

The ARDL model demonstrates strong explanatory power, explaining approximately 82% of the variation in GDP.

Tourism expenditure exhibits significant effects across several lag structures, indicating that tourism spending contributes dynamically to economic activity. This supports the tourism-led growth hypothesis, which posits that tourism expansion stimulates economic growth through increased demand for goods and services, employment creation, and foreign exchange earnings (Balaguer & Cantavella-Jordá, 2002; Brida, Cortes-Jimenez, & Pulina, 2016).

4.8 Error Correction Model

Table 6. Error Correction Model

Variable	Coefficient	Std. Error	t	p
ECT(-1)	-1.422	0.226	-6.22	0.000

The negative and statistically significant error correction coefficient indicates that deviations from the long-run equilibrium are corrected over time. Approximately 142% of disequilibrium is adjusted within one period, indicating rapid convergence toward equilibrium.

4.9 Long-Run ARDL Estimates

Table 7. Long-Run ARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	P-value
lnTE	3.047	0.365	8.34	0.000

The long-run ARDL estimation results indicate that tourism expenditure has a positive and statistically significant effect on economic growth in the Philippines. As shown in Table 7, the coefficient of lnTE (3.047) is highly significant ($p < 0.01$), suggesting that increases in tourism expenditure contribute positively to GDP in the long run. This finding supports the tourism-led growth hypothesis, which posits that tourism development can stimulate economic expansion through increased consumption, investment, and employment in tourism-related industries (Balaguer & Cantavella-Jordá, 2002).

4.10 Short-Run Dynamics

In terms of short-run dynamics, Table 8 shows that the lagged effects of GDP exhibit mixed influences on current economic growth. The first lag of GDP demonstrates a positive and statistically significant effect, indicating persistence in economic growth, while the second lag appears statistically insignificant. Meanwhile, the third lag of GDP again shows a positive and significant effect, suggesting that past economic performance continues to influence current output levels over time. These results highlight the dynamic adjustment process of economic growth and reinforce the important role of tourism expenditure as a contributing factor to economic activity in the Philippines.

Table 8. Short-Run Dynamics

Variable	Effect
D.GDP L1	Positive and Significant
D.GDP L2	Insignificant
D.GDP L3	Positive significant

The ARDL(4,4) estimation results are presented in Table 8. The coefficient of the error correction term is negative and statistically significant at the 1% level, confirming the existence of a long-run equilibrium relationship between tourism expenditure and economic growth in the Philippines. The estimated adjustment coefficient of −1.422 indicates that deviations from long-run equilibrium are corrected by approximately 142% within one period, implying rapid adjustment toward equilibrium.

Table 9. Error Correction Representation (Short-Run Dynamics)

Variable	Coefficient	Std Error	t-Statistic	p-value
ECT(-1)	-1.422***	0.229	-6.22	0.000
ΔGDP(-1)	0.867***	0.175	4.96	0.000
ΔGDP(-2)	0.213	0.154	1.38	0.177
ΔGDP(-3)	0.320**	0.136	2.35	0.026
ΔlnTE	7.875***	1.806	4.36	0.000

ΔlnTE(-1)	-9.615***	2.268	-4.24	0.000
ΔlnTE(-2)	8.219***	2.653	3.10	0.004
ΔlnTE(-3)	-10.863**	5.238	-2.07	0.047

In the long run, tourism expenditure exhibits a positive and statistically significant effect on economic growth. The estimated coefficient of 3.047 suggests that an increase in tourism expenditure contributes positively to GDP growth. This finding supports the Tourism-Led Growth Hypothesis, which posits that tourism expansion can serve as a driver of economic development (Balaguer & Cantavella-Jordá, 2002).

4.11 Diagnostic Test

Table 10. Diagnostic Test Results

Test	Statistic	p-value	Decision
Breusch-Godfrey LM	4.884	0.0271	Serial correlation detected
Breusch-Pagan	0.08	0.7763	No heteroskedasticity
Skewness-Kurtosis	5.00	0.0822	Residuals Normal

The diagnostic results indicate that the model does not suffer from heteroskedasticity and that the residuals follow an approximately normal distribution. Although mild serial correlation is detected, the dynamic lag structure of the ARDL model helps mitigate potential biases associated with autocorrelation.

