DEMAND, INCOME AND JOBS FOR THE ACTIVITY TOURIST IN COSTA RICA[34]

DEMANDA, INGRESOS Y EMPLEOS DE LA ACTIVIDAD TURÍSTICA EN COSTA RICA

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[34] Derivado del proyecto de investigación: Demand, Income And Jobs For The Activity Tourist In Costa Rica

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RESUMEN

Inspirándose en las exitosas estrategias turísticas que ha generado Costa Rica, este artículo estudiará la evolución del empleo, los ingresos, la salida de divisas y la distribución del turismo, con el fin de identificar los lineamientos establecidos para su desarrollo económico, cómo se proyectarían estas ganancias hasta 2025 y los posibles efectos que traería una disminución en la entrada de turistas. Para este estudio se generó un análisis recopilatorio de los indicadores distribuidos por diferentes entidades gubernamentales en Costa Rica y se utilizaron para realizar una proyección de ingresos y gastos utilizando cadenas Markov Monte Carlo. Los resultados anuales más relevantes de este trabajo determinan que una de las razones por las que se genera más turismo se debe a la adecuada distribución del empleo, proporcional a las necesidades de los visitantes que aportan mayor inversión extranjera en Estados Unidos y Europa. Por otro lado, el correcto manejo de los activos del país se debe al comportamiento predecible de sus ingresos y gastos, sin embargo, un impacto negativo en este comportamiento podría generar retrocesos contundentes en los activos de la región que solo se recuperarían progresivamente.

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ABSTRACT

Inspired by the successful tourism strategies that Costa Rica has generated, this article will study the evolution of employment, income, outflow of foreign currency and tourism distribution, in order to identify the guidelines established for its economic development, how these profits would be projected until 2025 and the possible effects that would bring a decline in the entry of tourists. For this study, a compilation analysis of the indicators distributed by different government entities in Costa Rica was generated and they were used to carry out a projection of income and expenditure using Markov Monte Carlo chains. The most relevant annual results of this work determine that some of the reasons why more tourism is generated is due to the adequate distribution of employment, proportional to the needs of the visitors who provide greater foreign investment in the United States and Europe. On the other hand, the correct management of the country's assets is due to the predictable behavior of its income and expenses, however, a negative impact on this behavior could generate forceful setbacks in the region's assets that would only recover progressively.

PALABRAS CLAVE: Turismo, Costa Rica, Ingresos, Egresos, Empleo.

Keywords: Tourism, Costa Rica, Income, Expenditures, Employment.

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INTRODUCTION

Economic phenomena that have an impact on a country's development have characteristics that are difficult to control (Chen Xu & Munday, 2020), which, when implemented in unison, generate a sense of instability in the evolution and growth of assets such as gross domestic product (GDP), investments and capital, among others (Dunets, et al., 2019). While some countries have reduced the random impact of their economic development based on reliable predictions and estimates (Sokhanvar, Ciftcioglu, & Javis, 2018), others, based on foreign exchange earnings, generate fewer stable changes, which implies greater uncertainty and, at the same time, inefficient growth policies. In this sense, within the framework of the globalization and competitiveness process, countries seek to generate diverse economic activities, thereby favoring the actors involved in their socio-economic aspects.

The travel and tourism (T&T) industry is growing significantly, positively impacting the socio-economic development of countries by being attractive to foreign investment, among other benefits (Brida, Lanzilotta, Pereyra, & Pizzolon, 2013). Until 2019, this growth has been sustainable, especially in those destinations that have developed competitively.

According to the World Tourism Organization (UNWTO), there was a 45% increase in the arrival of international tourists to different destinations in the world between 2011 and 2019 and, in the expenditure derived from this activity, the equivalent of 46%. Latin America produced 3% of GDP in 2018, according to data published in the Travel & Tourism Competitiveness Report 2019 (TTCR) (WEF, 2019) by the World Economic Forum (WEF). However, it has also been one of the sectors that has been affected by the pandemic due to COVID-19, registering a 74% drop in international arrivals in 2020 compared to the previous year (UNWTO, 2021).

