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COVID-19: IS IT A DISASTER FOR TOURISM IN TURKEY?

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Abstract

Covid-19, which started in China and spread to the rest of the world in a matter of months, is demanding us to keep distance with other people and not leave the region (or even home) because of its high contagion rate. The tourism sector, which is became helpless against Covid-19, like all economic sectors, collapsed in the first half of 2020. Turkey, which had 34.5 billion dollars tourism revenue from 52 million tourists in 2019, has also been negatively affected by the pandemic process as well as all over the world. In this study, in order to examine Turkey's dependence on tourism sector and to have knowledge about the possible impact of the Covid-19, an econometric analysis was conducted using the variables of GDP, tourism revenues, number of tourists and the ratio of tourism revenues to exports for the period of 2004:Q1-2019:Q4. According to unit root tests results, all variables were stationary at level except GDP and there were structural breaks in all variables. As a result of the Gregory-Hansen structural break cointegration test, it has been observed that tourism revenues have a positive effect on economic growth while the number of tourists has a negative effect. Therefore, in order to overcome the pandemic period with the least damage from tourism sector, the positive effects from the expected decrease of the number of tourists should be kept absolutely larger than the negative effects from the expected decrease of tourism revenues.

Keywords: Tourism, Covid-19, Structural breaks, Gregory-Hansen Cointegration Test.

1. Introduction

Individuals who have problems due to daily life's difficulties, work intensity and many other reasons go on vacation to get away from these problems for a certain time. In the second half of the twentieth century, as a result of the increase in welfare levels and transportation opportunities, people started to spend their holidays in different countries and contributed to the development of international tourism. On the other hand, the development of international tourism has brought great benefits to the countries both economically and culturally and has become a new economic sector.

Due to the positive effects of the tourism sector such as increasing employment, improving the income and welfare levels, easing the debt burden, and correcting the balance of payments disequilibrium, both the developed and developing countries with tourism potential increase their investments in this sector

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(Bahar, 2006; Çoban ve Özcan, 2013; Dereli ve Akiş, 2019; Yavuz, 2011). The increase in investments contributes to the development of the tourism sector both on country basis and worldwide. Therefore, vacation opportunities that serve different purposes and needs have increased worldwide.

While people who are planning to go vacation determine destination according to special factors such as the quality of the hotel (or place), price, activity facilities, weather conditions, they also take into account many factors such as security, relations between the countries, epidemics etc. That is why the tourism sector has more fragile structure than other sectors. Any possible negative situation such as natural disasters, terrorism, and epidemics may cause cancellation of plans for tourists and a great losses in tourism revenues for the destination country. This fragile structure of the sector can cause the investments to be wasted and the economy to be damaged rather than benefited. Therefore, especially developing countries should make sure that the weight of the tourism sector in the economy is not too high when making their development plans.

As a result of the corona virus pandemic called Covid-19, which emerged in Wuhan, China in December 2019 and spread all over the world, quarantine measures have been taken all over the world from prohibition of entering or exiting the country to the curfews across the country. These measures affect both individuals and countries economically. Governments are taking various steps to survive the pandemic process with minimal damage. However, the fact that the contagion speed of the virus is very high, and the vaccine has not been found yet, create a great uncertainty about how long these measures will continue.

The virus caused significant changes in lifestyles. Habits in daily life have begun to be abandoned or changed. Vacation plans are delayed or even canceled, and so on. It is clear that this virus will affect the tourism sector and even cause great damage.

In this study, in order to grasp a glimpse of the possible effects of Covid-19 on economy through the tourism sector, the historical events that took place across the world and impacted the tourism sector were examined. Possible outcomes of the pandemic process estimated by the results of Gregory-Hansen structural break cointegration test. Study is divided into seven sections. In section 2, development of tourism sector and how it became one of the leading sectors of the economy is investigated. Section 3 provides information on the relationship between tourism and the economy. In section 4, some information about the pandemic, Covid-19, is given and its possible effects on tourism sector is discussed. In section 5, a brief review of the selected literature of the effects of tourism on economy is provided. Even though the main purpose of the study to examine the effect of covid-19 on economy through tourism, but since covid-19 is a new phenomenon, there is not enough data to analyze. Therefore, the analysis was conducted with the newest data set. After providing information about the data and the variables, an econometric analysis is conducted to determine the weight of tourism sector in Turkish economy in section 6. Using the results of the analysis, a prediction is made about the possible damages Covid-19 outbreak may cause to the Turkey's economy. Section 7 concludes the study.

2. Development of tourism sector

The development of technology and economies has led to increased job opportunities and hence the welfare of people. In return for an increase in welfare, people began to live a monotonous life by working at a certain job at certain hours. In time, this monotonous life started to cause decrease in productivity which is not desired by neither employees nor employers. People prefer to go on vacation to avoid monotony and therefore loss of productivity.

With the increase in opportunities as a result of the development of the transportation sector, having a vacation in other countries has ceased being a dream and become possible for everyone. International tourism has become the center of attention of many countries as it provides direct foreign exchange income as well as the job opportunities it creates. The usage of jet planes with the effect of the technological developments that emerged after the World War II, and the rapid development of the commercial airline industry as a result played an important role in the increase of tourism activities. The tourism sector has become one of the most employed sectors in the last decade of the twentieth century with the effect of increased tourism activities. According to data from The World Tourism Organization (UNWTO) and World Travel and Tourism Council (WTTC), the number of tourists worldwide, which was 25 million in the 1950s, increased by 59 times by 2019, reaching the limit of 1.5 billion. With this increase, the tourism sector contributed \$8.9 trillion to the world GDP in 2019 and created 330 million jobs, corresponding to one in 10 of the jobs created worldwide. In addition, \$948 billion of capital investment in the tourism industry corresponds to 4.3% of the global total capital investment.

Tourism sector had not shown much improvement in Turkey where the import substitution policies followed until 1980. After the Tourism Incentive Law No. 2634 which came into force in 1982, the sector shown great development and started to play an important role in the development of the country (Çoban ve Özcan, 2013). According to tourism data of Turkey, it is seen that the number of tourists and tourism revenues, which were stagnant until Tourism Incentives Law, began to increase at a high rate after 1983. Until 1983, the total number of foreigners visiting the country was less than 2 million annually and the revenue from these visitors is less than \$400 million. In 1983, \$411 million of revenue was generated from 1.6 million visitors, and with the introduction of the Tourism Incentive Law, the number of visitors rose to 2.1 million in 1984 and the revenue reached \$840 million (Ünlüönen ve Kılıçlar, 2004). With the increases in the tourism sector that started to develop after this date, a total tourism income of \$34.5 billion was obtained from 51.7 million visitors in 2019.

According to data from Turkish Statistical Institute (TURKSTAT) and WTTC, the tourism sector, which contributed to employment with creation of 2.6 million jobs, and to exports with \$41 billion, in addition to generating \$34 billion in revenue in 2019, is of great importance on Turkey's economy.