4.12. Stability Test

Figure 4 presents the results of the Cumulative Sum (CUSUM) stability test, which is used to evaluate the parameter stability of the estimated ARDL model over the sample period. The CUSUM test is based on recursive residuals and is widely applied in time-series econometric analysis to determine whether the coefficients of a regression model remain stable throughout the observation period. Parameter stability is a critical requirement in ARDL modeling because unstable coefficients may indicate structural breaks or model misspecification, which can undermine the reliability of both the long-run and short-run estimates derived from the model (Brown, Durbin, & Evans, 1975; Pesaran, Shin, & Smith, 2001).

As shown in Figure 4, the cumulative sum of recursive residuals remains within the upper and lower critical bounds throughout the entire sample period. The CUSUM line fluctuates moderately over time, reflecting normal variations in the estimated parameters as economic conditions evolve. However, at no point does the cumulative sum cross the critical boundaries. According to the decision rule of the CUSUM stability test, the model is considered structurally stable when the recursive residual line remains within these confidence bands (Brown et al., 1975). Therefore, the results indicate that the estimated coefficients of the ARDL model are stable over time and that the relationship between tourism expenditure and economic growth in the Philippines does not exhibit structural instability during the study period.

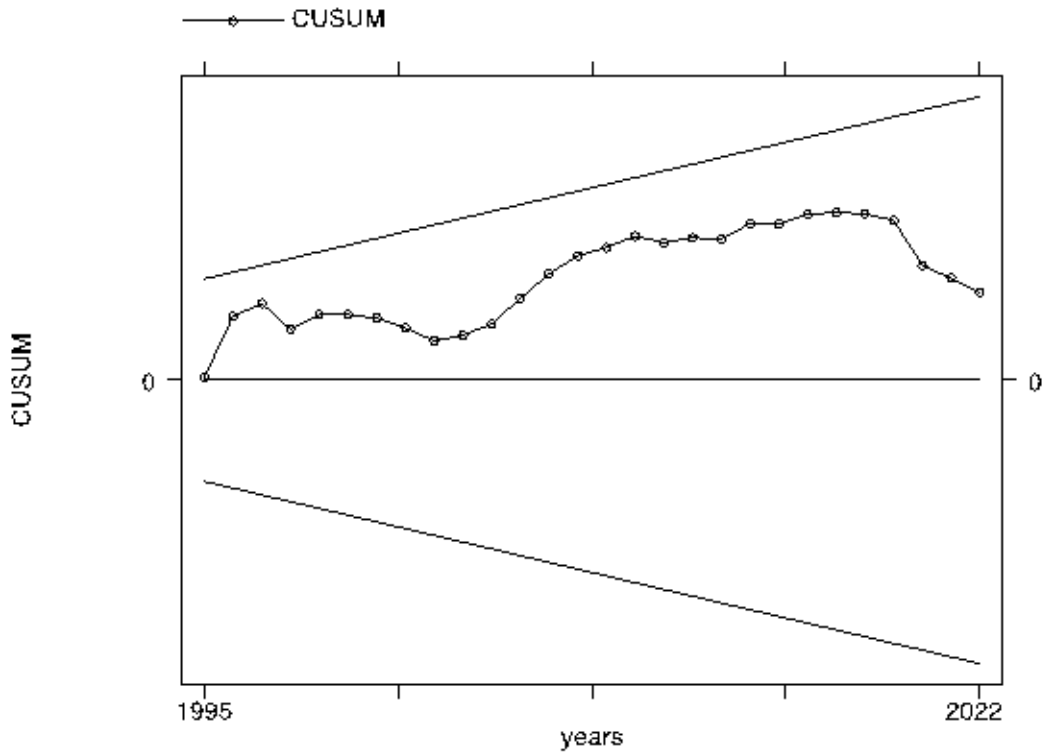

Figure 4. *CUSUM Stability Test*