Long-term studies of the T&T industry include its relationship with the economic development of countries (Brida, Lanzilotta, Pereyra, & Pizzolon, 2013), generally in terms of the generation of GDP income associated with this activity. However, the foreign contribution related to tourism activity is difficult to assess (Brida, Rodríguez, & Mejía-Alazate, 2021), due to problems of data availability (Pineda & Pérez, 2021) and because domestic investment is overshadowed by other services (Romagosa, Mendoza, Mojica, & Morén-Alegret, 2020). However, there are cases where tourism demand represents a

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significant proportion of economic development (Flores & Barroso, 2012) and other indicators such as employment generation (Noriega & Arnaiz, 2020) or income (Durán-Román, Pulido-Fernández, & Cárdenas-García, 2020), among others.

UNWTO has promoted Tourism Satellite Accounts (TSA) to clearly assess tourism activity figures on a continuous basis. In addition, it applies this methodology to estimate its products. For example, in Spain, the Spanish Tourism Satellite Account (CSTE), seeks to characterize the structure of production and costs of the T&T industry and demand and, finally, to obtain integrated measures with macroeconomic variables such as GDP and employment, among others (Ibérico, Nuñez-Seballo, Pachas, & Pazos, 2015).

Starting in the 1990s, countries began to have tourism activity observatories to generate and provide detailed and timely information on this dynamic. In addition, this would make it possible to measure the levels of its impact and anticipate future flows and demands of the sector, constituting information systems that show its trends and characteristics (Padilla, Sánchez, Hernández, & Mendoza, 2020).

In Latin America, Costa Rica is recognized for its sustainable tourism activity. Likewise, it is characterized for having an important tourism activity and is qualified as a country with an important biodiversity in the world, which generates a potential competitive advantage (Molina-Murillo, 2019), (Vásquez&Bolaños, 2020). According to (WEF, 2019), it is in 41st place in the Global Ranking, which considers the factors of environment, adequate conditions in travel policies, infrastructure, tourism, natural and cultural resources, to make this classification.

This document will explain the data, tools and strategies used to analyze and model some characteristics of Costa Rica's economy, under the following structure: firstly, the context of the country's tourism sector is presented; secondly, the development of the methodology applied in the study is presented; thirdly, the results are presented; and finally, the conclusions.

TOURISM SECTOR IN COSTA RICA

Costa Rica is located in Central America and is surrounded by the Atlantic and Pacific oceans. It is characterised by a mountainous system that crosses the length of the country, in addition to having stable temperatures that allow it to have a varied biodiversity. Its economic

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activities are related to tourism, agriculture and livestock and the provision of services (Arias-Hidalgo & Mornat González, 2020). Although it is a small country, approximately 51,100 km2, it has historically played a critical role in the sustainable development of the region (Ramírez Cover, 2020). Some of its recorded economic indicators that relate to the evolution of the country are presented in Table 1.

Table 1. Costa Rica Indicators

Item	Year 2016	Year 2017	Year 2018	Year 2019
Total population	4.899.345	4.949.954	4.999.441	5.047.561
Population growth (annual %)	1,1	1,0	1,0	1,0
Total exports (million $)	10.100,3	10.807,8	11.473,6	11.622,9
Tourism Ratio (Exports %)	36,0	33,8	32,8	34,1
Contribution of Tourism to GDP (Indirect Effect (%)	8,1	8,1	8,2	8,2
Life expectancy at birth (years)	79,7	79,9	80,1	80
GDP (US$ at current prices)	57.157.992.434	58.481.858.042	60.553.901.420	61.801.385.049
GDP growth (annual %)	4,2	3,9	2,7	2,1
Inflation, GDP deflator (annual %)	2,0	2,6	2,5	1,8

Source: Own elaboration based on IDB (2021)

Given its geographic, demographic and economic characteristics, Costa Rica is a country that has been articulating its policy according to market requirements (Leiva, Alegre, & Monge, 2014). Therefore, guidelines have been generated for the promotion of tourism activity.

Currently, the aspects established in the National Tourism Development Plan of Costa Rica 2017-2021 (ICT, National Tourism Development Plan of Costa Rica 2017-2021, 2017) are articulated with three (3) axes: sustainability, innovation, and inclusion. These generate a direct relationship with the Sustainable Development Goals (SDGs) set forth by the United Nations (UNDP, 2017), where:

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- Sustainability refers to how to make efficient use of environmental resources and maintain the diversity of the place and, by raising tourist awareness, respect the socio-cultural authenticity of the communities. In addition, generating a high level of tourist loyalty and achieving sustainable tourism practices.
- Innovation is premised on economic benefit and fair and equitable distribution to all parties involved. This makes it possible to generate strategic, market, organizational and technological innovation processes.
- The inclusion and generation of strategies that allow the reduction of poverty and social improvement, with the participation, evolution and strengthening of tourism.