The Minister of Culture and Tourism of Turkey, who was hopeful for the future of the tourism industry in January 2020, said that the industry had the best January with 1.8 million visitors and that 2020 was promising year for tourism¹. As the Minister of Culture and Tourism stated, this promising start in the first quarter of 2020 has generated tourism revenue of \$4.1 billion from 5.6 million visitors. However, as a result of the quarantine measures taken by Turkey after the first confirmed case of the Covid-19, the tourism sector was bottomed in the second quarter of 2020.

3. Relation between tourism and economy

With the development of the tourism sector in a region, the number of tourists coming to the region increases and new sectors are formed, and employment opportunities increase in order to meet the needs of the increasing number of tourists. On the contrary, tourists often prefer regions with sectors for their needs, and thus the number of tourists coming to the regions, where the sectors that meet the needs of the tourists, is increasing. So, it can be said that there is a mutual relationship between the tourism sector and the development of the region and employment.

According to the WTTC, the world tourism sector, which grew by 3.5% in 2019, is the reason for one of every 4 new jobs created in the world in the last five years². For this reason, the tourism sector is one of the biggest assistants of governments in creating new jobs and fighting unemployment. According to data from WTTC and UNWTO, the sector's contribution to employment is increasing in time. The tourism sector, which contributed greatly to the world economy by creating 249 million jobs in 2000, increased this contribution by more than 30% in 2019, creating approximately 350 million jobs.

In addition to its contributions in creating jobs, the foreign currency brought by the tourists positively affect the balance of payments (Adam et al., 2019). The tourism sector is developing as one of the most important sectors in the world economy and plays an important role that contributes to the economic growth of the country (Kaur & Sarin, 2016). Therefore, the tourism sector is used as a development strategy in developing countries.

One of the reasons why tourism is used as a development strategy is that it is a sub-branch of exports that benefits from economies of scale, reduces foreign currency constraints, alleviates foreign currency shortages, provides positive externalities in non-commercial sectors, uses resources effectively and efficiently, revitalizes investments in traditional sectors and consequently affects economic growth positively (Bahar, 2006). Therefore, developed countries, as well as emerging countries, attach importance to the tourism sector.

As known, tourism takes place in the international services section of the current account and on the top of the service activities subject to international trade. Therefore, the tourism expenditures of foreign tourists within the country bring foreign currency income to the country and has an export effect as the trade of goods, (Bahar, 2006). As a result of this effect, the balance of payments is positively affected, and it helps the development of the household economy individually thanks to the job opportunities it creates.

¹ <https://www.dailysabah.com/business/tourism/turkeys-recently-recovered-tourism-hurt-by-coronavirus> DOA: 17.04.2020

² <https://wtcc.org/en-gb/Research/Economic-Impact> DOA: 17.05.2020

Tourism has become one of the most attractive topics discussed in the economic literature in recent years with its positive effects on the economy. The discussion on the relation between tourism and economy by the economists became inevitable. As a result of the analyzes, four different hypotheses have been put forward. These hypotheses are (Şengönül et al., 2018):

- The tourism-led growth hypothesis: It expresses the existence of a one-way causality from tourism to economic growth.
- The growth-led tourism hypothesis: it expresses the existence of one-way causality from economic growth to tourism.
- Bidirectional causality hypothesis: it expresses the bidirectional causality relationship between tourism and economic growth.
- Neutrality hypothesis: it expresses no causal relationship between tourism and economic growth.

In the light of these hypotheses, having information about the direction and degree of the relationship between tourism and economic growth will increase the effectiveness of the policies to be implemented (Seghir et al., 2015: 1614; Chen and Chiou-Wei, 2009: 812; Şengönül et al., 2018: 1126). Otherwise, as a result of possible misplaced policies, the tourism sector will start to damage rather than contribute to the economy. Therefore, it is necessary to examine direction of this relationship before implementing any tourism policies.

Tourism sector has a much more fragile structure in terms of both supply and demand compared to other sectors. The reason for this is that although tourism is required by people, the degree of necessity is lower than other sectors. That is, people always want to go on vacation, but it is not difficult to make the decision to postpone or even cancel the vacation plans due to the individual problems (financial difficulties, illness, etc.) that can't be predicted.

Individual problems negatively affect people's vacation plans, however as a sector, these problems are not very effective on tourism. Since the tourism sector is a sector formed due to people's needs to move away from the problems of daily life, it will be interrupted by any situation that will negatively affect this need. Therefore, unlike individual problems, the tourism industry may suffer huge losses in several regions or even worldwide due to natural or unnatural problems that may affect one or more regions such as disasters, political conflicts, terrorism, epidemics etc. Since its development in the 1950s, the tourism sector has been troubled regionally or globally and has experienced periodic losses due to various reasons that have emerged.

For example, while the economy of the region was negatively affected due to the tsunami disaster that targeted the Southeast Asia region after the earthquake that occurred on December 26, 2004 and caused about 300 thousand lives loss in the countries of the region, the tourism sector also suffered greatly. Even though it was expected 155 million international tourists to arrive in the region in 2004, the year of the disaster, a total of 167 million tourists came and exceeded the expectations. After the disaster, a total of 136 million tourists came to the region in 2005 although 158 million tourists were expected (Blažin et al., 2014). If the tourism data of 5 countries affected by the tsunami disaster (table 1) is examined, it can be said that the number of tourists entering the country and tourism revenues had increased before the disaster, and the tourism sector had been developing. Following the tsunami disaster, it is observed that in 2005, there was a decline in tourism data in each country. While the effects of the disaster were overcome quickly in other countries, this process lasted for 3-4 years in Indonesia, where tsunami hit directly.

Table 1: Tourism data of countries most affected by tsunami disaster

	Number of Individual Tourist Arrival (thousands)					Realized Income (million \$)				
	Indonesia	Thailand	India	Sri Lanka	Maldives	Indonesia	Thailand	India	Sri Lanka	Maldives
2000	5064	9759	2649	400	467	4975	9935	3598	388	321
2001	5153	10133	2537	377	461	5277	9378	3342	347	327
2002	5033	10873	2384	393	485	5797	10388	3300	594	337
2003	4467	10082	2726	583	564	4461	10456	4560	709	N/A
2004	5321	11737	3457	681	617	5226	13054	6307	808	N/A
2005	5002	11520	3918	549	395	5094	12102	7652	729	N/A
2006	4871	13822	4447	560	602	4890	16614	8927	733	N/A
2007	5506	14464	5082	494	676	5831	20623	11234	750	1331
2008	6234	14584	5283	438	683	8150	22497	12462	803	1392
2009	6324	14150	5169	448	656	6054	19814	11136	754	1336

Source: (Blažin et al., 2014: 177-179)

Terrorism and violence, which have been observed in various parts of the world throughout history and started to increase since the beginning of 2000s, also affect the tourism sector negatively. Major terrorism shocks affect both the decision of whether to make a vacation and the choice of the destination. According to the studies and statistical indicators, the number of people who wanted to cancel their vacation and travel plans increased in the following years of the September 11 attack (Baker, 2014). In addition to the cancellation of plans, the tourism sectors of the countries with a high Muslim population have lost their comparative advantage over the other countries (Arana and León, 2008). Individuals making vacation plans also mind not to choose regions where terrorism and violence rate are high. Due to the terrorist incidents that occurred in 1985-1986, it was noted that holiday reservations made to the European continent were canceled by 54%. World Tourism Organization (WTO) stated that the world tourism sector lost \$105 billion in revenue due to terrorism in 1986 (Baker, 2014). Due to terrorist incidents that took place after the 1990s, reductions in the expected number of tourist arrivals have been observed in many countries such as Turkey, the US, Eurozone, Spain, Italy, Mesopotamia region, Nigeria, the Middle East, Tunisia (Seabra et al., 2020). As a result, tourism revenue losses caused the economies to be affected negatively in the specified countries.

