The role of tourism in driving economic growth: an empirical Study of the tunisian model, 1995-2020, using the ARDL methodology

O papel do turismo na promoção do crescimento económico: um estudo empírico do modelo tunisino, 1995-2020, utilizando a metodologia ARDL

El papel del turismo en el impulso del crecimiento económico: un estudio empírico del modelo tunecino, 1995-2020, utilizando la metodología ARDL

DOI: 10.34140/bjbv6n2-034

Submetido: 19/01/2024
Aprovado: 01/03/2024

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ABSTRACT
This research paper has proven the impact of tourism sector income on the progression of economic growth, through an econometric study, based on the ARDL methodology, where we find a logical long-term relationship between these variables, during the period 1995-2021.

Keywords: international tourism receipts, economic growth, gross domestic product.

RESUMO
Este trabalho de investigação comprovou o impacto do rendimento do sector do turismo na progressão do crescimento económico, através de um estudo econométrico, baseado na metodologia ARDL, onde encontramos uma relação lógica de longo prazo entre essas variáveis, durante o período 1995-2021.

Palavras-chave: receitas do turismo internacional, crescimento económico, produto interno bruto.

RESUMEN
Este trabajo de investigación ha demostrado el impacto de los ingresos del sector turístico en la progresión del crecimiento económico, a través de un estudio econométrico, basado en la metodología ARDL, donde encontramos una relación lógica de largo plazo entre estas variables, durante el período 1995-2021.

Palabras clave: ingresos por turismo internacional, crecimiento económico, producto interior bruto.
1 INTRODUCTION

1.1 PREAMBLE

Economic development stands as one of the most pressing goals for nations across the globe, particularly for developing countries. It serves as the pathway to elevate them from the depths of underdevelopment to the heights of economic progress. This progress can only be achieved through economic growth, a cornerstone of development and a reflection of the economic and social standing of any nation.

Recognizing this and keeping pace with global economic changes, numerous countries have turned their attention to the tourism sector, granting it a prominent role in their development programs and plans. The Republic of Tunisia stands as a shining example, having elevated its tourism industry to international prominence, thanks to its abundance of tourist attractions and its implementation of appropriate policies and programs.

1.2 STUDY PROBLEM

The study poses the following research question: **What is the role of the tourism sector in driving economic growth in Tunisia [as a model], during the period from 1995 to 2020, using the ARDL methodology?**

1.3 STUDY OBJECTIVES

The study aims to answer the research question by shedding light on the role of the tourism sector in driving economic growth within the Tunisian model. This will be done through a quantitative study that produces numerical indicators that can inform economic policymakers in Algeria in their efforts to achieve a national economic renaissance. This renaissance requires diversification in all sectors to avoid any potential negative future effects that may result from the collapse of oil prices.

1.4 STUDY METHODOLOGY

The study employs an empirical approach to build a long-term logical relationship that determines the magnitude of the impact of international tourism revenues on Tunisia's economic growth path for more than a quarter of a century. Additionally, a descriptive approach is used to provide a theoretical overview of the study variables and to understand the intricacies of their development during the period under consideration.

2 CONCEPTUALIZING TOURISM AND ECONOMIC GROWTH

Before delving into the quantitative analysis, it is crucial to establish a clear understanding of the two key concepts underpinning the study: tourism and economic growth. This involves examining their
theoretical dimensions and tracing their historical trajectories in Tunisia from 1995 to 2020.

2.1 THE MEANING OF TOURISM

Tourism is a multifaceted global phenomenon encompassing social, cultural, and economic dimensions. It stands as one of the largest industries in terms of revenue generation and employment creation, owing to its intricate linkages with various economic, social, and cultural sectors. To fully grasp the nature of the tourism sector, we will strive to comprehend the nature of the tourism sector through the following:

2.1.1 Definitions of tourism

The world of tourism definitions can be broadly categorized into two types, each serving a distinct purpose. (Burkart & Medlik, 1981) distinguish between conceptual and technical definitions. Conceptual definitions aim to establish a theoretical framework for tourism, identifying its core characteristics and what sets it apart from related activities.

An example of a conceptual definition is (Jafari, 1977) proposal: "Tourism is the study of people away from their usual environment, the industry catering to their needs, and the impacts of both the visitors and the industry on the host's socio-cultural, economic, and physical environments."

Technical definitions, on the other hand, provide information on tourism for statistical or legal purposes. These definitions offer clear and consistent understandings applicable in both international and domestic settings. This approach is evident in efforts to standardize international tourism data collection (Theobald, 2005).