Considering that Costa Rica is one of the 193 signatory nations of the Declaration of Sustainable Development Goals (UNDP, 2017), its commitment has been supported by the mobilization of the necessary means to implement the Agenda. This has led it to implement better productive processes, especially in the tourism sector, as it is considered one of the economic activities that should provide the most employment (Rodríguez Torres, 2009).

Costa Rica was one of the first countries to develop a sustainable country brand (Granados & Revilla, 2007), which allowed it to achieve a successful positioning, based on the strengthening of companies and compliance with procedures that are important and invaluable for tourists: quality, good service, product diversity and sustainable development of the travel and tourism industry (Martínez, 2020). It is important to highlight that, despite the natural phenomena that have affected it (Lizano, 2013) (Valerio, 2020), its location, beaches, forests, national parks, among others, continue to be of interest to tourists (Martínez, 2020).

The Costa Rican government has assigned the ICT to be in charge of promoting the development of tourism activity, the differentiation of the model, social responsibility, and the positioning of the sector in the international market. Its strategic objectives include the consolidation of a unified system of strategic information that allows it to optimize decision-making in the public and private spheres, as well as planning, knowledge generation and transfer, social responsibility, and sustainability (ICT, Costa Rican Tourism Institute, 2021).

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Another institution involved in the development of tourism activity is the Costa Rican Chamber of Hotels (CCH) (CCH, 2021). In the latest reports presented as a result of the pandemic caused by COVID - 19, it is indicated that the year 2020 has been considered atypical due to the prevention measures put in place to avoid the spread of this virus. This undoubtedly has an impact on the tourism sector and therefore on the country's economy. Therefore, it is considered important to protect the travel and tourism industry, due to the economic impact arising from the implementation of sanitary measures aimed at curbing the spread of COVID-19 (Vargas, 2020). This has a greater impact in coastal areas, where low-income families who earn their income through activities in hotels and restaurants, among others, are located. Hence the importance of studying recovery trends in the tourism sector, viewed from the perspective of integrality and sustainability with nature-based solutions, i.e., "all actions that rely on ecosystems and the services they provide to respond to various societal challenges, such as climate change, food security or disaster risk" (IUCN, 2017).

METHOD

The study of the tourism sector in Costa Rica and its contribution to the local economy is based on the collection of five (5) databases, which facilitated the analysis of variables that make it possible to measure and identify annual variations in tourist arrivals and the economic implications they imply.

a) The first database focuses on the measurement of economic resources obtained by tourism from 2003 to 2019 from the Macroeconomic Statistics Department of the Central Bank of Costa Rica (BCCR, 2021). This generates its indicators on a monthly basis and publishes them annually. The foreign exchange generated by tourism in the country is obtained from this database. The information compiled in this database considers 2012 as a reference period in which 183 products and 136 activities are considered.

b) The estimate of the number of tourists entering the country from 2013 to 2019, published by the ICT (ICT, 2021). Data collection is based on a random sampling that is carried out periodically each year and on personal interviews conducted in the waiting rooms of international airports. From this, the main reason for visiting Costa Rica and the number

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of non-resident visitors to the Juan Santamaría or Daniel Oduber Quirós International Airports are extracted.

c) From the National Institute of Statistics and Census (INEC, 2021), through the Continuous Employment Survey (ECE), the number of persons employed in activities associated with the tourism sector from 2010 to 2019 is identified. The data were retrieved from the website. Likewise, the records were collected from a probabilistic, stratified, bimetallic clustered and replicated sampling focused on the population over 15 years of age that is executed periodically, every year from personal interviews conducted in 9528 households per quarter, with 794 Primary Sampling Units (PSU). The purpose of the analysis of this indicator is to have a periodic indicator of the evolution of employment in activities associated with the tourism sector from the perspective of the persons employed.

d) The population study distributed by economic activity focused on the tourism sector from 2010 to 2019. The data are obtained from the actuarial and economic directorate of the Costa Rican Social Security Fund (CCSS, 2021). The main objective of the data collection is to have an annual monitoring indicator of the evolution of employment in the country from the perspective of people employed in the tourism sector.

e) International arrivals to Costa Rica, filtered by country and region of origin from 2015 to 2019. It also has a record of total international arrivals from 1951 to 2019 (ICT, 2021).

f) Each database is recorded in a spreadsheet. However, the separations by tenths were established by spaces, so the data processing adapts the characters of the records to a numerical value format by removing the spaces and separating the individual amounts in Excel columns.

