

Research Article

Assessing the Economic Impact of Medical Tourism: A Sectoral Analysis

Sağlık Turizminin Ekonomik Etkisinin Değerlendirilmesi: Sektörel Bir Analiz

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Abstract

Purpose – This study aims to determine the contribution of health tourism, which is a sector in the trend of development and growth, to the Turkish economy in the period 2010q1-2023q4. The study attempts to show how promoting medical tourism, as stated in the Health Transformation Program, can increase economic growth in Türkiye.

Methodology/Design/Approach – This study analyses the industrial production index, medical tourism revenues, and real effective exchange rate data to examine the causality relationship in the short, medium, and long term within the framework of the “frequency domain causality approach”.

Findings – while there is causality from the industrial production index, which represents economic growth, to medical tourism revenues in every period, no causality was found from medical tourism to economic growth. A causality was found from the real effective exchange rate to economic growth in the short and medium term, but no causality was found from economic growth to the real effective exchange rate. The findings show a causality from medical tourism revenues to the real effective exchange rate in the short term and a causality from the real effective exchange rate to tourism revenues in the medium term. This explains why healthcare services have become cheaper in Turkey due to the increase in the exchange rate.

Originality of the research – It is thought that the method and period applied in the study could fill the gap in the literature.

Keywords *Medical Tourism, Industrial Production, Economic Growth, Real Effective Exchange Rate, Frequency Domain Causality*

Öz

Amaç – Bu çalışma, gelişme ve büyüme eğiliminde olan bir sektör olan sağlık turizminin 2010q1-2023q4 döneminde Türkiye ekonomisine katkısını belirlemeyi amaçlamaktadır. Çalışma, Sağlık Dönüşüm Programı'nda belirtildiği gibi sağlık turizminin teşvik edilmesinin Türkiye'de ekonomik büyümeyi nasıl artırabileceğini göstermeye çalışmaktadır.

Metodoloji/Tasarım/Yaklaşım – Endüstriyel üretim endeksi, sağlık turizmi gelirleri ve reel efektif döviz kuru verilerinin analiz edildiği çalışmada, değişkenler arasındaki nedensellik ilişkisi “frekans alanı nedensellik yaklaşımı” çerçevesinde kısa, orta ve uzun vadede incelenmiştir.

Bulgular – Ekonomik büyümeyi temsil eden endüstriyel üretim endeksinden sağlık turizmi gelirlerine her dönemde nedensellik bulunurken, sağlık turizmden ekonomik büyümeye nedensellik bulunamamıştır. Kısa ve orta vadede reel efektif döviz kurundan ekonomik büyümeye nedensellik bulunurken, ekonomik büyümeden reel efektif döviz kuruna nedensellik bulunamamıştır. Bulgular, kısa vadede sağlık turizmi gelirlerinden reel efektif döviz kuruna ve orta vadede reel efektif döviz kurundan sağlık turizmi gelirlerine doğru bir nedensellik olduğunu göstermektedir. Bu, döviz kurundaki artış nedeniyle Türkiye'de sağlık hizmetlerinin neden daha ucuz hale geldiğini açıklamaktadır.

Araştırmanın özgünlüğü – Bu çalışmada uygulanan yöntem ve ele alınan dönem, literatürdeki mevcut boşluğu doldurma potansiyeline sahiptir.

Önerilen Atıf /Suggested Citation

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Anahtar Kelimeler: Sağlık Turizmi, Endüstriyel Üretim, Ekonomik Büyüme, Reel Efektif Döviz Kuru, Frekans Alanı Nedenselliği

1. Introduction

Today, the tourism sector is developing and changing dynamically with the improvement of transportation facilities and technology development. In this context, the consumption, needs, and desires of people who want to buy tourism products differ day by day. Alternative tourism is used to differentiate a tourism product. For this reason, it is possible to say that many alternative tourism types are included in the literature (Özkan, 2019). One of the types of tourism, such as Education, sports, culture, religion, entertainment, recreation, and history, divided into classes is medical tourism. More and more people around the world are traveling abroad for medical care. Thus, it can be seen that sites promoting 'first-class' service have diversified rapidly in recent years (Ormond & Sulianti, 2017). There are several definitions of health tourism in the literature (Çimen, 2018). Medical tourism is when people travel abroad for medical treatment (Beladi et al., 2019). Medical tourism allows health institutions to grow by using the international patient potential that arises due to the need for diagnosis, treatment, and healing services (Bulut & Şengül, 2019). Many countries have promoted medical tourism to revitalize their economies, especially after the global financial crisis in 2008.