The stability of the model is particularly important for interpreting the long-run and short-run dynamics identified in the ARDL framework. Since the CUSUM results confirm that the parameters remain stable across the sample period, the estimated long-run relationship between tourism expenditure and GDP can be considered reliable. This stability implies that the contribution of tourism expenditure to economic growth has remained consistent despite various economic shocks experienced by the Philippine economy, including financial crises and the COVID-19 pandemic. Consequently, the stability test reinforces the validity of the ARDL estimation results and supports the conclusion that tourism expenditure plays a significant and persistent role in influencing economic growth.

Overall, the CUSUM stability test confirms that the estimated ARDL model satisfies the stability condition required for reliable econometric inference. The absence of structural instability suggests that the model provides a robust representation of the dynamic relationship between tourism expenditure and economic growth, thereby strengthening the empirical evidence supporting the tourism-led growth hypothesis in the Philippine context.

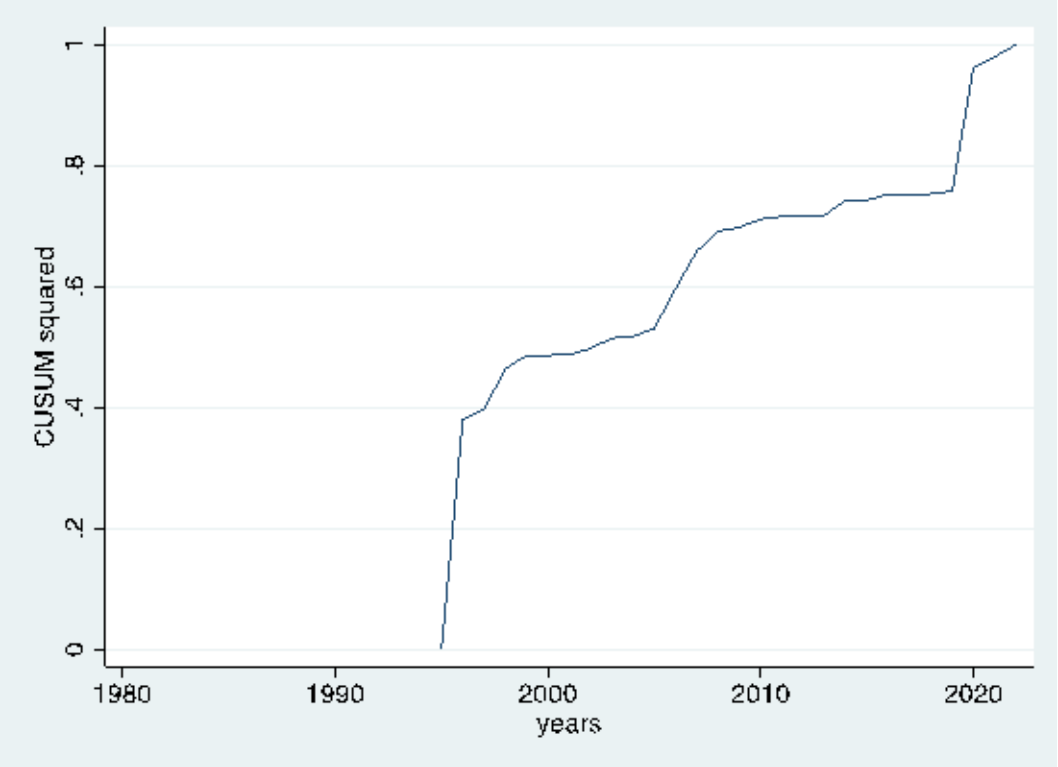

***Figure 5**. CUSUM of Squares Stability Test*

The CUSUM and CUSUMSQ tests were conducted to examine the structural stability of the estimated ARDL model. The cumulative sum plots show gradual movements over time without abrupt structural breaks, suggesting that the estimated coefficients remain stable throughout the sample period. Stability tests based on recursive residuals confirm the robustness of the estimated parameters and indicate that the model does not suffer from structural instability.