The need for a more precise definition arose due to the surge in international tourism revenue between the World Wars. The first such definition, proposed by the League of Nations in 1937, defined a tourist as someone who travels for 24 hours or more outside their normal country of residence. It included those travelling for business in addition to pleasure, health or other purposes, and it also introduced the ‘excursionist’ as someone who stays in a destination for less than 24 hours. A similar definition, though resorting to the more general description of ‘visitor’, was produced by the United Nations Conference on Travel and Tourism in 1963. It states that a visitor is ‘any person visiting a country other than that in which he [sic] has his usual place of residence, for any reason other than following an occupation remunerated from within the country visited’, a visitor being either a tourist staying overnight or an excursionist on a day visit. (Nations, 1963)

In the latest edition of the Glossary of Tourism Terms in 2008 by the United Nations World Tourism Organization, tourism is defined as: a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. These people are called visitors (which may be either tourists or excursionists;
residents or non-residents) and tourism has to do with their activities, some of which involve tourism expenditure”.

This organization also recognized that tourism includes four essential points:
- Tourism involves the movement of people from one place to another outside their local community;
- Tourist destinations provide a range of: activities, experiences, facilities and services;
- The tourist's needs and motives require satisfaction, which in turn creates a social impact;
- The tourism industry includes a number of sub-activities, which collectively generate income for the national economy, through the foreign currency that enters the tourist country visited.

2.1.2 Types of tourism

Tourism can be categorized into several elements, which can be listed as follows:

2.1.2.1 Types of tourism based on motive or purpose

According to the classification based on motive and purpose, a variety of tourism types can be identified, including:

➢ **Religious Tourism**: Religious tourism is a type of travel that involves visiting religious sites and experiencing the spiritual values associated with a particular faith. It's one of the oldest forms of tourism, and it continues to be a popular activity for people of all backgrounds. Religious tourism can take many forms, from pilgrimages to retreats to conferences and festivals. It's a great way to learn about different cultures and religions, and it can also be a very rewarding spiritual experience (Iliev, 2020).

➢ **Sports Tourism**: it can be defined as those trips made for recreational (noncommercial) reasons, to participate in or observe sports activities that take place outside the place of habitual residence and may or may not have a competitive purpose. Although in the first instance sport tourism appears just as a tourist activity, nowadays it is seen as an experience of sport culture. (Jiménez-García, Ruiz-Chico, Peña-Sánchez, & López-Sánchez, 2020)

➢ **Conference Tourism**: it constitutes one of the largest segments within the tourism sector providing high exposure to destinations, significant global growth, and contributions to the development of strong global markets which yield high level economic benefits. (Welthagen, Slabbert, & Plessis, 2022)

➢ **Cultural Tourism**: it is a travel experience centered around immersing oneself in the cultural tapestry of a destination. It allows visitors to delve into the tangible and intangible expressions of a place, fostering a deeper understanding of its history, traditions, and way of life. This can take many forms, from appreciating ancient architecture and artwork to experiencing local crafts,
languages, and religious practices. In essence, cultural tourism offers a window into the soul of a destination, allowing travelers to connect with the past, present, and living traditions of a society.

➢ **Medical Tourism:** it has become a popular choice for individuals seeking alternative therapies for various health conditions. Driven by the prevalence of ailments like anxiety, stress, and respiratory issues, patients are increasingly traveling to destinations worldwide to experience treatments such as sand baths, hot springs, and even cosmetic surgery. While medical tourism may be a relatively new concept, the idea of traveling for improved health has a long history. Throughout time, travel has been associated with relaxation, rejuvenation, and exposure to new environments, all of which can contribute to overall well-being. In this sense, medical tourism can be seen as an extension of this longstanding tradition, offering a more targeted approach to health improvement. (Connell, 2011)

➢ **Recreational Tourism:** This involves changing one's place of residence for a period of time solely for the purpose of enjoyment and leisure, engaging in activities such as fishing, scuba diving, and other hobbies.

### 2.1.2.2 Tourism by geographical location

Based on geographical location, tourism can be categorized into the following forms: (OECD, 2011)

➢ **Domestic tourism,** it allows residents to travel within their home country, venturing beyond their usual surroundings. This can involve staying overnight in a different location for reasons other than work, allowing them to discover new places and experiences within their own nation.