Medical Tourism is one of the main sectors of the emerging industry and contributes to social, economic, and global development (Chukwuka & Amahi, 2021). Medical tourism, among the sub-sectors of tourism, has become essential in providing economic returns (Tang & Abdullah, 2015). Medical tourism has developed significantly in developed countries due to seriously increasing healthcare costs, international medical education, and expanding and developing passenger transportation (NaRanong & NaRanong, 2011). Nowadays, citizens of developed countries travel to developing countries daily to demand health services. These medical tourists are not high-income citizens. Instead, these tourists are groups with a middle-income level and looking for affordable, high-quality health services (Nee, 2018). "Medical tourism" or "health travel" integrated with travel is a specific green industry that has a well-established history in some countries such as Hungary, Belgium, Türkiye, and Poland (Dang et al., 2020). According to Grand View Research's "Medical Tourism Market Size, Share and Trends Analysis, 2022-2030" report, it was announced that the medical tourism market size was 4 billion US dollars in 2021 and 10 billion US dollars in 2022. The report announced the global medical tourism revenue in 2023 as 221 billion US dollars and the 2030 estimate as 733 US billion dollars. The same report states that Türkiye is one of the countries that dominate this sector, with a share of 26.1% in 2021. This can be attributed to Türkiye's higher flow of health tourists than other countries.

1 million 398 thousand medical tourists visited Türkiye, one of the most preferred countries in Health Tourism, in 2023. Türkiye's income from the services is 2 billion 307 million dollars. The clinical branches most preferred by international patients are gynecology, internal medicine, ophthalmology, medical biochemistry, general surgery, dentistry, orthopedics, infectious diseases, and ear-nose-throat (<https://www.futuremarketinsights.com/reports/medical-tourism-market>).

Table 1: Number of Medical Tourists & Medical Tourism income in Türkiye

Year	Number of Medical Tourists	Medical Tourism income (1000 USD)
2015	395.018	638.622
2016	400.699	715.438
2017	467.699	827.331
2018	594.851	863.307
2019	701.046	1.412.438
2020	407.423	1.164.779
2021	670.730	1.726.973
2022	1.258.382	2.119.059
2023	1.398.504	2.307.130

Resource: Turkish Statistical Institute (TÜİK)

In 2019, 701,046 patients received health services in Türkiye within the scope of health tourism. Tourism income from foreign visitors and citizen visitors residing abroad who came for health and medical reasons

amounted to approximately 1.5 billion USD in 2019. Due to the global epidemic in 2020, there was a noticeable decrease in health tourists. 407,423 patients preferred Türkiye to receive health care. Tourism income from foreign visitors and citizen visitors residing abroad who came for health tourism and medical reasons decreased to 1.15 billion US dollars in 2020. A total of 670,730 people received healthcare services in 2021, and the income generated from this amounted to 1.7 billion US dollars. A total of 1,258,382 people received health services in 2022, and the income generated from this amounted to 2.1 billion US dollars. In 2023, 1,398,504 people came to Türkiye to receive health services, and the income obtained from here amounted to 2.3 billion US dollars.

WHO Regional Office for Europe (2012) stated that Türkiye is one of the rare countries that has significantly developed its health sector and achieved positive results quickly. For this reason, Türkiye is considered a successful example of the health sector. According to the OECD (2014) report, a significant amount of investment has been made in the health sector with the increasing number of modern hospitals, and the Health Transformation Program has been established to complement these changes (Uçak, 2016).

This study examines the relationship between the medical tourism sector and economic growth in Türkiye. This is because Türkiye is one of the leading players in medical tourism in Europe and Asia. The study attempts to show how promoting medical tourism, as stated in the Health Transformation Program, can increase economic growth in Türkiye. The study is divided into sections: Section 2 examines studies related to the subject. Section 3 describes the model's features and data sources. Section 4 describes the results and discussion, and Section 5 concludes the study.

2. Literature Review

Medical tourism attracts attention because it directly affects countries' health systems and public health (Cattaneo, 2009). Examining the literature only from the host country's perspective would be deficient for the sending countries. Therefore, this section includes studies covering both the sending and host countries.