According to data from WTTC and UNWTO, in the tourism sector, which showed a steady increase worldwide before the 2008 crisis, it is seen that there is a decrease in tourist numbers by 35 thousand in 2009, in the contribution of tourism to global GDP by \$500 billion and in employment by 5 million. In addition, if the data is examined, it is observed that the impact of the crisis on the tourism sector lasts approximately 2-3 years.

Ebola virus, first discovered in 1976, started in a rural area of Southeastern Guinea in Africa in 2014-2016 and turned into an epidemic. After spreading to urban areas in weeks, the Ebola virus, mostly affected Guinea, Liberia, and Sierra Leone, has become a global epidemic³ in months (Maphanga and Henama, 2019). When the tourism data of these countries and South Africa⁴ are analyzed (with the available data), it is seen that there is a certain decrease in the number of international tourists and tourism revenues. As seen in the table, in the tourism data, which increased even though it was not regular before the outbreak of 2014, there were sudden decreases in 2014 and 2015. With the decrease of the effects of the virus, the tourism sector in these countries started to revive after 2016.

Table 2: Tourism data of countries most affected by Ebola outbreak

	International tourism, number of arrivals (thousand)			International tourism, receipts (million \$)		
	Guinea	Sierra Leone	South Africa	Guinea	Sierra Leone	South Africa
2010	12.4	39	8074	2.04	26	10309
2011	131	52	8339	2.12	44	10706
2012	96	60	9188	1.68	47	11202
2013	56	81	9537	N/A	66	10468
2014	33	44	9549	17.1	35	10484
2015	35	24	8904	8.2	37	9140
2016	63	55	10044	16.6	41	8807
2017	99	51	10285	16.6	39	9706
2018	N/A	57	10472	7.7	39	9789

Source: World Bank Data Bank, DOA: 27.05.2020

Similar to the examples in the world, the tourism sector in Turkey has experienced several contractions for various reasons and negatively affected the economy. For example, since Turkey shot down a Russian fighter jet in late 2015, it was observed a sudden drop in the number of Russian tourists coming to Turkey. In 2016, due to the failed coup attempt in July, DEASH and PKK terror attacks targeting Turkey's tourist regions including the attacks on Istanbul Atatürk Airport and a night club in Istanbul, and increased Islamophobia, the number of tourists decreased more than 10 million (according to data from TURKSTAT and WTTC) compared to 2015. In 2018, Turkish lira depreciated against the US dollar and the Euro due to the problem between Turkey and the US. Therefore, the number of tourists visiting Turkey, that became comparatively cheaper destination, increased by 7 million but, the tourism revenues increased only \$3 billion due to exchange rate⁵.

As seen in the examples, there can be a high decline in the number of tourists and tourism revenues due to the problems that may occur in daily life. For this reason, it will be inevitable that any problem in the

³ <https://www.cdc.gov/vhf/ebola/history/summaries.html> DOA: 01.06.2020

⁴ Although South Africa was not affected by the virus epidemic, tourists canceled their plans since it is on the Africa continent.

⁵ <https://www.dailysabah.com/business/tourism/turkeys-recently-recovered-tourism-hurt-by-coronavirus> DOA: 17.04.2020

tourism sector will cause great damage to the economy because of the country's economy being extremely dependent on the tourism sector.

It would not be wrong to predict that the tourism sector, which can be affected by the regional problems, will be helpless in the face of a problem affecting the whole world. The last and perhaps most important negativity affecting all sectors in the world as well as the tourism sector is the pandemic called Covid-19. It can be said that the measures taken due to the pandemic brought the economic life in the world to a halt.

4. Covid-19 and possible effects on tourism

The virus called Covid-19 spread to the whole world in matter of months and managed to affect people's lives negatively. The status of Covid-19, which had been declared epidemic in January 2020, was changed to pandemic by WHO in February 2020.

As 80% of infections are mild or asymptomatic⁶, people who do not take precautions are helping to increase the speed of contagion. When the effects of the virus, which has a very high contagion rate, are examined, it can be seen that a total of 36.36 million people are infected and it caused more than 1 million deaths in the world as of October 10, 2020⁷.

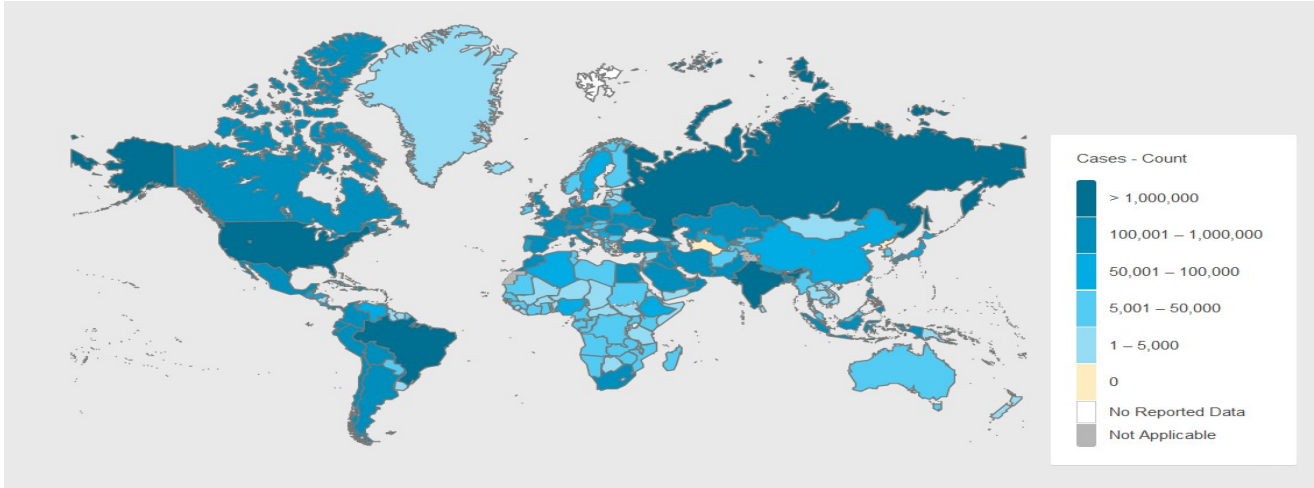


Figure 1: Covid-19 world map

Source: WHO (World Health Organization) DOA: 10.10.2020

Covid-19, which seems to be less harmless compared to other epidemic diseases, according to the number of positive cases and mortality rates, has affected the whole world in a short time due to the high contagion rate and caused governments to take big measures. The outbreak first affected air transport. To prevent or at least delay the entry of the virus into the country, firstly international flights and then local flights were canceled.