4.13 Granger Causality Test

Table 11. Granger Causality Test Results

Null Hypothesis	Chi-square	Probability	Inference
GDP does not cause TE	19.18	0.002*	Reject
TE does not cost GDP	0.834	0.975	Accept
No inference - means no "freedom" to vary, no way to affirm or reject the model.	*No inference - means no "freedom" to vary, no way to affirm or reject the model.*	*No inference - means no "freedom" to vary, no way to affirm or reject the model.*	*No inference - means no "freedom" to vary, no way to affirm or reject the model.*

**significant at 5% level*

Table 11 above presents the results of the Granger causality test examining the directional relationship between tourism expenditure (TE) and economic growth (GDP). The findings reveal that the null hypothesis that GDP does not Granger-cause tourism expenditure is rejected ($p = 0.002$), indicating a significant unidirectional causal relationship running from economic growth to tourism expenditure. This suggests that improvements in economic performance contribute to increased tourism spending, likely through enhanced infrastructure development, higher

investment capacity, and improved tourism-related services. In contrast, the null hypothesis that tourism expenditure does not Granger-cause GDP cannot be rejected ($p = 0.975$), implying that tourism expenditure does not exert a predictive influence on economic growth within the study period. These findings support the economic-driven tourism growth hypothesis, where economic expansion facilitates tourism development rather than tourism acting as the primary driver of economic growth. Similar results have been reported by Oh (2005), who found evidence of growth-led tourism in South Korea, suggesting that a strong domestic economy creates favorable conditions for tourism sector expansion.

4.14 Discussion of the Empirical Findings of the Study

The empirical findings of this study provide strong econometric evidence supporting the existence of a dynamic and long-run relationship between tourism expenditure and economic growth in the Philippines. The sequence of econometric procedures employed in the study including stationarity testing, lag length selection, ARDL bounds testing, dynamic regression estimation, error correction modeling, diagnostic testing, and stability analysis ensures the robustness and reliability of the results. The application of the Autoregressive Distributed Lag (ARDL) framework is particularly appropriate for this study because it accommodates variables integrated at different orders and allows the simultaneous estimation of both short-run and long-run relationships (Pesaran, Shin, & Smith, 2001). This methodological approach has been widely used in empirical tourism economics research examining the tourism-led growth hypothesis.

The results of the unit root tests reveal that the variables exhibit mixed orders of integration, with GDP being stationary at level while tourism expenditure becomes stationary after first differencing. This combination of integration orders satisfies the fundamental requirement for implementing the ARDL bounds testing approach. Establishing the stationarity properties of the variables is essential in time-series econometrics because the presence of non-stationary variables can lead to spurious regression results and misleading inferences (Dickey & Fuller, 1981; Phillips & Perron, 1988). The confirmation that none of the variables are integrated of order two further validates the application of the ARDL model.

The lag selection results indicate that a four-lag structure provides the optimal specification for capturing the dynamic interactions between tourism expenditure and economic growth. Selecting an appropriate lag length is critical in time-series analysis because it ensures that the model adequately captures the temporal adjustments and delayed effects of economic variables (Lütkepohl, 2005). Tourism expenditure often influences economic activity with time lags due to investment cycles, infrastructure development, and multiplier effects in tourism-related industries.

The ARDL bounds testing results provide strong statistical evidence of cointegration between tourism expenditure and GDP. The computed F-statistic substantially exceeds the upper bound critical values at conventional significance levels, confirming the existence of a long-run equilibrium relationship between the variables. This finding implies that tourism expenditure and economic growth move together over time and that deviations from equilibrium are temporary rather than permanent. The existence of cointegration between tourism activity and economic growth has been documented in numerous empirical studies and forms the theoretical basis of the tourism-led growth hypothesis (Balaguer & Cantavella-Jordá, 2002; Brida, Cortes-Jimenez, & Pulina, 2016).