The data presented are based on studies carried out annually throughout Costa Rica, so there is no specific data available on the general distribution of the contribution of income, expenditure, foreign exchange, or tourism focus of each region of the country. In this sense, this study will be divided into two (2) phases to understand the main characteristics of the

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country and the behaviour of its expected projections. The first is focused on a general study of the data from a conventional descriptive summary, due to the fact that there is a limitation in the amount of information available, which does not allow the generation of sophisticated studies that implement adaptive inference techniques or artificial intelligence. Therefore, a distribution study will be generated to identify the countries with the greatest contribution to tourist arrivals to Costa Rica, the reason why visitors enter the country, the contribution of each economic activity to employment and the affinity of tourists with the available activities in the region.

The second phase focuses on forecasting the expected projections for foreign exchange inflows and outflows, as well as the growth of annual international tourism arrivals. As stated above, the economic evolution of a tourism-centered country is determined by highly volatile independent characteristics that can generate instability in the population frequency of people entering the country (Romero, 2016). This in turn has a direct impact on the behaviour of foreign exchange inflows and outflows over time.

For the analysis of trends in inflows and outflows, it is proposed to establish mathematical models whose behaviour is similar to that observed by the temporal evolution of each characteristic of interest. The mathematical models obtained will be adjusted based on parameter estimation implemented through the use of Monte Carlo Markov chains (MCMC) (Foreman-Mackey, Hogg, Lang, & Goodma, 2013). These are sampling strategies that explore multidimensional spaces based on Markov chains, whose main theoretical reference is Bayesian inference and conditional probability (Berg & Billoire, 2007).

For parameter inference, an error or dispersion function is implemented that receives as inputs a set of parameters which give flexibility to the model and the real data of the study. The objective of this function is to evaluate the closeness of the predictions to the real values, in order to subsequently infer the coefficients of the model that minimize the dispersion (Geyer, 1991).

For the first phase of the study, the databases described in a, b, c and d are used. For the second phase of the study, foreign exchange inflows and outflows, as well as international arrivals recorded in databases a and d, will be used. For the prediction and adjustment of behaviors in the second study, a fitted linear model will be established (Johannes & Polson, 2010). The number of parameters set in linear models are two (2): the slope (representing the

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annual growth) and the cut-off point with the X-axis (representing the minimum number of estimated amounts to be made at time 0 or initial time).

RESULTS

The preliminary analysis is carried out through the distribution of the number of people entering the country, organized by country from the lowest to the highest participation. For this data, the period 2015 - 2019 is considered, considering the following regions: North, Central and South America, Europe and the Caribbean. Tables 2, 3 and 4 show the results.

Table 2. Number of tourists arriving in Costa Rica from North America and Central America from 2015 to 2019

Country	2015	2016	2017	2018	2019
Mexico	84.940	94.499	106.783	98.918	97.173
Canada	175.771	188.104	201.921	217.006	234.621
United States	1.077.044	1.233.277	1.199.241	1.265.067	1.334.777

Source: Own elaboration from ICT (2021)

Table 3. Number of tourists arriving in Costa Rica from the Central American region from 2015 to 2019

Country	2015	2016	2017	2018	2019
Belize	812	869	970	964	1103
Honduras	39.560	40.478	40.300	38.135	42.024
Guatemala	57.600	65.063	78.032	65.633	69.471
El Salvador	69.427	78.273	81.091	76.937	78.948
Panamá	97.135	99.917	104.795	92.802	92.072
Nicaragua	446.870	440.038	429.990	416.915	414.983

Source: Own elaboration from ICT (2021)

Table 4. Number of tourists arriving in Costa Rica from the South American region from 2015 to 2019

Country	2015	2016	2017	2018	2019
Surinam	106	94	91	98	89
Guyana	220	215	248	214	290
Paraguay	1.054	1.095	1.017	1.005	1.603

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Country	2015	2016	2017	2018	2019
Bolivia	2.205	2.184	2.115	2.181	2.638
Uruguay	3.835	3.838	4.099	4.392	5.041
Ecuador	6.171	6.243	6.306	6.280	6.434
Peru	11.268	13.328	13.261	14.865	17.007
Chile	11.887	13.091	13.555	18.297	21.235
Brazil	19.272	20.005	21.485	22.329	26.815
Argentina	24.204	29.869	30.992	40.832	37.948
Venezuela	34.745	47.511	40.277	33.197	31.924
Colombia	41.185	43.706	47.953	46.723	44.557

Source: Own elaboration from ICT (2021)

According to (ICT, 2021) the percentage of tourism data is generated by the use of US visas by persons from other countries. However, it is impossible to analytically identify the participation of other countries in this data due to the way it was collected.