With the introduction of the virus into the country (detection of the first positive case), governments that have increased their measures have taken many quarantine measures, including curfews and mandatory quarantines. Since the factories, workshops, restaurants, and retail stores that were temporarily closed, the virus had negative effects on the economy. Due to these negativities, unemployment numbers increased, and contraction of GDP was observed in all economies. According to the data announced by the OECD, France contracted by 5.83%, Italy by 4.75%, Germany by 2.22%, England by 1.98% and the USA by 1.29% in the first quarter of 2020.

⁶ <https://covid19bilgi.saglik.gov.tr/tr/covid-19-yeni-koronavirus-hastaligi-nedir> DOA: 29.05.2020

⁷ WHO Coronavirus Disease (COVID-19) Dashboard (<https://covid19.who.int/>) DOA: 10.10.2020

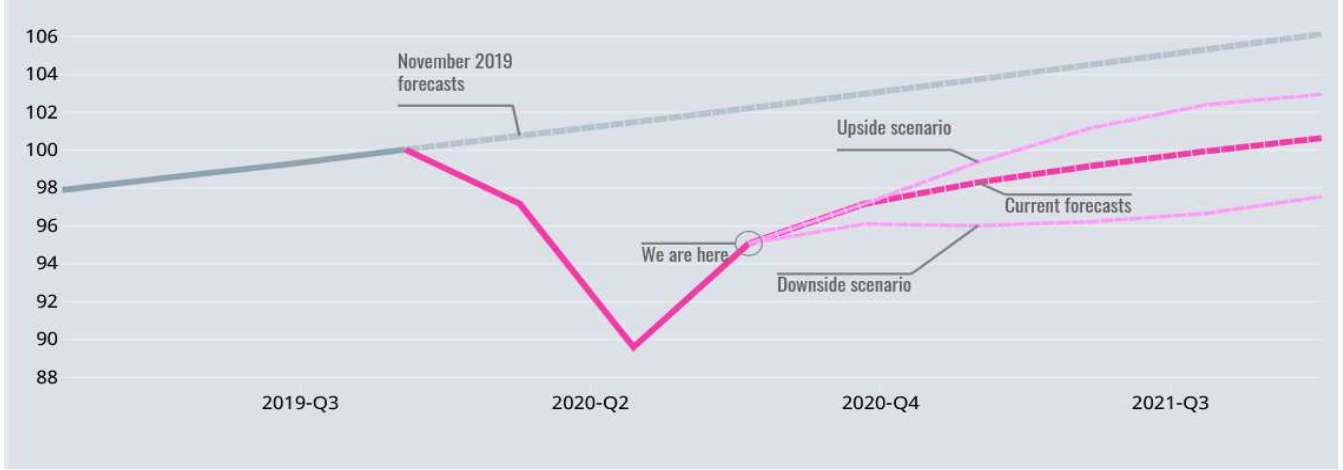


Figure 2: World GDP (index 2019-Q4=100)

Source: OECD (2020), "OECD Economic Outlook, Interim Report September 2020", OECD Economic Outlook: Statistics and Projections (database). <http://www.oecd.org/economic-outlook/> DOA: 10.10.2020

As seen in the figure 2 obtained from OECD, the forecasts of the world economy were optimistic and static increase was expected during 2020. The figure also shows how bad the world economy collapsed during outbreak. The world GDP started to decrease in the beginning of 2020 and dropped to 89% of its 2019-Q4 value in second quarter of 2020. After this drop, it started to increase with the help of slow-down measures which are put in place by the governments. According to current forecasts of OECD, the world GDP would increase to its 2019-Q4 value not before the end of 2021. if the virus recovers strongly or the governments decide to strengthen the measures, the global growth will not be recovered even in 2021. According to an optimistic scenario, the threat of the virus will fade sooner than expected (with the discovery of vaccine and treatment) and consumer confidence will increase the global economy in the beginning of 2021.

The fact that most the 10 countries (US, India, Brazil, Russia, Colombia, Peru, Mexico, Spain, Argentina and South Africa) most affected by Covid-19⁸ are among the most preferred tourism destination indicates that there is a high correlation between the contagion speed of virus and travel rates. As a matter of fact, the measures taken by countries to reduce the mobility of the virus already include restrictions on travel, reduced flights numbers, closing borders and curfews. Because of these measures, the tourism sector experienced the fastest decline among the economic sectors. It is observed that the travel and tourism activities, which have become affordable by most of the people due to the effect of technological developments and that have an annual number of billions, are incapable of a virus that demands that we maintain our distance with other people and even not to leave our place. In addition to the measures taken by the governments, because of the individuals canceling their vacation plans by complying with the demands of the virus, an unprecedented drop in the number of tourists was seen in 2020. In other words, the tourism sector saw its biggest collapse in 2020 due to Covid-19. According to UNWTO, the international tourism started to drop in the beginning of 2020 and almost stopped in April and May. As in the case of the world GDP, the tourism sector started to revive after the second quarter of 2020 with the slow-down measures.

⁸ <https://www.businessinsider.in/politics/india/news/check-out-the-10-most-affected-countries-with-the-highest-number-of-coronavirus-cases/slidelist/76275918.cms#slideid=76275944> DOA: 10.10.2020

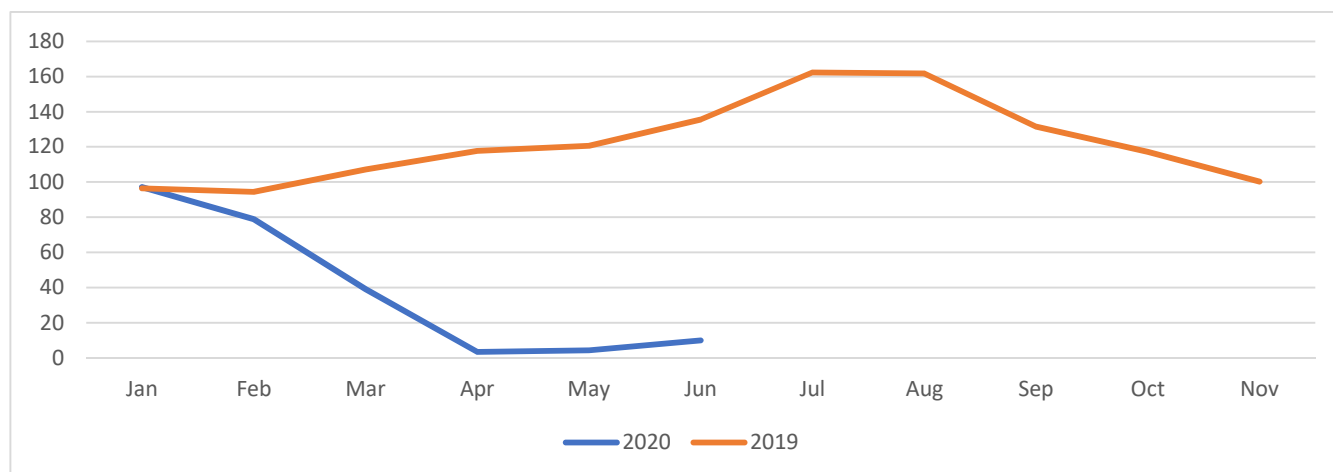


Figure 3: International tourist arrivals (million)