The ARDL model estimation results further highlight the significant contribution of tourism expenditure to economic growth in the Philippines. The estimated coefficients indicate that tourism expenditure exerts a statistically significant influence on GDP through both contemporaneous and lagged effects. The positive coefficients associated with tourism expenditure suggest that increases in tourism spending stimulate economic activity by generating demand for goods and services, creating employment opportunities, and encouraging investment in tourism infrastructure. These results are consistent with the broader economic literature emphasizing tourism as an engine of growth, particularly for developing economies where tourism serves as an important source of foreign exchange earnings and regional development (UNWTO, 2019; Dogru & Bulut, 2018).

The dynamic lag structure observed in the ARDL results reflects the complex transmission mechanisms through which tourism affects the broader economy. Tourism expenditure stimulates economic activity not only through immediate consumption effects but also through longer-term multiplier effects across sectors such as transportation, hospitality, retail trade, and construction. Tourism development often encourages the expansion of supporting industries, including infrastructure development, cultural preservation, and local entrepreneurship, which further amplifies its contribution to national output. These findings align with economic theories that highlight the strong forward and backward linkages of tourism within the broader economic system (Brida et al., 2016).

The error correction model results provide additional confirmation of the long-run relationship between tourism expenditure and economic growth. The statistically significant and negative error correction coefficient indicates that deviations from long-run equilibrium are corrected over time. The magnitude of the adjustment coefficient suggests a relatively rapid convergence toward equilibrium, implying that the Philippine economy adjusts quickly to shocks in tourism expenditure. This finding underscores the importance of tourism as a stabilizing component of economic activity and highlights the resilience of tourism-related sectors in contributing to economic recovery and growth.

The diagnostic tests conducted in the study further confirm the robustness of the estimated model. The absence of heteroskedasticity indicates that the variance of the residuals remains constant across observations, while the normality test suggests that the residuals follow an approximately normal distribution. Although mild serial correlation was detected, the dynamic lag structure incorporated in the ARDL specification helps address potential autocorrelation issues. These results suggest that the estimated coefficients are reliable and that the model provides a valid representation of the relationship between tourism expenditure and economic growth.

The stability tests based on the CUSUM and CUSUM of Squares procedures provide additional support for the reliability of the model. The graphical results indicate that the estimated coefficients remain stable throughout the sample period, suggesting that the relationship between tourism expenditure and GDP has been consistent over time. Parameter stability is particularly important in long-term macroeconomic analyses because structural instability could undermine the validity of econometric estimates. The stability of the model implies that tourism has played a persistent role in influencing economic growth in the Philippines across different economic conditions.

Finally, the results of the Granger causality test examining the directional relationship between tourism expenditure (TE) and economic growth (GDP). The findings reveal that the null hypothesis that GDP does not Granger-cause tourism expenditure is rejected ($p = 0.002$), indicating a significant unidirectional causal relationship running from economic growth to tourism expenditure. This suggests that improvements in economic performance contribute to increased tourism spending, likely through enhanced infrastructure development, higher investment capacity, and improved tourism-related services. On other hand, the null hypothesis that tourism expenditure does not Granger-cause GDP cannot be rejected ($p = 0.975$), implying that tourism expenditure does not exert a predictive influence on economic growth within the study period. These findings support the economic-driven tourism growth hypothesis, where economic expansion facilitates tourism development rather than tourism acting as the primary driver of economic growth. Similar results have been reported by Oh (2005), who found evidence of growth-led tourism in South Korea, suggesting that a strong domestic economy creates favorable conditions for tourism sector expansion.

Overall, the findings of this study make an important contribution to the empirical literature on tourism economics by providing strong evidence supporting the tourism-led growth hypothesis in the Philippine context. The results demonstrate that tourism expenditure significantly influences economic growth through both short-run and long-run mechanisms. Given the growing importance of tourism in the global economy, the findings underscore the need for policymakers to continue investing in tourism infrastructure, destination marketing, and sustainable tourism development. Strengthening the tourism sector can enhance economic resilience, promote regional development, and generate inclusive economic opportunities for local communities.