➢ **Inbound tourism,** regional tourism invites travelers to explore neighboring countries that share geographical and cultural affinities, forming a cohesive tourist region. This could involve embarking on a journey through the diverse landscapes of Africa, immersing oneself in the rich traditions of the Arab world, or delving into the vibrant tapestry of South Asia.

➢ **Outbound tourism,** international tourism is a global phenomenon that brings together travelers from across the globe, each seeking unique experiences and cultural immersion. This form of tourism not only enriches the lives of individuals but also generates valuable foreign currency for the host country. However, to thrive, international tourism requires a supportive environment: developed infrastructure, security and stability, stable laws and regulations, competitive pricing…

### 2.1.2.3 Tourism based on duration of stay

This classification further categorizes tourism into the following types: (Organization, 1995)

➢ **Seasonal Tourism:** This refers to the tendency of tourists to flock to specific destinations during particular seasons, such as visiting holy sites during pilgrimage seasons.
Transit Tourism: This involves tourists passing through or making a mandatory stop in a particular country while traveling to their final destination. They typically stay for a day or two, requiring high flexibility from tourism companies to cater to their short-term needs.

2.1.2.4 According to the number

Tourism can be classified into two main categories based on the number of travelers:

- **Individual tourism** involves a single person or a small group of people visiting a destination for a duration that varies depending on their enjoyment of the place, their financial means, or their available free time. This type of tourism is influenced by word-of-mouth recommendations, advertising, tourism promotion, and the tourist's own cultural background.

- **Group tourism** involves travelers traveling together as a group, following a pre-arranged itinerary that includes the planned destinations. This type of tourism is typically organized by travel agencies and includes a pre-planned program.

2.1.3 The importance of tourism

Tourism is one of the most important phenomena of our modern era, due to its significance in various aspects, including:

2.1.3.1 The economic importance

We must examine the effect on income, employment, the area’s balance of payments and investment and development. (Holloway, Humphreys, & Davidson, 2009) Let us look at each of these in turn:

- Income: The sum of all incomes in a country is called the national income and the importance of tourism to a country’s economy can be measured by looking at the proportion of national income that is created by tourism. Furthermore, tourism’s contribution to the income of an area is enhanced by a phenomenon known as the tourism income multiplier. This arises because money spent by tourists in the area will be re-spent by recipients, augmenting the total.

- Employment: Just as tourism holds significant weight on a global scale, it also plays a crucial role within specific regions of an economy. The multiplier effect that influences income in a region similarly impacts employment. When tourists choose a destination, the tourism industry there directly creates jobs. These jobs don't just benefit the employed individuals; their families residing in the area also contribute to the local economy. They purchase goods and services, require education for their children, and need access to medical care. This, in turn, stimulates the creation of jobs in shops, schools, and hospitals to cater to these needs. We can expect the value of the
employment multiplier to be roughly similar to that of the tourism income multiplier, assuming the newly created jobs offer average wages.

- Balance of payments: A nation's tourism industry can significantly impact its balance of payments. When international tourists purchase services within a country, these transactions are recorded as "invisibles" in the national accounts. The annual balance of payments on the tourism account is calculated by subtracting total tourism-related payments made by the country from its total tourism receipts. This tourism account forms part of the broader invisible balance, which encompasses other service sectors like banking, insurance, and transportation. Notably, transportation services play a crucial role in facilitating tourism itself.

2.1.3.2 The cultural importance

The World Heritage title grants destinations a significant level of prestige and distinction. This designation, awarded by UNESCO based on the 1972 Convention for the Protection of the World's Cultural and Natural Heritage, signifies that specific expressions of cultural (monuments, complexes, and places of interest) and natural heritage possess outstanding universal value. As of 2015, the World Heritage list included 1007 items, with the majority (779) falling under the cultural category (UNESCO, 2015, http://www.unesco.org).

Despite this enhanced visibility, various studies have begun to explore the relationship between the World Heritage title and tourism, highlighting a potential dilemma. On the one hand, there is a strong expectation that such sites can "induce prosperous tourism that creates jobs and earns foreign exchange, thus serving as a major driving force for further growth in many countries. (Allis, 2017)

2.2.3 The social importance:

Tourism plays a pivotal role in fostering the growth and prosperity of local communities by generating employment opportunities, enhancing infrastructure, and promoting cultural exchange. It also serves as a catalyst for preserving cultural heritage and enriching the experiences of tourists. (Mill, 2010)