Source: <https://www.unwto.org/international-tourism-and-covid-19> DOA: 10.10.2020

The effect of the outbreak on tourism can be seen in the figure 3. In the beginning of 2020, everything was normal and international tourist numbers were as much as a year before. But in February, instead of increasing as in 2019, the international tourist arrivals dropped immediately. In April and May, there was almost zero tourist around the world. After May, the numbers started to increase with the effect of lowered measures.

According to the forecasts made by IATA (International Air Transport Association), the net loss of worldwide airline industry in 2020 will be \$84.3 billion which makes 2020 the worst year in history. The employment will decrease 35.5% compared to 2019 which means about one million people in airline industry will lose their job in 2020. In addition to this, IATA estimates that 32 million job linked to the airline industry including tourism might be at risk.

Table 3: Revenue global airline industry

	2019	2020F	2021F
Spend on air transport, \$billion	876	434	598
% change over year	3.6%	-50.4%	37.7%

Source: IATA (2020), IATA Airline Industry Economic Performance, 2020 Mid-year report, <https://www.iata.org/en/iata-repository/publications/economic-reports/airline-industry-economic-performance-june-2020-report/> DOA: 10.10.2020

Under these pessimistic estimates, the outbreak will affect the revenue of the industry deeply. According to table 3, the revenue of the airline industry will decrease 50.4% to \$434 billion in 2020. However, in 2021, it is expected (optimistically) the revenues rise to \$598 billion.

Virginia Messina, managing director of WTTC, estimates that it may take up to 10 months for the tourism industry to return to normal levels after the outbreak is under control⁹. On the other hand, there are also people with optimistic expectations. Roger Dow, the president and the CEO of the US Travel Association, believes people will have a suppressed desire to travel and the industry will return to its normal functioning in the long term. However, economists warn that only a few sectors might return to normal in the near future and the tourism sector may not be included in these sectors¹⁰.

Alexandre de Juniac, IATA's Director General and CEO said that since the tourism covers the %10 of the world GDP, the economic recovery will be boosted by ensuring that people can fly safely again (IATA, 2020). With this in mind, company officials and governments, who want to obtain tourism income and minimize losses in summer season of 2020, take series of measures to ensure the trust of tourists. These measures include redesigning the common areas for tourist such as hotels, restaurants, beaches, transportation vehicles etc. to be suitable for social distancing. The capacities of redesigned hotels, restaurants and tourist sites are expected to be reduced by 50% or more. This implies that even if people decide to go on holiday, the number of tourists will have to decrease by at least 50% due to the decrease in supply.

⁹ <https://www.weforum.org/agenda/2020/03/world-travel-coronavirus-covid19-jobs-pandemic-tourism-aviation> DOA: 17.04.2020

¹⁰ <https://www.nationalgeographic.com/travel/2020/04/how-coronavirus-is-impacting-the-travel-industry/> DOA: 17.04.2020

The fact that the sector gets such damage will cause major problems for the countries economically dependent on tourism revenues. Since the 15 of the top 20 countries with the highest dependence on tourism and travel revenues are small island countries, it is expected that these countries will have the most damage. For example, more than 30% of Iceland's GDP, whose economy also suffered greatly from the 2008 financial crisis, accounts for travel and tourism revenues¹¹. Therefore, it is clear that Iceland will again suffer great losses in this process.

In Turkey, which is surrounded by seas on three sides and has historical richness, tourism industry contributed greatly to the country's economy by \$35 billion in 2019. Being aware of the fact that the economy will suffer greatly if the tourism sector closes due to the virus, Ministry of Culture and Tourism, Ministry of Health, Ministry of Transport and Infrastructure, Ministry of the Interior, and Ministry of Foreign Affairs have launched the "Safe Tourism Certification Program (STCP)" that will be valid from the summer season of 2020. The accommodation facilities, food and beverage facilities and vehicles for tour and transfer purposes who receive this certificate after application will be inspected on a monthly basis and checked to see if they meet the criteria¹². In order to obtain and preserve the certificate, high-level health and hygiene conditions and social distancing rules must be applied in accordance with the criteria determined by international standards. We can say that the STCP helped to reduce the losses in July and August, but this help was not even close to be enough.

Table 4: international tourist arrivals in Turkey (million)

	2019	2020	2020/2019
January	1.54	1.79	16.11
February	1.67	1.73	3.76
March	2.23	0.72	-67.83
April	3.29	0.02	-99.26
May	4.02	0.03	-99.26
June	5.32	0.21	-95.96
July	6.62	0.93	-85.90
August	6.31	1.81	-71.23
September	5.43		
October	4.29		
November	2.19		
December	2.15		
Total	45.06	7.26	

Source: MCT (The Ministry of Culture and Tourism of Republic of Turkey) (2020). Monthly Border Bulletin (August 2020), <https://yigm.ktb.gov.tr/TR-9851/turizm-istatistikleri.html> DOA: 12.10.2020

In the beginning of 2020, the tourism sector was promising in Turkey as seen in the table 4. After March, the international tourist arrivals dropped immediately. Even though the international tourist arrivals were not even close to the 2019 values, the tourist numbers increased in August with the effect of the STCP and slow-down measures.

5. Literature review

The rapid development of the tourism sector has not escaped from the attention of economists and there are many studies in the literature on the economic effects of the sector. In this part of the study, summaries of the some of the studies on the economic effects of tourism will be presented.