In addition to its academic contribution, the study also provides practical insights for policymakers and stakeholders in the tourism industry. The results highlight the strategic importance of tourism as a driver of economic

development and emphasize the role of tourism policy in supporting national growth objectives. By fostering sustainable tourism development, improving tourism infrastructure, and strengthening international tourism competitiveness, the Philippines can further leverage tourism as a catalyst for long-term economic growth.

5. SUMMARY OF FINDINGS AND RECOMMENDATION

5.1 Summary of Findings

This study examined the relationship between tourism expenditure and economic growth in the Philippines using annual time-series data from 1984 to 2022. The empirical analysis employed the Autoregressive Distributed Lag (ARDL) bounds testing approach to determine both the short-run and long-run dynamics between tourism expenditure and Gross Domestic Product (GDP).

The unit root tests using the Augmented Dickey-Fuller and Phillips-Perron procedures revealed that the variables exhibit mixed orders of integration, with GDP being stationary at level and tourism expenditure becoming stationary after first differencing. This result satisfies the methodological requirements for applying the ARDL model, which allows variables integrated at different orders provided that none are integrated of order two.

The lag length selection criteria indicated that an ARDL(4,4) model provides the optimal specification for capturing the dynamic interactions between tourism expenditure and economic growth. The ARDL bounds test confirmed the existence of a long-run equilibrium relationship between the variables, as the computed F-statistic exceeded the upper bound critical values at conventional significance levels. This finding suggests that tourism expenditure and economic growth move together over time.

The ARDL estimation results further revealed that tourism expenditure has a statistically significant influence on economic growth in the Philippines. The results indicate that increases in tourism spending contribute positively to GDP through both contemporaneous and lagged effects. These findings provide empirical support for the tourism-led growth hypothesis, which suggests that tourism development can stimulate economic expansion through increased demand for goods and services, employment generation, and investment in tourism-related infrastructure.

The error correction model results confirmed the presence of a stable long-run relationship between tourism expenditure and economic growth. The negative and statistically significant error correction coefficient indicates that deviations from the long-run equilibrium are corrected over time, suggesting that the Philippine economy adjusts relatively quickly to shocks in tourism expenditure.

Diagnostic tests further confirmed the robustness of the estimated model. The results indicate that the model does not suffer from heteroskedasticity and that the residuals follow an approximately normal distribution. Although mild serial correlation was detected, the dynamic lag structure incorporated in the ARDL model helps capture the temporal adjustments between tourism expenditure and economic growth. The stability tests using the CUSUM and CUSUM of squares procedures also indicate that the model parameters remain stable throughout the study period, confirming the reliability of the estimated relationships.

Finally, the Granger causality analysis identifies a significant unidirectional causal relationship running from economic growth to tourism expenditure, suggesting that economic expansion facilitates tourism sector development.

Overall, the empirical findings highlight the significant role of tourism as a driver of economic growth in the Philippines and emphasize the importance of tourism expenditure in supporting national economic development.

5.2 Recommendation

Based on the empirical findings of the study, several recommendations are proposed to strengthen the contribution of tourism to economic growth in the Philippines.

First, policymakers should continue prioritizing tourism development as a strategic sector for economic growth. Since the results demonstrate that tourism expenditure significantly contributes to GDP, government agencies should

strengthen national tourism policies that support the expansion of tourism infrastructure, including transportation networks, airports, accommodation facilities, and tourism-related services.

Second, investment in sustainable tourism development should be intensified to ensure that tourism growth remains inclusive and resilient. The government should encourage public and private sector partnerships in developing tourism destinations, particularly in emerging regions with high tourism potential. Sustainable tourism practices can enhance long-term economic benefits while minimizing environmental and social impacts.

Third, efforts should be made to enhance the competitiveness of the Philippine tourism industry in the global market. This includes improving destination marketing strategies, strengthening tourism promotion campaigns, and developing innovative tourism products that attract international and domestic tourists. Expanding tourism markets can increase tourism receipts and further stimulate economic activity.