2.2.3.1 The political importance

Tourism plays a crucial role in fostering positive diplomatic relations between nations. As tourism flourishes, it encourages cultural exchange, promotes mutual understanding, and fosters a sense of global interconnectedness. This, in turn, contributes to the resolution of political conflicts and the strengthening of international cooperation.
2.3 THE MEANING OF ECONOMIC GROWTH

Understanding the concept of economic growth requires clarifying the points that define its characteristics. We present the most important of these points below:

2.3.1 Definitions of economic growth

To fully grasp the concept of economic growth, it is essential to delve into its defining characteristics. Here, we outline the key aspects that shape economic growth:

Economic growth is often defined as the "continuous increase in the quantity of goods and services produced per capita within a specific economic context" (Arrous, Les Théories de la Croissance, 1999) or "the gradual transformation of the economy through an increase in production or well-being, whereby the state that the economy reaches is in a single direction towards an increase in the latter" (Jean, 1994)

Characteristics of Economic Growth:

From the aforementioned definitions, we can extract the following key characteristics of economic growth:

- Economic growth must be accompanied by a corresponding increase in the real per capita income of the country's citizens.
- The growth in per capita income must be real, meaning it must be adjusted for inflation
- Economic growth is a long-term phenomenon, typically analyzed over periods of several years or decades

2.3.2 Distinguishing economic growth from economic development

In his seminal work, Amartya Sen posits that economic development is not merely about material progress but rather about the expansion of human freedoms. This expansion of freedom empowers individuals to shape their own destinies, fostering self-reliance and enabling them to pursue their aspirations. Conversely, obstacles to freedom and development manifest as "poverty, lack of economic opportunities, corruption, poor governance, lack of education, and lack of health." These impediments hinder individuals' ability to thrive and contribute to society, ultimately undermining the prospects of sustainable economic development. (Doina, 2020)

Economic growth and economic development are often used interchangeably, but they represent distinct concepts with varying implications for a nation's well-being. While economic growth focuses on the quantitative increase in a nation's total output, typically measured by Gross National Product (GNP), economic development encompasses a broader perspective, considering not just economic expansion but also improvements in various aspects of people's lives.

Economic growth serves as a benchmark for a country's economic performance and is used to compare developed, developing, and underdeveloped nations. However, its limitations include its inability
to capture the informal economy, the long-term impact on resources, and crucial aspects of societal well-being, such as leisure time and environmental quality.

In contrast, economic development takes a more holistic view, considering not just economic factors but also social and environmental dimensions. It encompasses improvements in life expectancy, literacy rates, poverty reduction, and access to quality healthcare and education. Additionally, it promotes individual freedoms, fair distribution of opportunities, and sustainable practices to ensure economic growth doesn't come at the expense of environmental damage.

While economic growth is a necessary condition for development, it's not sufficient on its own. Development is a long-term process that involves both qualitative and quantitative changes. It takes into account factors like a country's natural resources, the skill level of its workforce, and the effectiveness of its government policies.

To assess a nation's economic development, two key measures are employed: the Human Development Index (HDI) and the Human Poverty Index (HPI). The HDI considers a country's average life expectancy, level of education, and standard of living to provide a holistic picture of development. The HPI, on the other hand, focuses on the deficit in three key dimensions - health, knowledge, and economic means - highlighting the number of people experiencing poverty within a country.

By understanding the distinctions between economic growth and economic development, we can gain a more nuanced perspective on a nation's true progress. Economic growth, while valuable, is not the sole indicator of a country's well-being. Sustainable economic development, which prioritizes both economic expansion and improvements in the quality of life for its citizens, is essential for achieving long-term prosperity and societal well-being.

### 2.3.3 Measuring Economic Growth:

Economic growth for any country is typically measured using two types of gross domestic product (GDP):

#### 2.3.3.1 Nominal GDP:

Nominal GDP is defined as "the market value of all goods and services produced within a year by resident factors of production," (MANKIW, 2010) and can be formulated as:

\[
\text{Nominal GDP}_c = \sum (Q_i \cdot P_i)
\]  \hspace{1cm} (1)

where:

- \( P_i \) is the price of the \( i \)th good or service
- \( Q_i \) is the quantity of the \( i \)th good or service produced

(Froyen, 2013)
2.3.3.2 Real GDP

Real GDP represents "the market value of all goods and services produced by resident factors of production, based on prices in the base year (MANKIW, 2010)," or:

\[ \text{GDP}_F = \sum_{i}^{n} p_i^{\text{base}} \times Q_i^t \]