There are studies that determined a positive relation between tourism and economic growth. Bahar (2006) determined the existence of a long-term relationship between tourism and economic growth in Turkey by cointegration and VAR analysis. The results of the study show that the tourism sector had a positive effect on economic growth. Aslan (2008), by applying Johansen cointegration and Granger Causality tests, determined that the tourism sector of Turkey has affected the economic growth positively in the last 15-years. Although Çoban and Özcan (2013) observed no short-term relationship between tourism and economic growth. They concluded that in the long run Turkey's tourism revenue is a major cause of economic growth as the results of Johansen cointegration and causality tests. Şengönül et al. (2018) determined one-way causality relationships from tourism revenues to GDP, from GDP and tourism income

¹¹ <https://foreignpolicy.com/2020/04/01/coronavirus-tourism-industry-worst-hit-countries-infographic/> DOA: 17.04.2020

¹² <https://www.tga.gov.tr/turkiyenin-guvenli-turizm-programi-hakkinda/> DOA: 06.06.2020

to the number of tourists in the seven Mediterranean countries (France, Greece, Israel, Italy, Slovenia, Spain and Turkey) by Emirmahmutoğlu ve Köse panel causality test. Dereli and Akis (2019) applied Toda-Yamamoto Approach based causality test, Johansen Cointegration test and vector error correction model based Granger causality test to data of Turkey and observed no causality relation in the short run but they determined bidirectional causality from tourism revenues to economic growth in the long run. Manga and Ballı (2019) found that economic growth was positively affected by trade openness, number of tourists and financial development both in the short and long term in Turkey as a result of the ARDL test. Castro-Nuño et al. (2013) determined that although the magnitude of the effect varies according to the methodological method, there is a positive flexibility between GDP and tourism in 87 different studies. GARCH analysis conducted by Pérez-Rodríguez et al. (2015), resulted that there is an asymmetrical and positive dependency between tourism and growth in England, Spain, and Croatia, while this situation varies over time only in Croatia. Kaur and Sarin (2016) determined that there is a one-way causality from tourism activities to economic growth in Turkey. Adam et al. (2019) found that the effect of the number of tourists on GDP was statistically significant and positive in 10 selected ASEAN countries (Indonesia, Malaysia, Singapore, Thailand, Philippines, Vietnam, Myanmar, Brunei, Laos, and Cambodia). Simonetti et al. (2019) concluded that there is a long-term relationship between tourism revenues and GDP, the number of tourists and GDP, and tourism expenditures and GDP in the EU member countries. Adversely, Yavuz (2011), as a result of the standard Granger causality test and the Toda-Yamamoto approach, observed that there was no causal relationship between tourism revenues and economic growth in Turkey.

In the literature review, it is seen that there is a long-term relationship between the tourism sector and economic growth, and the tourism sector positively affects economic growth.

6. Data and econometric analysis

In this part of the study, in order to examine the dependence of Turkey's economy to the tourism sector and measure the degree of this dependence, an econometric analysis will be conducted to the quarterly data belong to the period 2004: Q1-2019: Q4.

Table 5: Variables Used in Analysis

Variable	Definition	Source
GDP	Percentage change of GDP compared to the same period of the previous year	CBRT (EVDS)
TREX	The ratio of tourism revenues to exports	CBRT (EVDS)
TR	Percentage change of tourism revenues compared to the same period of the previous year	CBRT (EVDS)
TN	Percentage change of the number of tourists visiting the country compared to the same period of the previous year	CBRT (EVDS)

The econometric model foreseen for analysis is as follows.

$$GDP_t = \beta_1 TREX_t + \beta_2 TR_t + \beta_3 TN_t + \mu_t$$

The graph of the variables is given below. According to the figure, though all variables are generally fluctuating, excessive fluctuation in the TREX variable is noticeable. The reason for this is that tourism revenues decrease in winter and increase in summer. It is also noticeable that there is a correlation between other variables.

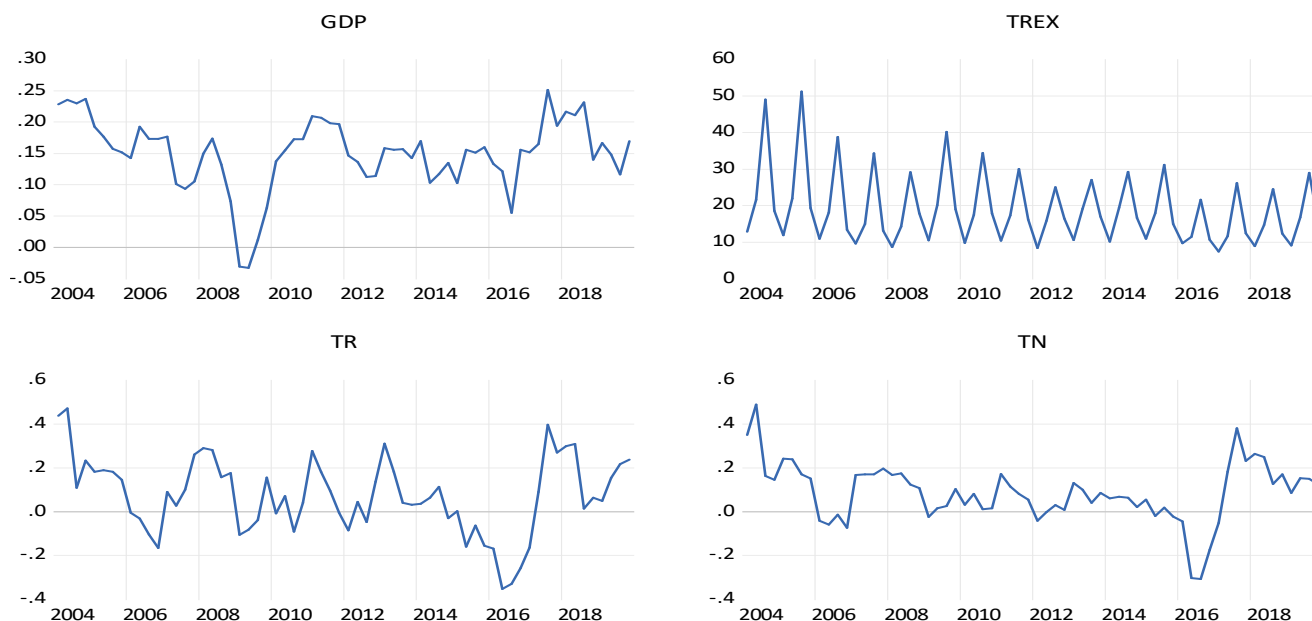


Figure 4: Level values of the variables used in the analysis

Since the variables used have a quarter frequency, the variables need to be seasonally adjusted. For this, Census X12 is used.

6.1. Unit root tests

One of the biggest problems encountered in econometric analysis is the spurious regression problem. This problem might occur if the variables used are not stationary. So, to avoid this problem, the stationarity of the variables should be examined before the analysis. In this context, to check the stationarity of the variables, ADF unit root test which is the most common unit root test in the literature was used by selecting the lag lengths according to the Akaike Information Criteria. Analysis results are given in the table 5.

Table 6: ADF unit root test results

	Intercept		Intercept and trend		none	
	t-stat.	Probability	t-stat.	Probability	t-stat.	Probability
GDP	-2.5732	0.1047	-2.3483	0.4017	-0.5193	0.4872
D(GDP)	-4.1951*	0.0016	-4.2502*	0.0073	-4.2390*	0.0001
TREX	-3.0365**	0.0369	-3.9440**	0.0157	-0.8487	0.3443
TR	-3.4862**	0.0117	-3.4314***	0.0566	-3.3014*	0.0013
TN	-3.4239**	0.0139	-3.2410***	0.0866	-2.7652*	0.0065

Note: *, ** and *** denote 1%, 5% and 10% significance levels, respectively.