Table 3 shows how, of the Central American countries, Nicaragua is the one with the highest participation in Costa Rican tourism, contributing almost 60% of the total values generated by this region as a whole. Despite having a high geological and cultural diversity, the South American countries that represent the greatest contribution to Costa Rican tourism are Colombia, Venezuela and Argentina, as shown in Table 4.

Table 5. Number of tourists arriving in Costa Rica from the Caribbean region from 2015 to 2019

Country	2015	2016	2017	2018	2019
Puerto Rico	16	19	13	7	5
Haiti	346	415	399	409	502
Bahamas	422	323	423	355	367
Bermuda	481	443	364	344	339
Others Caribbean	709	571	721	627	633
Jamaica	1.004	971	982	997	1.180
Trinidad and Tobago	1.440	1.105	1.356	1.212	1.371
Cuba	2.919	3.161	3.167	3.149	3.042
Dominican Republic	5.312	5.541	5.956	5.897	6.071

Source: Own elaboration from ICT (2021)

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Table 6. Number of tourists arriving in Costa Rica from the European region from 2015 to 2019

Country	2015	2016	2017	2018	2019
Slovakia	950	1.097	1.236	1.323	1.296
Hungary	1.125	1.105	1.357	1.636	1.966
Romania	1.499	2.026	1.695	2.032	2.091
Finland	2.119	2.161	1.894	1.824	1.832
Czech Republic	2.186	2.262	3.028	3.909	3.723
Ireland	3.324	3.977	4.321	4.578	4.411
Portugal	3.400	3.570	4.268	5.808	5.953
Poland	3.514	3.917	4.186	5.056	6.212
Norway	3.835	3.616	3.485	3.784	4.007
Russia	4.018	4.086	4.657	4.765	5.562
Denmark	5.371	6.221	6.123	6.574	7.191
Other Europe	7.322	8.454	10.058	10.673	11.283
Austria	7.679	7.560	7.688	8.089	8.322
Sweden	10.588	10.646	9.985	11.117	10.979
Belgium	10.597	10.367	12.275	12.381	12.256
Israel	15.806	17.186	14.563	14.359	14.869
Switzerland	20.383	21.242	25.395	28.884	27.841
Netherlands	27.083	27.129	30.316	32.561	34.712
Italy	28.406	29.975	29.047	29.171	30.196
United Kingdom	47.499	71.392	76.173	74.338	78.562
France	54.773	61.503	69.803	74.032	77.013
Spain	65.188	67.453	69.782	68.634	69.745
Germany	66.450	67.939	70.960	74.574	80.580

Source: Own elaboration from ICT (2021)

Table 5 presents the main sources of tourism contribution in the Caribbean, with Cuba and the Dominican Republic making the largest contributions. In addition, the country's domestic tourism represents a low contribution to tourism only by Costa Ricans living abroad returning to their country. On the other hand, the contribution of the Caribbean Region indicates the low interest of nearby countries in visiting Costa Rica compared to other regions of the world, possibly influenced by similar tourism environments.

In contrast, the more urbanized countries show a greater contribution to tourism as shown in Table 6, which demonstrates the high numbers of people travelling to Costa Rica,

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positioning this region as the second largest contributor to the inflow of people to the country, behind North America.

Given the above distributions of people visiting Costa Rica, residents based in countries further away from the tropical regions have a greater interest in visiting the country, with Europe and North America being the most representative countries with approximately 66% and 70% of the total annual participation. These characteristics are of great interest to Costa Rica since they allow it to identify the target population on which to focus its attractions. However, under these characteristics, it is also necessary to expand on the motivations that drive people to visit Costa Rica, which can be seen in Table 7. As can be seen, almost 90% of the population is interested in travelling for recreational purposes, these proportions set the personal motives under the distributions seen in Table 8, exceeding 82% interest.

Under these population contributions of tourism, employment development is directly affected by a partially constant development set between 5 and 7% as can be seen in table 9.