Therefore, economic growth is nothing more than the annual percentage change in real GDP, written as:

\[ \gamma_t = \frac{\text{GDP}_{F_n} - \text{GDP}_{F_{n-1}}}{\text{GDP}_{F_{n-1}} \times (n-1)} \] (2)

where:
- \( \text{GDP}_{F_n} \) is real GDP in year n
- \( \text{GDP}_{F_{n-1}} \) is real GDP in the previous year (n-1)

It is worth noting that the GDP deflator is:

\[ \text{df}_{\text{GDP}} = \frac{\sum_{i}^{n} p_i^{t} \times Q_i^t}{\sum_{i}^{n} p_i^{\text{base}} \times Q_i^t} = \frac{\text{GDP}_C}{\text{GDP}_F} \] (3)

This is equal to the quotient of nominal GDP and its real counterpart.

3 EVOLUTION OF INTERNATIONAL TOURISM REVENUES AND GDP IN TUNISIA FROM 1995 TO 2020

This section presents an analysis and interpretation of the evolution of international tourism revenues\(^1\) and GDPc\(^2\) in Tunisia from 1995 to 2020, based on the data provided in the following table:

\(^1\)International tourism revenues encompass the expenditures of international visitors arriving in a country, including payments made to national transportation companies for international travel. These revenues should include any prepaid amounts for goods or services to be obtained in the destination country. They may also include revenue from same-day visitors, unless there are compelling reasons to classify them separately. For some countries, they may not include revenue related to passenger transportation items.

\(^2\)GDP (Gross Domestic Product) at purchasers' prices is the sum of the gross value added by all resident producers in the economy, plus any taxes on products, less any subsidies not included in the value of products. It is calculated without deducting the value of depreciation of fixed assets or making any deductions for depletion and degradation of natural resources. The data are expressed in current US dollars. They are converted from the local currency using the official exchange rates for a single year. Depreciation and depletion are accounting methods that recognize the gradual decline in value of tangible assets like machinery and buildings, and natural resources like oil and minerals, and are typically expressed in current US dollars using official exchange rates for one year to ensure consistent valuation across periods and countries.
Table 1: Evolution of International Tourism Revenues and GDP in Tunisia (1995-2020) (Billions of USD).

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Sources: (World Bank, 2022), (World Bank, 2022)

3.1 EVOLUTIONARY PATH OF THE VOLUME OF INTERNATIONAL TOURISM REVENUES IN TUNISIA DURING THE STUDY PERIOD

The tourism sector stands as a cornerstone of Tunisia's national economy, playing a multifaceted role in driving economic growth, generating employment, and enhancing the country's overall prosperity. Its significance is evident in several key aspects that are inextricably linked to the nation's well-being.

Economically, tourism accounts for a substantial 7.57% of Tunisia's GDP, as highlighted by the (World Bank, 2022). This significant revenue stream directly contributes to the nation's economic growth and development, supporting infrastructure projects, public services, and social welfare programs. The sector's contribution extends beyond financial gains, as it serves as a major source of employment, providing over 400,000 permanent and seasonal jobs. This employment not only generates income for individuals but also supports the livelihoods of their families and communities, fostering social stability and economic well-being.

Furthermore, the tourism sector plays a crucial role in alleviating the trade deficit by generating foreign exchange earnings. The sector's contribution to covering the trade deficit reaches a remarkable 75%, indicating its positive impact on Tunisia's external financial position. This positive impact is further amplified by the significant investments attracted to the tourism sector over the past decade, exceeding a threshold of 1.15 billion dollars. These investments have been instrumental in enhancing infrastructure, promoting tourism products, and improving the overall visitor experience, further strengthening the sector's appeal and competitiveness.(ʻAqūn, Qurayshī, & bwḥdyd, 2019, p. 168)(Statistiques Tunisie, 2022)

Over the past 26 years, Tunisia's international tourism revenue has experienced fluctuations in its growth rate, averaging a modest 0.19% annually. Despite this variability, the sector has demonstrated resilience and growth potential, as evidenced by the significant influx of 1.84 billion dollars in tourism revenue recorded in 1995.

The year 1999 marked a remarkable year for Tunisia's tourism industry, as tourism revenue soared to 2.12 billion dollars, representing an impressive average annual growth rate of 3.67%. This remarkable achievement can be attributed to a confluence of favorable factors, including a significant surge in tourist arrivals 4.28%, a concurrent expansion of tourism units 4.22%, and a substantial rise in hotel bed capacity 4.42%.
The year 2002 marked a temporary setback for Tunisia's tourism industry, as international tourism revenue dipped to 1.83 billion dollars, representing an average annual decline of (-4.58%). This downturn was primarily attributed to a (-6%) drop in tourist arrivals due to the unfortunate events of Djerba³.