Tutgun and Kunç (2023) In this study The Fourier Bootstrap ARDL method developed by Yılanıcı, Bozoklu, and Gorus (2020) was employed to investigate the existence of a long-term relationship. Additionally, the Ordinary Least Squares (OLS) and Fully Modified Least Squares (FMOLS) methods were applied for estimating parameter coefficients. The study contributed to the literature by demonstrating that health tourism can positively affect economic growth. Şak (2021) the relationship between health tourism and economic growth was examined using the Hidden Cointegration Test and Time-Varying Asymmetric Causality Analysis. The study reveals a linear relationship between health tourism and economic growth. In their study of non-OECD countries, Beladi et al. (2019) concluded that medical tourism positively affects economic growth, utilizing the Panel VAR method to analyze the data. Garcia (2015) empirically showed that health expenditures positively affect economic growth in her study using a sample of 144 countries. Manzoor et al. (2019) concluded in their study of Pakistan that tourism positively affects economic growth, utilizing the VAR method to analyze the data. In their study of BRICS member countries, Danish and Wang (2018) A group of econometric tests robust to heterogeneity and cross-sectional dependence is applied to achieve accurate and unbiased results. The study revealed that the tourism sector supports economic growth. Sarantopoulos and Demetris (2015) concluded in their study of Greece that health tourism contributes positively to economic growth. Perkumiene et al. (2019) A qualitative research method was applied for the study. A purposeful (partially structured) interview was chosen for the purpose of this empirical research. The study stated in their study of Lithuania that health tourism contributes to economic growth. In examining the development of health tourism through holistic health tourism, Kazakov and Oyner (2021) the study traces down the wellness tourism evolution research by re-viewing and analysing an extant body of the relevant literature over the last 75 years. The study concluded that health tourism positively affects social and economic welfare. In their study examining the countries of Malaysia, Singapore and Thailand, Cheah and Abdul-Rahim (2018) they revealed a positive relationship between health tourism and economic growth in both the short and long term. Girgin (2019) and Batbaylı (2021) obtained similar results in studies conducted in Turkey. Both of these studies show that health tourism contributes to economic growth.

Studies also state that health tourism does not contribute to economic growth. Among these studies, Beladi et al. (2015) and NaRanong and NaRanong (2011) concluded that increased health tourism may make it more difficult for low-income citizens in the host country to access health services. Smith et al. (2011) stated that health services sought abroad reduce health revenues and negatively affect economic growth. Elshennawy and Sidding (2023) found that GDP and welfare decreased in Egypt, where tourism potential decreased due to

terrorism. The findings of Pleşoianu and Diaconescu (2016) and Zhong et al. (2021) indicate no relationship between health tourism and economic growth.

In short, most studies find positive economic growth in host countries that develop medical tourism. However, it is clear that participating in medical tourism can lead low-income groups to be deprived of healthcare services and, therefore, less productive. Beladi et al. (2015) support this view, showing that due to medical tourism developments, the public health sector may be excluded, and growth may also decrease.

3. Data and Methodology

An explanation is given about the model variables in this section. Then, information is given about the model to examine the relationship between medical tourism and economic growth in Türkiye.

3.1. Sample and Variables

The variables used to explain the relationship between medical tourism and economic growth in Türkiye cover the period 2010-2023 and are quarterly. Medical Tourism Revenues (MTR) and Industrial Production Index (IPI) data used for economic growth were collected from the Turkish Statistical Institute (TUIK). The Real Effective Exchange Rate (REER) variable, important for developing countries such as Türkiye, was collected from the Central Bank of the Republic of Türkiye. The reason for choosing the data from 2010 is to avoid the effects of the 2008 Global Economic Crisis. For regression analysis, the logarithm of the variables was calculated.

Table 2: Variable Descriptions

Variable	Definition
MTR	Medical Tourism Revenue
IPI	Industrial Production Index
REER	Real Effective Exchange Rate

Source: Qwn Representation.

3.2. Methodology and Model

One of the methods used to estimate multiple variables using a single model is the VAR model. Univariate autoregression is extended to multiple time series variables through the VAR model. VAR(p) indicates that the number of lags in each equation is the same and equal to p. The VAR model introduced by Sims (1980) is still being developed. If VAR models are made for causal inferences, these models are called structural models. A widely used VAR model was used in this economic growth analysis. The following equation can explain the VAR model:

$$\mathbf{Z}_t = \mathbf{A}(\mathbf{L})\mathbf{Z}_{t-1} + \mathbf{B}(\mathbf{L})\mathbf{X}_t + \mathbf{u}_t \quad (1)$$