Table 7. Participation rates by reason for travel and year

Country	Personal reasons (%)	Business and professional motives (%)
2013	88	12
2014	86	14
2015	84	16
2016	90	10
2017	92	8
2018	91	9
2019	95	5

Source: Own elaboration from ICT (2021)

Table 8. Personal reasons for travelling to Costa Rica by category (ICT, 2021)

Country	Health (%)	Education and training (%)	Other reasons (%)	Visits to relatives (%)	Holidays, recreation and leisure (%)
2013	0	1	2	11	85
2014	0	1	1	10	87
2015	0	1	1	11	87
2016	0	1	2	14	82
2017	1	2	3	11	84
2018	1	3	3	12	82
2019	1	3	2	10	84

Source: Own elaboration from ICT (2021)

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Table 9. employment indicators National Institute of Statistics and Censuses (INEC) and Continuous Employment Survey (ECE)

Indicator	Population employed in tourism activities (direct employment)	Percentage of labour force (direct employment only) (%)
2010	126.231	6,1
2011	120.084	5,9
2012	130.438	5,9
2013	152.081	6,8
2014	149.207	6,5
2015	156.574	6,9
2016	152.426	6,9
2017	155.296	6,9
2018	160.976	6,8
2019	170.870	6,9

Source: Own elaboration from ICT (2021)

Under this concept, tourism activity does not generate all the jobs necessary for the development of the country. However, it is a joint work among the local activities offered throughout the region. Of the total number of activities, these are the five (5) that generate the most jobs in all of Costa Rica, in order from least to most represented:

- Public administration and defense
- Manufacturing industries
- Real estate, business and renting activities
- Agriculture, hunting, forestry and hunting activities
- Trade, repair of motor vehicles and household goods

Whose progressive annual evolution since 2010 can be seen in Table 10.

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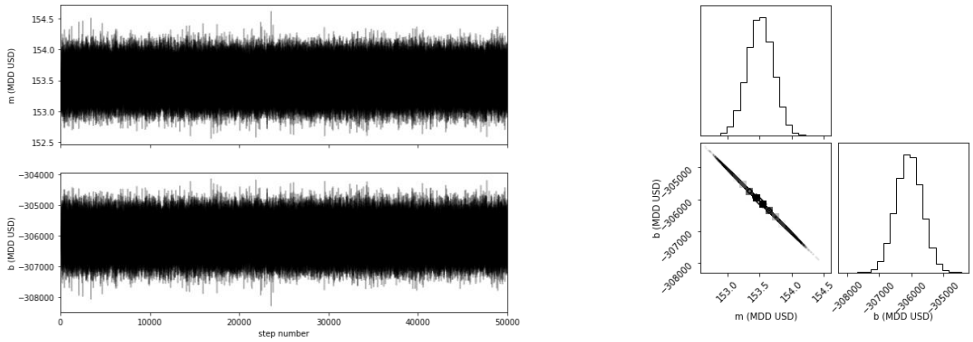
Table 10. Annual evolution of directly insured workers according to the economic activity they perform actuarial and economic management of the Costa Rican social security fund (CCSS)

Year	Management	Manufacturing	Real state agencies	Agriculture	Business
2010	120.316	136.679	148.767	160.337	192.318
2011	123.408	139.610	161.651	154.484	201.045
2012	123.574	153.253	167.788	155.383	209.684
2013	126.642	150.985	176.163	155.698	216.990
2014	130.189	149.450	182.827	159.462	219.728
2015	130.947	150.416	194.629	163.350	230.004
2016	130.901	151.869	209.208	160.228	239.189
2017	134.414	154.227	217.293	162.182	250.857
2018	133.635	156.686	226.739	159.045	252.227
2019	134.086	155.205	240.116	151.712	249.318

Source: Own elaboration from ICT (2021)

The distributions generate annual foreign exchange, the evolution of which is represented by a semi-linear share affected by annual variations in the values of foreign exchange inflows and outflows. These sometimes-erratic values are usually evaluated from stochastic models based on known data (Foreman-Mackey, Hogg, Lang, & Goodma, 2013), in this case from 2003 to 2019, for inflows and outflows. The time periods were set this way because the distributions presented in these intervals were more consistent with linear growth. Figure 1 shows the results of fitting a linear model of slope m and cut-off point b using the inflow data and root mean square error metric.