It can be seen from the table that the GDP is stationary at first difference with 1% significance, and other variables are stationary at level with 5% and 10% significance.

As known, economic variables are affected by many factors that can be encountered in daily life such as political factors, economic factors etc. Due to these effects, some changes in the structure of the variables may occur over time. These are called structural breaks, and unit root tests that do not consider these breaks may give biased results. Zivot and Andrews (2002) found a solution to this problem by developing a unit root test that considers this issue. There are three different situations that we may encounter in the structure of the variables, changes in the constant, changes in the trend and changes in both (Bouznit and Pablo-Romero, 2016: 96). In addition to the ADF unit root test, Zivot and Andrews (2002) structural break unit root test was applied (by selecting the lag lengths according to the Akaike Information Criteria in order to comply with the ADF) to the variables in case they had structural breaks. Analysis results are given in the table 6.

Table 7: Zivot and Andrews (2002) structural break unit root test

Trend Specification Break Specification	Intercept only			Intercept only			Trend and intercept			Intercept only		
	Intercept only			Intercept only			Break Specification			Intercept only		
	t-stat.	Prob.	B. D.	t-stat.	Prob.	B. D.	t-stat.	Prob.	B. D.	t-stat.	Prob.	B. D.
GDP	-3.3038	0.5013	2004Q4	-4.0522	0.3393	2008Q2	-3.9301	0.5685	2010Q2	-3.6298	0.3357	2009Q1
D(GDP)	-8.0114*	< 0.01	2006Q2	-7.9429*	< 0.01	2006Q2	-8.0205*	< 0.01	2007Q2	-7.9334*	< 0.01	2006Q3
TREX	-5.1913*	< 0.01	2005Q3	-5.4172*	< 0.01	2005Q3	-5.3994**	0.0274	2005Q3	-4.6907**	0.0307	2007Q1
TR	-4.0832	0.1296	2018Q4	-4.6687***	0.0840	2017Q1	-5.9728*	< 0.01	2015Q4	-4.8159**	0.0214	2016Q4
TN	-4.3813***	0.0594	2016Q2	-5.3238**	0.0112	2017Q1	-8.7463*	< 0.01	2016Q1	-5.2302*	< 0.01	2016Q4

Note: *, ** and *** denote 1%, 5% and 10% significance levels, respectively.

According to the results in the table, the structural break unit root test results coincide with the ADF unit root test results. In other words, the GDP is stationary at first difference and other variables are stationary at level. In addition, it is observed that all variables have structural breaks.

6.2. Cointegration test

In econometric analysis, there are many cointegration tests that examine the long-term relationship between variables according to the established model. It can be said that the most commonly used cointegration tests in the literature are Ordinary Least Squares (OLS), Engle-Granger (1987), Johansen (1991) and ARDL cointegration tests. OLS is used for the variables which are stationary at level, Engle-Granger (1987) and Johansen (1991) used for the variables which are stationary at first difference, and ARDL cointegration test can be applied to variables with different degrees of integration. However, ARDL boundary test may also give biased results if at least one of the variables in the applied model has structural breaks.

To overcome this problem, Gregory and Hansen (1996) developed a cointegration test that examines the relationship between the variables by checking the structural breaks in the model. Since there are structural breaks in the variables, the long-term relationship between the variables was examined by the Gregory-Hansen (1996) cointegration test within the framework of the ARDL cointegration test.

Before applying the Gregory-Hansen cointegration test, the structural break (or breaks) of the model should be examined and its date determined. According to the specified date, classical ARDL bound test is applied by adding appropriate dummy variables to the model. If a co-integration between variables is determined by the boundary test, the effects of these variables on each other are determined by examining the long-term coefficients.

Table 8: Bai-Perron multiple breakpoint test results

Breaking variables: TREX TR TN C			
Break test options			
Trimming		0.15	
Maximum breaks		5	
Significance level		0.05	
Sequential F-statistic determined breaks		1	
Break Test	F-statistic	Scaled F-statistic	Critical Value**
0 vs. 1 *	6.6287	26.5147	16.19
1 vs. 2	3.7230	14.8920	18.11
Break dates			
Sequential		Repartition	
2008Q4		2008: Q4	

Note: * denote 1% level of significance. ** (Bai and Perron, 2003)

As can be seen from the table, there is a structural break in the model and the break date was determined as 2008: Q4. It is clear that this date coincided with the 2008-2009 financial crisis. As mentioned earlier, the financial crisis caused a recession in the tourism sector while affecting economies negatively. It is seen that Turkey had its share from this problem. According to the determined structural break date, dummy variables (Z , Z_{TN} , Z_{TR} and Z_{TREX} ¹³) were created for each variable. Statistically significant dummy variables were determined by testing them in the model. The dummy variables that are statistically significant and used in the analysis are Z_{TN} , Z_{TR} and Z_{TREX} .

¹³ Here, Z , Z_{TN} , Z_{TR} and Z_{TREX} denote the dummy variables of GDP, TN, TR and TREX, respectively.

6.3. Bound test

Since the null hypothesis (H_0) of the ARDL boundary test is that there is no co-integration between the series, the existence of cointegration between the variables is determined by rejecting the null hypothesis. In case the value of the F-statistic obtained from the analysis is lower than the lower bound value of significance levels, H_0 cannot be rejected. If the value of F-statistic is between the lower and upper bound values of the significance level, no decision can be made about H_0 in the respected significance level. For H_0 to be rejected, the value of the F-statistic must be greater than the upper bound value. ARDL bound test results applied to the model are given in the table 8.

Table 9: ARDL bound test results

Test Statistic	Value	K
F- statistic	9.4234	3
Significance level bound		
Level	I (0)	I (1)
1%	4.3	5.23

As seen in the table, the value of F-statistics (9.4234) is greater than the upper limit value (5.23) of the 1% significance level. So, H_0 is rejected and we conclude that there is cointegration between the variables in the model.

6.4. ARDL test and long-term coefficients

ARDL model has been determined as ARDL (4, 4, 0, 2) as a result of the analysis made in case 4 (Unrestricted Constant and Restricted Trend). The test results are given in the table 9.