Here, the polynomial matrices for lag operators L consist of A(L) and B(L). \mathbf{Z}_t is a vector of internal variables, \mathbf{X}_t is a vector of external variables, and \mathbf{u}_t is a vector of error terms. The basic model includes medical tourism revenues, industrial production index and real effective exchange rate. The following equations can describe it:

$$\mathbf{Z}_t = [\mathbf{M}_t \ \mathbf{I}_t \ \mathbf{R}_t] \quad (2)$$

For this purpose, the study aims to determine the existence and direction of causality at different frequencies by examining the causality relationship between variables within the framework of the frequency domain causality approach. Frequency domain causality test is a method that was first discussed by Granger (1969) but has been developed with different approaches over time. One of these approaches, Breitung and Candelon's (2006) frequency domain causality approach, which allows test statistics to be decomposed into different frequencies, constitutes the method of this study. The main factor in choosing the relevant test is that the method in question allows the determination of causality in the short, medium and long term by examining the relationships between variables at different frequencies within the specified period (Bayhan et al., 2021).

The analysis of Breitung and Candelon (2006), which allows causality to be determined at any frequency by imposing linear restrictions on the VAR model, is based on the work of Geweke (1982). The causality measure developed by Geweke (1982) can be written as follows:

$$M_{X \Rightarrow Y}(\omega) = \log \left[1 + \frac{|\psi_{12}(e^{-i\omega})|^2}{|\psi_{11}(e^{-i\omega})|^2} \right] \quad (3)$$

Here, under the condition $\psi_{12}(e^{-i\omega}) = 0$, it takes the value $M_{X \Rightarrow Y}(\omega) = 0$ and this is expressed as Y is not the Granger cause of X at frequency ω . In the Breitung and Candelon (2006) approach, the following linear restrictions are imposed on the basic hypothesis in order to claim that there is no Granger causality at ω frequency:

$$\sum_{j=1}^p \theta_{12,j} \cos(j\omega) = 0 \quad (4)$$

$$\sum_{j=1}^p \theta_{12,j} \sin(j\omega) = 0 \quad (5)$$

Under linear constraints, the basic hypothesis can be tested with the F test. The F statistic shows a distribution as $F(2, T-2p)$ for $\omega \in (0, \pi)$, where 2 is the number of constraints, T is the number of observations, and p is the order of the VAR model. The study aims to test the following hypotheses:

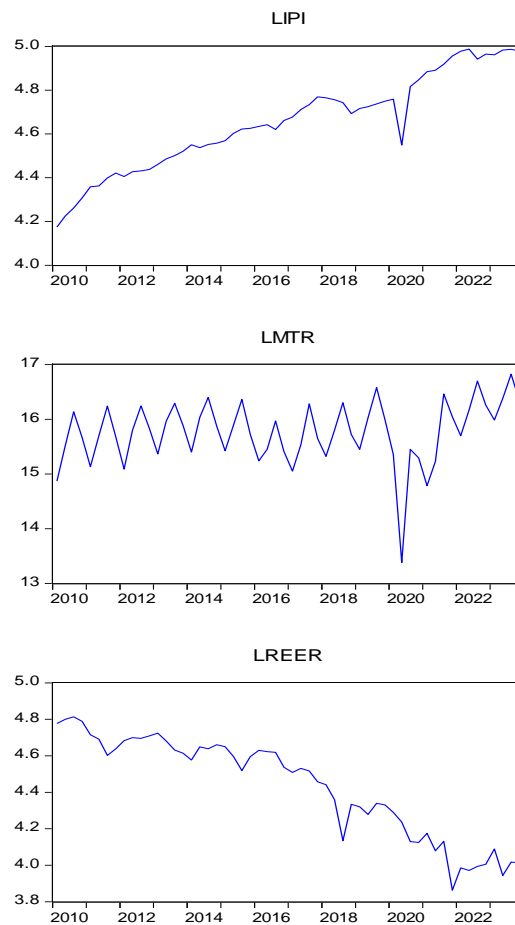
H1: There is frequency domain causality from medical tourism to economic growth.

H2: There is frequency domain causality from economic growth to health tourism.

4. Empirical Findings

It is important to investigate the stationarity of the series in the first stage of time series analysis. Granger and Newbold (1974) suggested that non-stationary series analysis leads to the spurious regression problem. For this reason, working with non-stationary series may lead to erroneous results depending on the method applied. Since the frequency domain causality approach is based on the VAR model, the series used in the analysis must be stationary. Therefore, before moving on to causality analysis, it should be tested whether the series are stationary or not.

Here, the changes in all three variables over time before the unit root tests can be seen with the help of Figure 1. Figure 1 respectively shows the quarterly industrial production index, medical tourism revenues and real effective exchange rate.