Figure 1. Generated values and distribution of the Markov chain obtained for the slope parameters and the cut-off point for the revenue estimation



Source: Own elaboration

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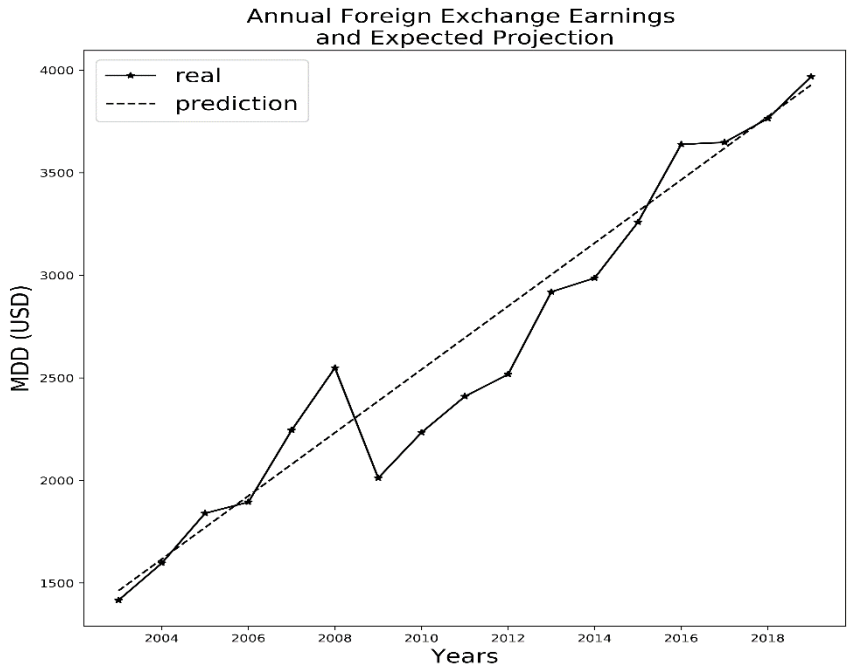
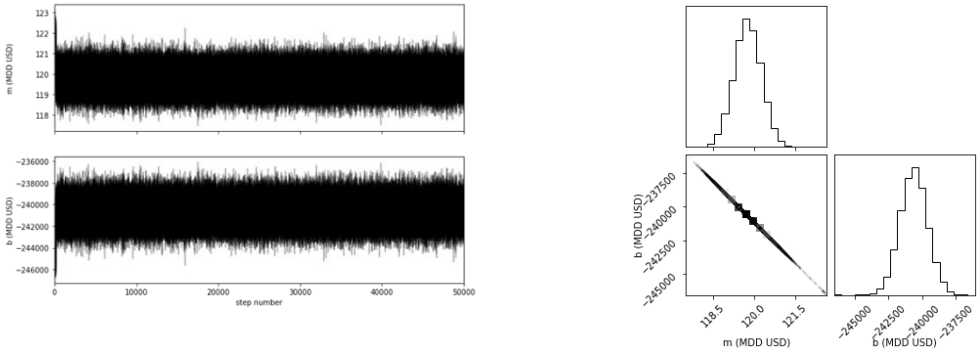
Figure 2. Annual Foreign Exchange Earnings and Expected Projection



Source: Own elaboration

Figure 3. Generated values and Markov chain distribution obtained for the slope



Source: Own elaboration

As can be seen, the Markov chain generates controlled jumps distributed from a normal, of mean 153 for the slope of the straight line and -307200 for the point of intersection with the Y-axis. Due to the behaviour of these distributions, it can be intuited that the method converges to a solution, this being the approximation that minimises the distances. As a result, the distribution shown in Figure 2 is obtained. Similarly, Figure 3 shows the results