Table 10: ARDL (4, 4, 0, 2) test results

Dependent Variable: GDP				
Case 4: Unrestricted Constant and Restricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECM	-0.5340	0.0743	-7.1836	0.0000
$GDP = 0.0170 * TREX + 0.8051 * TR - 0.9682 * TN + 0.0033 * @TREND + ECM$				
Long-term coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TREX	0.0170*	0.0056	3.0251	0.0042
TR	0.8051**	0.3545	2.2708	0.0283
TN	-0.9682**	0.4676	-2.0707	0.0446
@TREND	0.0033*	0.0009	3.4932	0.0011
$R^2 = 0.7798 \quad \bar{R}^2 = 0.690639 \quad F = 8.7479 \quad [0,000]$				
Breusch-Godfrey Serial Correlation LM Test				
F- statistic =1.2198 [0.3060]				
Breusch-Pagan-Godfrey Heteroskedasticity Test				
F- statistic =1.6207 [0.1019]				

Note: *, ** and *** denote 1%, 5% and 10% significance levels, respectively.

As seen in the table, the coefficient of the error correction model (ECM) is negative and significant (-0.5340 [0.0000]). Therefore, it is understood that if for any reason a deviation from the long-term equilibrium is observed, the system will return back to this value in approximately 2 ($1 / 0.5340 \cong 2$) periods. Before starting to interpret the coefficients obtained from the model, the statistical quality control tests results were examined to determine whether the coefficients are valid. It is seen that there is no Serial correlation and heteroskedasticity problem in the model. In addition, the cumulative sum (CUSUM) of recursive residuals and the CUSUM of square (CUSUMSQ) stability tests results, which examine the stability of the coefficients of the model, are given in figure 3.

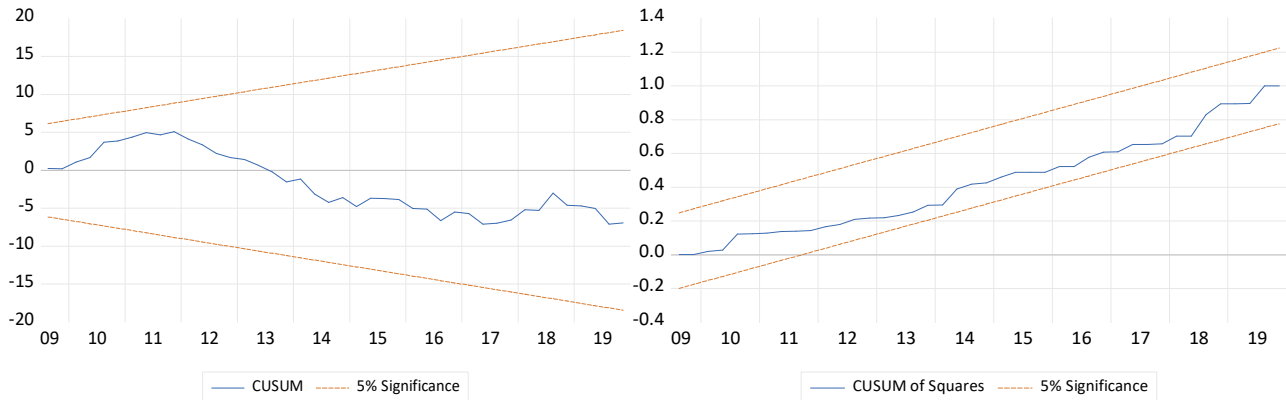


Figure 5: CUSUM and CUSUMSQ test results

As seen in Figure 3, CUSUM and CUSUMSQ test statistics are within the critical limits at 5% significance level. This indicates that the model is stable. Therefore, the long-term coefficients obtained as a result of the ARDL model are significant and can be interpreted.

When the long-term coefficients of the ARDL model are examined, it is seen that the coefficients of all variables are statistically significant. Therefore, the changes that may occur in independent variables will have an impact on GDP in the long run by the value of their coefficients. According to the coefficients, the coefficient of TREX is very small, meaning that the increase in the share of tourism revenues in exports will have a positive effect on GDP, but this effect will not be noticeable. However, the coefficient of tourism revenues is positive and 0.8. In other words, 1% unit decrease in tourism revenues compared to the same period of last year will cause GDP to decrease by 0.8%. Thus, the observed decrease in tourism revenues, will lead to a contraction in Turkey's economy. Note that changes in tourism revenues affect GDP positively, while changes in the number of tourists affect negatively. In other words, the increasing number of tourists does not have a positive effect for the economy. Which means the logic of "less tourists more income" should be adopted rather than "more tourists less income". As previously mentioned, due to the fluctuations in exchange rates (increase), Turkey becomes attractive to tourists and the number of tourists increase but tourism revenues do not increase at the same rate. For example, because of the increased dollar exchange rate as a result of the conflict between the United States in 2018, the number of tourists visiting Turkey increased by 7 million, but revenues increased only \$3 billion. Therefore, it is seen that the results of analysis, which are similar to the results of the study in the literature, coincide with the results we encounter in real life.

If we consider these results and the expected effects of Covid-19 outbreak together, it is clear that the tourism sector, which will have great losses due to the pandemic, will affect the Turkish economy negatively as well as the world economy. According to results, it is clear that the losses in tourism revenues will directly affect the country's economy. However, if the exchange rates can be kept under control and the revenue from the potential tourists to enter this country can be prevented from excessive reduction, Turkey may be able to pass this outbreak with the least damage.

7. Conclusion

As the tourism sector started to develop as a result of the increase in opportunities, it has become an important income opportunity for the economies. Tourism, which is an easy source of income especially for developing countries, can become a sector that causes more harm than benefit to the country's economy in situations such as terrorism, economic crisis, and pandemic due to its fragile structure. Examples of this issue have been seen in the world tourism history. The last negativity that harms the economies via tourism industry is the virus called Covid-19, which has spread to the world from Wuhan, China. As a result of the quarantine measures taken due to the virus, the tourism sector stopped as well as the rest of the economy in the second quarter of 2020. Economy, which has come to a halt around the world, has forced governments to take normalization steps. After the first wave of the virus, economies that are closed due to the virus have started to take normalization steps slowly. New normal (!) tourism criteria have been determined within the framework of the normalization steps. In order to minimize losses in tourism revenues, companies operating in the tourism sector have reorganized their facilities within the framework of the rules set by the governments in accordance with the rules of hygiene and social distance. As a result of these regulations, a

50% decrease in the supply of tourism sector is expected. Therefore, the world tourism industry is expected to suffer great losses in this process.

According to the results of the econometric analysis carried out in order to investigate the effects of tourism sector on Turkish economy and have knowledge about how the pandemic period will affect the economy, Turkey's economy is affected positively by tourism revenues and negatively affected by the number of tourists. Thus, the number of tourist which is expected to decline during the pandemic process, will lead to a positive outcome for Turkey's economy, on the contrary the tourism revenue, which is also expected to decline, will cause damage to the economy. So there seems to be a contrast in the analysis results. As in other economies in the world it is certain for Turkey's economy to be damaged from the pandemic in the process however, positive or negative contribution of the tourism industry to this damage depends on which side of this contrast will outweigh. If it can be ensured that the positive effects of the decrease in the number of tourists are greater than the negative effects of the decrease in tourism revenues with exchange rate policies and appropriate economic packages, Turkey might overcome the pandemic period with the least damage from tourism sector.

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