Graph 1: Values of Variables

The graphs in Figure 1 give an idea that the variables are not stationary. However, in order to reach this decision, it would be better to determine stationarity with unit root tests. In Table 3, the stationarity of the series was examined using Augmented Dickey-Fuller (ADF) unit root tests and the results are summarized.

Table 3: ADF Unit Root Tests

Variables		Intercept	Trend & Intercept	None
IPI	I (0)	-0.763167 (0.8212)	-2.800942 (0.2033)	2.434325 (0.9960)
	I (1)	-10.38070 (0.0000)*	-28.319 (0.0000)*	-9.493266 (0.0000)*
MTR	I (0)	-2.581439 (0.1039)	-2.667183 (0.2543)	0.322627 (0.7749)
	I (1)	-3.86995 (0.0043)*	-3.930192 (0.0178)*	-3.831424 (0.0003)*
REER	I (0)	-0.889279 (0.7844)	-3.441481 (0.0563)	-1.780549 (0.0714)
	I (1)	-8.888180 (0.0000)*	-8.803490 (0.0000)*	-8.435505 (0.0000)*

Source: Note: Probability values are shown in parentheses. * indicates the 1% significance level.

ADF unit root test results indicate that the three variables are not stationary at the level but stationary at the first difference. The results of the causality test conducted using the stationary first difference values of the variables are summarized in the table below.

Table 4: Frequency Domain Causality Analysis

	Long-Run		Mid-Run		Short-Run	
	$\omega=0.01$	$\omega=0.05$	$\omega=1.00$	$\omega=1.50$	$\omega=2.00$	$\omega=2.50$
IPI → MTR	10.2584 (0.0059)*	10.2898 (0.0058)*	10.7884 (0.0045)*	4.4665 (0.1072)	8.6735 (0.0131)*	5.0203 (0.0813)
MTR → IPI	3.5251 (0.1716)	3.5499 (0.1695)	1.0879 (0.5805)	2.6102 (0.2711)	1.2057 (0.5472)	2.1692 (0.3380)
IPI → REER	1.2443 (0.5368)	1.2449 (0.5366)	4.7447 (0.0933)	0.1811 (0.9134)	0.3663 (0.8327)	5.7208 (0.0572)
REER → IPI	5.9026 (0.0523)	5.9020 (0.0523)	1.1291 (0.5686)	7.6469* (0.0219)	9.0268* (0.0110)	5.9696 (0.0505)
MTR → REER	5.5586 (0.0621)	5.5460 (0.0625)	3.4562 (0.1776)	7.3976 (0.0248)	4.5293 (0.1039)	6.4407* (0.0399)
REER → MTR	7.8196* (0.0200)	7.8267* (0.0200)	0.5740 (0.7505)	6.4452* (0.0399)	3.5869 (0.1664)	3.5326 (0.1710)

Note: Probability values are shown in parentheses. * indicates the 1% significance level. The appropriate lag length for the VAR model was determined according to the Schwarz Information Criterion.

The values expressed in the table as $\omega = 0.01$ and $\omega = 0.05$ represent long-term frequencies, $\omega = 1.00$ and $\omega = 1.50$ represent medium-term frequencies, and $\omega = 2.00$ and $\omega = 2.50$ represent short-term frequencies. While there is causality from IPI to MTR in all periods, there is no causality from MTR to IPI in any period. Causality is unidirectional from IPI to MTR in the short, medium, and long term. While there is causality from REER to IPI in the short and medium term, there is no causality from IPI to REER. In other words, causality is unidirectional from REER to IPI in the short and medium term. There is causality from MTR to REER in the short and medium term. At the same time, there is causality from REER to MTR in the medium and long term. In other words, there is a one-way causality relationship from MTR to REER in the short term, a one-way causality relationship from REER to MTR in the long term, and a bidirectional causality relationship in the medium term.

Table 5: Directions of causality between variables

	IPI	MTR	REER
IPI	-	✓	✓
MTR	-	-	✓
REER	-	✓	-

Source: Own calculations

5. Conclusion

Health tourism, located at the intersection of the tourism and health sectors, is becoming increasingly attractive as it offers individuals both diagnosis and treatment opportunities for their diseases and the opportunity to travel. However, factors such as technological advances in the health sector, differences in diagnosis and treatment methods between countries, the state of the equipment and devices used, and the provision of quality service by expert personnel play an important role in patients' choice of treatment center.

Nowadays, it has been noticed that tourism revenues make significant contributions to the country's economies due to the advancements in the service sector and have improving effects on balances in the balance of

payments, especially the current account deficit. For this reason, it is observed that economies make significant investments and expenditures in these areas. Subcategories of tourism revenues, such as health tourism, especially attract attention with their high-income potential.