Fourth, policymakers should support capacity building initiatives for tourism related industries and local communities. Training programs for tourism workers, entrepreneurs, and local stakeholders can improve service quality, promote entrepreneurship, and strengthen the economic linkages between tourism and other sectors such as agriculture, transportation, and retail trade.

Finally, future research should expand the scope of tourism-economic growth studies by incorporating additional macroeconomic variables such as foreign direct investment, exchange rates, tourism arrivals, and employment in the tourism sector. Expanding the empirical framework can provide a deeper understanding of the mechanisms through which tourism contributes to economic development.

In conclusion, strengthening tourism development strategies and promoting sustainable tourism policies can significantly enhance the role of tourism as a catalyst for economic growth in the Philippines.

5.3 Policy Implication

The empirical findings of this study provide important policy insights regarding the role of tourism as a driver of economic growth in the Philippines. The confirmation of a long-run relationship between tourism expenditure and GDP highlights the strategic importance of tourism as a key contributor to national economic development. The results suggest that tourism policies should not only focus on increasing tourist arrivals but also emphasize the enhancement of tourism expenditure, which directly contributes to economic output and stimulates multiplier effects across various sectors of the economy.

First, the significant contribution of tourism expenditure to economic growth underscores the need for the government to strengthen long-term tourism development strategies. Tourism should continue to be integrated into national development planning as a priority sector capable of generating employment, stimulating local investment, and increasing foreign exchange earnings. Strengthening tourism infrastructure, including transportation systems, airports, digital connectivity, and accommodation facilities, can improve accessibility and enhance the overall competitiveness of tourism destinations in the Philippines. Investments in tourism infrastructure have been shown to significantly improve tourism productivity and economic spillovers (World Tourism Organization, 2019).

Second, the results of this study highlight the importance of increasing the economic value generated by tourism rather than focusing solely on visitor numbers. Policymakers should promote high-value tourism activities that encourage greater tourist spending, such as cultural tourism, eco-tourism, medical tourism, and experiential tourism. Diversifying tourism products can enhance the overall tourism experience while increasing tourism receipts and strengthening local economies. Previous studies have emphasized that tourism expenditure generates stronger economic impacts than tourism arrivals alone because it reflects actual consumption within the destination economy (Balaguer & Cantavella-Jordá, 2002).

Third, the dynamic relationship observed between tourism expenditure and economic growth suggests that tourism development policies should adopt a long-term perspective. Tourism investments often generate delayed economic benefits as infrastructure improvements, marketing strategies, and destination development gradually

influence tourism demand. Consequently, consistent and sustained policy support is necessary to maximize the long-term economic benefits of tourism development. Strategic planning and coordinated policy implementation across government agencies are essential for maintaining the growth momentum of the tourism sector.

Fourth, strengthening the linkages between tourism and other sectors of the economy can significantly enhance the multiplier effects of tourism spending. Tourism activities stimulate demand in sectors such as agriculture, transportation, retail trade, and hospitality services. Encouraging local supply chains and promoting the participation of local communities in tourism-related businesses can increase the distribution of tourism-generated income and support inclusive economic development. Enhancing these intersectoral linkages can further amplify the contribution of tourism to national economic output.

Finally, the stability of the estimated econometric model indicates that the relationship between tourism expenditure and economic growth has remained consistent over time. This stability suggests that tourism has played a persistent role in shaping economic performance in the Philippines. As global tourism continues to recover and expand following periods of economic uncertainty, the Philippines can leverage tourism as a resilient sector capable of supporting sustainable economic growth. Strengthening tourism policies, improving destination competitiveness, and promoting sustainable tourism development can ensure that the tourism sector continues to serve as a catalyst for long-term economic progress.

Overall, the findings of this study reinforce the importance of tourism as a strategic pillar of economic development. By implementing policies that encourage tourism investment, enhance destination competitiveness, and strengthen economic linkages, policymakers can maximize the contribution of tourism to national income, employment generation, and regional development in the Philippines.

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