However, the following six years witnessed a remarkable resurgence in the tourism sector, with revenue soaring by 13.67% to reach a peak of 3.91 billion dollars. This remarkable recovery was fueled by a combination of factors, including a 5.80% average annual growth in tourist arrivals, coupled with a 1.23% and 1.80% average annual growth in the number of tourism units and their bed capacity, respectively. (World Bank, 2022)(Agence foncière touristique, 2022)(Mafātīḥ, 2019, p. 20)

![Figure 1: Evolution of Tunisian Tourism Sector Revenues at Current Prices during the Period 1995-2020.]

International tourism revenue experienced a renewed decline, with 2011 marking a low point of 2.53 billion dollars and an average annual decrease of (-12.80%). This was primarily attributed to a (-5.20%) drop in tourist arrivals, making it one of the most challenging seasons for the sector due to the combined effects of the economic crisis, the swine flu pandemic, and the Tunisian Revolution on December 17, 2010.(World Bank, 2022) (Mafātīḥ, 2019, pp. 19-20)

Three years later, the sector's share improved by 6.57%, reaching 3.04 billion dollars in 2014, driven by an average annual increase of 8.09% in tourist arrivals. This growth occurred despite the unfavorable security situation in the country during this period, which led to a (-2.91%) decline in European tourist arrivals, while the number of visitors from Maghreb countries increased by 4.77%. (World Bank, 2022) (STATISTIQUES TUNISIE, 2022)

Tunisia's international tourism revenue experienced another decline after the Djerba attacks, settling at 1.78 billion dollars in 2017, representing an average annual decrease of (-14.32%). This decline was primarily attributed to an average annual drop of 8.39% in the number of tourists arriving from the Maghreb region, which was caused by the deteriorating security situation following the attacks on the Kantaoui Port beach and the Bardo Museum⁵. (STATISTIQUESTUNISIE, 2022)(Mafātīḥ, 2019)

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³21 people were killed in the Djerba attacks, following the bombing of the Jewish synagogue
⁴European and Maghreb tourists represent over 38% and 57%, respectively, of the total number of tourists arriving in Tunisia
⁵The attacks on the beach of Port El Kantaoui on June 26, 2015, left 38 tourists dead, while the attacks on the Bardo Museum on March 18, 2015, resulted in 24 fatalities.
In the following two years, tourism revenue improved to 2.68 billion dollars, representing an average annual increase of 22.93%. This growth was driven by a surge in tourist arrivals to an all-time high of 9,429,000 tourists, with an average annual increase of 15.65% in 2019. However, 2020 witnessed a collapse of these revenues to their lowest level of 1.01 billion dollars, representing an average annual decrease of (-62.31%). This decline was primarily attributed to a plunge in tourist arrivals to a record low of 2,012,000 tourists, with an average annual decrease of (-78.66%). This was due to the implementation of local and international lockdown measures to combat the spread of the Covid-19 pandemic. (World Bank, 2022)

3.1.1 Evolutionary path of the level of GDP at current prices in Tunisia during the study period

Tunisia’s GDP in current prices experienced a trajectory of expansion punctuated by periods of decline during the 1995-2020 period. The overall average annual growth rate of 3.62% indicates a general trend of economic growth. However, this trend was not without its challenges, as evidenced by the occasional setbacks. (World Bank, 2022)(Central Bank of Tunisia, 2022)

The year 1995 began with revenues of 18.03 billion dollars, reaching 22.94 billion dollars by 1999, representing an average growth rate of 6.22%. This growth was driven by average growth rates in consumption expenditures and gross fixed capital formation of 11.89% and 12.77%, respectively.

Likewise, the average export rate exceeded the import rate by 0.81%, despite the country’s trade deficit throughout most of the study period. Immediately afterward, in the year 2000, it declined to 21.47 billion dollars, or by 6.41%, due to the worsening trade deficit by 75.58%.

Figure no 2: Evolution of GDP at Current Prices in Tunisia from 1995 to 2020.