This study aims to determine the contribution of health tourism, which is a sector in the trend of development and growth, to the Turkish economy in the period 2010q1-2023q4. In the study where industrial production index, medical tourism revenues, and real effective exchange rate data are analyzed, the causality relationship between the variables is examined in the short, medium, and long term within the framework of the frequency domain causality approach. According to the findings, while there is causality from the industrial production index, which represents economic growth, to medical tourism revenues in every period, no causality was found from medical tourism to economic growth. A causality was found from the real effective exchange rate to economic growth in the short and medium term, but no causality was found from economic growth to the real effective exchange rate. The findings show a causality from medical tourism revenues to the real effective exchange rate in the short term and a causality from the real effective exchange rate to tourism revenues in the medium term. This explains why healthcare services have become cheaper in Turkey due to the increase in the exchange rate. In summary, H_1 was rejected, while H_2 was accepted. More clearly, while medical tourism revenues are not a causality of economic growth, economic growth is a causality of medical tourism revenues. This is because economic growth attracts more tourists by increasing investments in health infrastructure and enables the development of the sector. On the other hand, the impact of medical tourism on economic growth may be more indirect and limited, because it has a relatively small share in the overall economy. In addition, while the impact of medical tourism on economic growth may occur in the long term, economic growth may trigger medical tourism more quickly. These results are similar to those in the literature by Pleşoianu and Diaconescu (2016) and Zhong et al. (2021) provide supporting evidence for the studies.

In order to gain an essential position in the world health tourism market, Türkiye could identify specific target markets, determine short and long-term goals, give due importance to international promotional activities, ensure inter-institutional coordination, quickly provide the technological infrastructure and qualified personnel suitable for the sector and ensure diaspora support. Steps such as evaluating its impact and considering patients' expectations from abroad should be taken. According to these results, Turkey's medical tourism revenues, which continue to grow economically, will continue to increase. Policymakers will be able to increase both economic growth and medical tourism revenues by giving more importance to medical tourism in their economic growth plans.

Future research can evaluate the long-term effects of the policies implemented by Turkey in medical tourism. In addition, empirical studies can be conducted to examine the contribution of factors such as patient satisfaction, price advantages, and quality of healthcare services to medical tourism revenues. In addition, the impact of the integration of artificial intelligence and digital health technologies into the sector can be investigated. Finally, a comparative analysis of Turkey with other medical tourism centers can help identify strengths and weaknesses in the sector.

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Arastırma Makalesi**Assessing the Economic Impact of Medical Tourism: A Sectoral Analysis***Sağlık Turizminin Ekonomik Etkisinin Değerlendirilmesi: Sektörel Bir Analiz*

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Genişletilmiş Özet

Sağlık Turizmi, gelişmekte olan ekonomiler için ana sektörlerinden biri konumundadır ve sosyal, ekonomik ve küresel kalkınmaya katkıda bulunmaktadır (Chukwuka ve Amahi, 2021). Turizmin alt sektörlerinden biri olan sağlık turizmi, ekonomik getiri sağlamada olmazsa olmaz hale gelmiştir (Tang ve Abdullah, 2015). Sağlık turizmi, ciddi şekilde artan sağlık hizmetleri maliyetleri, uluslararası tıp eğitimi ve genişleyen ve gelişen yolcu taşımacılığı nedeniyle gelişmiş ülkelerde önemli ölçüde gelişmiştir (NaRanong ve NaRanong, 2011). Günümüzde gelişmiş ülke vatandaşları sağlık hizmetleri talep etmek için her gün gelişmekte olan ülkelere seyahat etmektedir. Bu tıbbi turistler yüksek gelirli vatandaşlar değildir. Bunun yerine, bu turistler orta gelir düzeyine sahip ve uygun fiyatlı, yüksek kaliteli sağlık hizmetleri arayan gruplardır (Nee, 2018). Seyahatle bütünleşen “sağlık turizmi” veya “sağlık seyahati”, Macaristan, Belçika, Türkiye ve Polonya gibi bazı ülkelerde köklü bir geçmişe sahip belirli bir yeşil endüstridir (Dang vd., 2020). Grand View Research'ün "Sağlık Turizmi Pazarı Büyüklüğü, Payı ve Trend Analizi, 2022-2030" raporuna göre, sağlık turizmi pazar büyüklüğünün 2021'de 4 milyar ABD doları, 2022'de ise 10 milyar ABD doları olduğu açıklanmıştır. Raporda, 2023'teki küresel sağlık turizmi gelirinin 221 milyar ABD doları olduğu, 2030 tahmininin ise 733 milyar ABD doları olarak öngörüldüğü açıklanmıştır. Aynı raporda, Türkiye'nin 2021'de %26,1'lik bir payla bu sektöre hakim ülkelerden biri olduğu belirtilmektedir. Bu, Türkiye'nin diğer ülkelere göre daha fazla sağlık turisti akışına sahip olmasına bağlanabilir. Bu çalışma, Türkiye'deki sağlık turizm sektörü ile ekonomik büyüme arasındaki ilişkiyi incelemektedir. Bunun nedeni, Türkiye'nin Avrupa ve Asya'da sağlık turizminde önde gelen oyuncularından biri olmasıdır. Çalışma, Sağlık Dönüşüm Programı'nda belirtildiği gibi sağlık turizminin teşvik edilmesinin Türkiye'de ekonomik büyüme nasıl artırabileceğini göstermeye çalışmaktadır.