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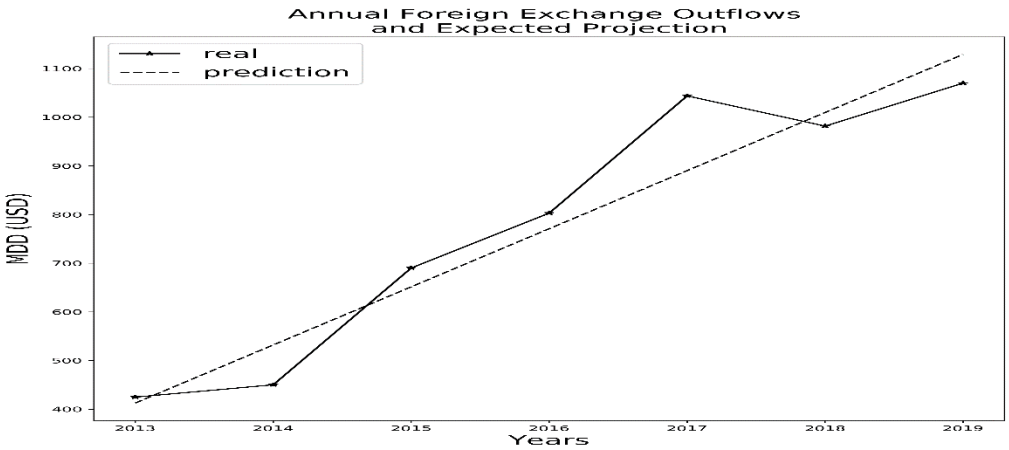
for the outflow. For the outflow, the growth obtained approximately a convergence to the mean of 120 for the slope and -240000 for the cut-off point, thus achieving the following prediction of the outflow in Costa Rica shown in Figure 4.

Figure 4. Annual Foreign Exchange Outflows and Expected Projection



Source: Own elaboration

As can be seen in Figures 2 and 4, the growth in foreign exchange inflows and outflows increases monotonically from a linear evolution, which appears to be constant. This indicates that the characteristics proposed as a model of tourism in Costa Rica allow for a progressive evolution, not only of monetary goods, but also of employment and the frequency with which people eventually visit the country for recreational purposes.

Given that the flow of people visiting Costa Rica, the employment contribution it implies, and the motivations of tourists keep their participation under control, it can be assumed that under normal conditions all these general data are constant and can be estimated from the only values that do vary over time, the inflow and outflow of foreign exchange. Because of this, the expected value of revenues from this progressive trend of the markets since 2010, the growth of inflows and outflows for the years 2020 to 2025 are shown in Table 11.

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Table 11. Projected income and expenditure (USD millions)

Year	Income	Expenditure
2020	4023,363	1259,551
2021	4176,873	1379,298
2022	4330,383	1499,045
2023	4483,893	1618,792
2024	4637,403	1738,539
2025	4790,913	1858,286

Source: Own elaboration

A progressive estimation based on the policy reference from 2010 to 2019 based on the parameters obtained by the Markov chains for annual foreign exchange inflows and outflows. It is known that by 2020 the effects of global confinement cause a setback in the economic development of the country, due to the decrease of goods from tourism.

From the results presented above, it can be concluded that the data present a progressive growth of all direct and indirect economic areas involved in tourism, due to the phenomenon that limits the growth and the capacity of Costa Rica to generate income through the activities derived from the sector. Finally, this would imply that the growth of the country's income will not recover immediately after a shock but will remain with a monotonic increase until reaching an equilibrium point, where the number of tourists remains constant.

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CONCLUSIONS

Costa Rica is one of the Central American countries with the greatest tourism potential due to its natural wealth and the development of activities that promote knowledge of its tourist sites, in a sustainable manner and with a representative economic impact for those who participate in them.

The research carried out reveals that the reasons for this trend are purity of nature, climate, nobility of the people, among others. This leads to an increase in tourist activity, with the main reason for travel being holidays.

The ratio of foreign exchange earnings is growing steadily, and the share of direct employment in the tourism sector remains constant. Tourism is directly related to employment growth in activities such as manufacturing, commerce and agriculture, with commerce being the most representative and the fastest growing compared to the other sectors.

The annual growth of foreign exchange earnings in Costa Rica is 153 million dollars, while outflows per year grow by 120 million dollars. It is worth noting that since 2013 the evolution of foreign exchange inflows and outflows has been more controlled, so there is an easily identifiable trend.

It is worth noting that, from what has been established for tourism-based economies, these analyses can be replicated in Latin American countries with flexible and simple estimation models based on the previous evolution of a country's inflows and outflows.

It is important to highlight that, despite the volatility of the data presented by the countries based on tourism economies, Costa Rica presents a stability in its foreign exchange which is reflected in the monotonic growth of income and expenditure, despite having a fortuitous change in the number of visitors, employment and the distributions of this generated within domestic trade.

Finally, given the behaviour of the data presented, the growth of foreign exchange earnings and outflows from tourism is progressive, so a negative impact on this behaviour could not be recovered in the short term, but depends on variables such as the weather, government measures, confidence and the markets in general.

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