Source: Prepared by the researcher, based on the data of Table 01, using the outputs of EViews 12

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1European and Maghreb tourists represent over 38% and 57%, respectively, of the total number of tourists arriving in Tunisia
2The attacks on the beach of Port El Kantaoui on June 26, 2015, left 38 tourists dead, while the attacks on the Bardo Museum on March 18, 2015, resulted in 24 fatalities.
3In Tunisia, during the period 1995-2020, consumption expenditures and gross fixed capital formation GFCA represented 55.27% and 14.78% of GDP, respectively, while exports and imports represented 29.47% and 33.22% of GDP, respectively.
4In Tunisia, during the period 1995-2020, consumption expenditures and gross fixed capital formation GFCA represented 55.27% and 14.78% of GDP, respectively, while exports and imports represented 29.47% and 33.22% of GDP, respectively.
During the period 2000-2014, GDP improved and reached its highest level of 50.27 billion dollars, representing an average growth rate of 6.44%. This growth was driven by improvements in the consumption and indicators, with average growth rates of 8.47% and 6.05%, respectively. However, in 2009 and 2012, GDP declined by (-3.14%) and (-1.68%), respectively, due to a slowdown in all indicators, particularly export volume, which contracted by (-14.09%) in 2009, and a widening trade deficit, which grew at a rate of 37.92% in 2012.

During the remaining years of the study period, GDP deteriorated to 41.62 billion dollars, representing an average decline of (-3.04%). This decline was driven by a contraction in gross fixed capital formation at an average rate of (-0.82%), coupled with a worsening trade deficit averaging 2.36%. It is worth noting that the COVID-19 pandemic did not spare the Tunisian economy, as indicators GFCA and exports plummeted by (-30.45%) and (-18.75%), respectively, in 2020.

4 AN ATTEMPT TO ESTABLISH A LONG-TERM LOGICAL RELATIONSHIP BETWEEN INTERNATIONAL TOURISM REVENUES AND TUNISIA'S GDP DURING THE PERIOD 1995-2020 USING THE ARDL MODEL

The country's GDP at current prices includes the revenues of a group of sectors, such as industry and services. The latter includes various branches, such as tourism. Therefore, we can infer a positive impact of international tourism revenues at current prices on the construction of. Accordingly, we will try to find a long-term logical relationship between them in Tunisia, over 26 years, according to the hypotheses of the ARDL model (al-Mīrghanī, 2021)

4.1 AN EXPLORATORY LOOK AT THE MODEL'S DATA:

Upon examining the movement of the two chains depicted in Figures 1 and 2, it is evident that they are both unstable and exhibit fluctuations without a general trend. This is because they neither decrease nor increase exclusively over time. Additionally, the two chains are not centered on their paths at zero, which allows us to refine the method of selecting and defining the model.

4.2 STATIONARITY TESTS (PRE-TESTS)

Assessing the stationarity of the model's variables requires incorporating them into the A.D.F test, represented below
4.3 DETERMINING THE LAG PERIODS OF THE MODEL

Based on the observations made in the data of the model to be constructed, the most appropriate form for it among the five available forms is: Constant, which we derive definitively according to the following equation:

$$\text{GDPC} = (0.89) \cdot \text{GDPC}(-1) + (2.09) \cdot \text{TIRC} - 0.25 + \varepsilon_i \ldots (01)$$

Table no 3: Determining the Lag Periods of the Model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPC(-1)</td>
<td>0.88041</td>
<td>0.031435</td>
<td>26.94400</td>
<td>0.0000</td>
</tr>
<tr>
<td>TIRC</td>
<td>2.090693</td>
<td>0.545247</td>
<td>3.827374</td>
<td>0.0000</td>
</tr>
<tr>
<td>C</td>
<td>-0.240399</td>
<td>1.498836</td>
<td>-0.154277</td>
<td>0.8710</td>
</tr>
</tbody>
</table>

Source: Prepared by the researcher, based on the outputs of EViews 12 software.
It is evident that in addition to the model variables, the equation has been provided with another independent variable, which is manifested in a single lag period of the dependent variable GDPC(−1), after evaluating twenty models.

4.4 TEST FOR HOMOSCEDASTICITY OF ERROR VARIANCE

Using the White test, we establish the homoscedasticity of the model's error variance [acceptance of the null hypothesis], due to its significance at: 95%, because:

\[ \text{obs} \times R = 3.97 < \chi^2_{0.05}(5) = 11.07 \]  
(Mignon, 2008, pp. 160-161)

4.5 F-BOUNDS TEST

After subjecting the equation to the F-Bounds test, the value: \( F - \text{statistic} = 9.47 \) is greater than the lower bound: \( I(0) = 4.94 \) and the upper bound: \( I(1) = 5.73 \) at the significance level of 5%, as well as at all bounds at any significance level. Therefore, we reject the null hypothesis, which explains the existence of a long-run cointegration relationship between the variables GDPC and TIRC.
4.6 T-TEST FOR LONG-RUN CAUSALITY

The T-test is used to assess the long-run causality relationship between two variables. Since the T-statistic=\textbf{-3.25} is greater than the lower bound=\textbf{-2.36} and the upper bound= \textbf{-3.22} [in absolute values] at the significance level of \textbf{5\%}, the null hypothesis is rejected, confirming the long-run causality relationship between \textit{GDPC} and \textit{TIRC}.