Tutgun ve Kunç (2023), sağlık turizminin büyüme olumlu yönde artırabileceği sonucuna varmıştır. Şak (2021), sağlık turizmi ile ekonomik büyüme arasında doğrusal bir ilişki olduğunu ortaya koymuştur. Beladi vd. (2019), OECD dışı ülkeler üzerine yaptıkları çalışmada, sağlık turizminin ekonomik büyüme olumlu yönde etkilediği sonucuna varmıştır. Garcia (2015), 144 ülkeden oluşan bir örneklem kullanarak yaptığı çalışmada, sağlık harcamalarının ekonomik büyüme olumlu yönde etkilediğini ampirik olarak göstermiştir. Manzoor vd. (2019), Pakistan üzerine yaptıkları çalışmada, turizmin ekonomik büyüme olumlu yönde etkilediği sonucuna varmıştır. Danish ve Wang (2018), BRICS üyesi ülkeler üzerine yaptıkları çalışmada, turizm sektörünün ekonomik büyüme desteklediğini ortaya koymuştur. Sarantopoulos ve Demetris (2015), Yunanistan üzerine yaptıkları çalışmada, sağlık turizminin ekonomik büyüme olumlu katkıda bulunduğu sonucuna varmıştır. Perkumiene vd. (2019), Litvanya üzerine yaptıkları çalışmada, sağlık turizminin ekonomik büyüme katkıda bulunduğunu belirtmişlerdir. Kazakov ve Oyner (2021), bütünsel sağlık turizmi yoluyla sağlık turizminin gelişimini incelerken, sağlık turizminin sosyal ve ekonomik refahı olumlu yönde etkilediği sonucuna varmıştır. Malezya, Singapur ve Tayland ülkelerini inceleyen çalışmalarında, Cheah ve Abdul-Rahim (2018), hem kısa hem de uzun vadede sağlık turizmi ile ekonomik büyüme arasında olumlu bir ilişki olduğunu ortaya koymuşlardır. Girgin (2019) ve Batbaylı (2021), Türkiye'de yürütülen çalışmalarda benzer sonuçlar elde

etmiştir. Bu çalışmaların her ikisi de sağlık turizminin ekonomik büyümeye katkıda bulunduğunu göstermektedir.