4.7 ERROR CORRECTION COEFFICIENT

The error correction coefficient allows us to estimate the speed of adjustment from the short run to the long run in the relationship between the model variables. From the data in Table 7, we obtain: \textit{CointEq(1)}^* = \textbf{0.11}, which is an ideal value because it is negative and significant at the \textbf{5\%} level, indicating its ability to correct from the short run to the long run at a speed of \textbf{11\%}.
4.8 THE MODEL

When conducting the historical simulation between the actual and estimated values of GDP, we find a great deal of convergence between the two, as reflected in Figure 3. We observe that the error values $\varepsilon_i$ are stable across all years at $\pm 2$ billion dollars, ensuring that the curves of the actual and estimated values of GDP are close, except for only 6 cases out of 26 cases where this barrier was breached.

Figure no 3: Historical Simulation with Actual and Estimated Statistical Values for GDPC.

The ARDL methodology employed in this study confirms the existence of a long-run causal relationship between real GDP (indicating economic growth) and current-value international tourism revenue in Tunisia from 1995 to 2020.

An analysis of the model constrained by equation number (1) reveals that an increase in TIRC by one unit, i.e., by 1 billion dollars, will lead to an increase in GDPC of 2.09 billion dollars, (holding all other variables constant and neutralizing them). This result highlights the estimated positive impact through the average elasticity of $E_{GDPC,TIRC} = 14.24\%$, (Mkyd, 2007). This is a direct relationship that is fully consistent with economic theory.

5 CONCLUSION

Algeria is no longer immune to the repercussions of global crises. It is called upon to free its economy from its dependence on hydrocarbons by adopting serious policies aimed at diversifying the national economy, which requires the revival of major development projects in all sectors, including tourism.

We have a good example in Tunisia, which has invested in the tourism sector since its independence, as it is one of the main pillars of building a strong and productive national economy. In this context, it has allocated significant budgets, focusing on continuing investment in the sector and providing its requirements of: hotels, banks... targeting the European market in this context. These efforts have borne fruit in driving and stimulating the wheel of economic growth in the country.
Results of the study:

- During the period 1995-2020, Tunisia recorded an average growth rate of [numerical value] % in international tourism revenues at current value, thanks to its investment expenditures, which exceeded [numerical value] billion dollars in the last ten years.
- Gross domestic product at current prices is one of the indicators of measuring economic growth, and Tunisia achieved an average expansion of [numerical value] % during the study years.
- The impact of international tourism revenues on the growth of Tunisia's gross domestic product was confirmed at [numerical value] % during the period 1995-2020, and the long-term logic of the relationship between them was also proven.

Recommendations and suggestions:

The importance of the tourism sector and its role in stimulating economic growth within the Tunisian model have been proven in this research paper. The following are some recommendations for building on this foundation:

- Reassess and update the country's tourism development plan to align with global and regional changes and impacts. This plan requires high-level coordination between the ministries of security, environment, culture, and transportation.
- Regulate and control exchange and payment operations by establishing exchange offices and promoting online payments.
- Establish professional channels for marketing tourism and promoting domestic and foreign tourism investment.
- Regarding the tourism patterns related to the qualifications of the city of Constantine, we propose some suggestions that may contribute to its advancement and development, in comparison to what was presented in the Tunisian model:
- Protect the city's archaeological and natural treasures from neglect, through various necessary measures, especially by educating the residents, most of whom are unaware of their historical and cultural values.
- Enforce security in the city, especially at night, where it becomes a haven for delinquents, thieves, and dog walkers, depriving it of visitors who seek beauty illuminated by the lights of bridges and streets.
- Ensure that the concerned authorities take steps to limit the spread of dirt, unpleasant odors, and water leaks that disfigure the landscape and cause annoyance to tourists.
- Make the best use of new media, especially social networks, through promotional images and videos that provide information about the city's landmarks, which have a great impact on attracting foreign tourists.
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