Türkiye'de sağlık turizmi ile ekonomik büyüme arasındaki ilişkiyi açıklamak üzere kullanılan değişkenler 2010-2023 dönemini kapsamakta olup, üçer aylıktır. Ekonomik büyüme için kullanılan Sağlık Turizm Gelirleri (MTR) ve Sanayi Üretim Endeksi (IPI) verileri Türkiye İstatistik Kurumu'ndan (TÜİK) derlenmiştir. Türkiye gibi gelişmekte olan ülkeler açısından önemli olan Reel Efektif Döviz Kuru (REER) değişkeni ise Türkiye Cumhuriyet Merkez Bankası'ndan derlenmiştir. 2010 yılına ait verilerin seçilmesinin nedeni 2008 Küresel Ekonomik Krizin etkilerinden kaçınmaktır. Regresyon analizi için değişkenlerin logaritması hesaplanmıştır. Zaman serisi analizinin ilk aşamasında serilerin durağanlığının araştırılması önemlidir. Granger ve Newbold (1974), durağan olmayan seri analizlerinin sahte regresyon sorununa yol açtığını öne sürmüştür. Bu nedenle durağan olmayan serilerle çalışmak uygulanan yöntemle ilgili olarak hatalı sonuçlara yol açabilmektedir. Frekans alanı nedensellik yaklaşımı VAR modeline dayandığından analizde kullanılan serilerin durağan olması gerekmektedir. Bu nedenle nedensellik analizine geçmeden önce serilerin durağan olup olmadığı test edilmelidir. ADF birim kök testi sonuçları üç değişkenin düzeyde durağan olmadığını, ancak birinci farkta durağan olduğunu göstermektedir. Tüm dönemlerde IPI'den MTR'ye doğru nedensellik varken, hiçbir dönemde MTR'den IPI'ye doğru nedensellik yoktur. Nedensellik kısa, orta ve uzun vadede IPI'den MTR'ye doğru tek yönlüdür. Kısa ve orta vadede REER'den IPI'ye doğru nedensellik varken, IPI'den REER'e doğru nedensellik yoktur. Başka bir deyişle, nedensellik kısa ve orta vadede REER'den IPI'ye doğru tek yönlüdür. Kısa ve orta vadede MTR'den REER'e doğru nedensellik vardır. Aynı zamanda orta ve uzun vadede REER'den MTR'ye doğru nedensellik vardır. Başka bir deyişle, kısa vadede MTR'den REER'e doğru tek yönlü bir nedensellik ilişkisi, uzun vadede REER'den MTR'ye doğru tek yönlü bir nedensellik ilişkisi, orta vadede ise çift yönlü bir nedensellik ilişkisi bulunmaktadır.

Sağlık ve turizm sektörlerinin kesiştiği noktada yer alan sağlık turizmi, bireylere hastalıklarının hem tanı ve tedavisi hem de seyahat imkânı sunması nedeniyle giderek daha cazip hale gelmektedir. Ancak sağlık sektöründeki teknolojik gelişmeler, ülkeler arası tanı ve tedavi yöntemlerindeki farklılıklar, kullanılan ekipman ve cihazların durumu, uzman personel tarafından kaliteli hizmet sunulması gibi faktörler hastaların tedavi merkezini tercih etmesinde önemli rol oynamaktadır (Tutgun & Künc, 2023).

Günümüzde hizmet sektöründeki gelişmeler nedeniyle turizm gelirlerinin ülke ekonomilerine önemli katkılarda bulunduğu ve özellikle cari açık olmak üzere ödemeler dengesindeki dengeleri iyileştirici etkilerinin olduğu fark edilmiştir. Bu nedenle ekonomilerin bu alanlara önemli yatırımlar ve harcamalar yaptığı görülmektedir. Özellikle sağlık turizmi gibi turizm gelirlerinin alt kategorileri yüksek gelir potansiyeli ile dikkat çekmektedir.

Bu çalışmanın amacı, gelişme ve büyüme eğiliminde bir sektör olan sağlık turizminin 2010q1-2023q4 döneminde Türkiye ekonomisine katkısını belirlemektir. Sanayi üretim endeksi, sağlık turizmi gelirleri ve reel efektif döviz kuru verilerinin incelendiği çalışmada, değişkenler arasındaki nedensellik ilişkisi kısa, orta ve uzun vadede frekans alanı nedensellik yaklaşımı çerçevesinde incelenmiştir. Bulgulara göre, ekonomik büyümeyi temsil eden sanayi üretim endeksinden sağlık turizmi gelirlerine doğru her dönemde nedensellik bulunurken, sağlık turizminden ekonomik büyümeye doğru bir nedensellik bulunamamıştır. Kısa ve orta vadede reel efektif döviz kurundan ekonomik büyümeye doğru bir nedensellik bulunurken, ekonomik büyümeden reel efektif döviz kuruna doğru bir nedensellik bulunamamıştır. Bulgular, kısa vadede sağlık turizmi gelirlerinden reel efektif döviz kuruna doğru bir nedensellik, orta vadede ise reel efektif döviz kurundan turizm gelirlerine doğru bir nedensellik olduğunu göstermektedir. Bu durum, döviz kurundaki artış nedeniyle Türkiye'de sağlık hizmetlerinin neden ucuzladığını açıklamaktadır. Daha açık bir şekilde, tıbbi turizm gelirleri ekonomik büyümenin bir nedenselliği değilken, ekonomik büyüme tıbbi turizm gelirlerinin bir nedenselliğidir. Bu sonuçlar Pleşoianu ve Diaconescu (2016) ve Zhong ve diğerleri (2021) tarafından yapılan literatürdeki sonuçlara benzerdir ve çalışmalar için destekleyici kanıt sağlar.

Dünya sağlık turizmi pazarında önemli bir yer edinmek için Türkiye, belirli hedef pazarları belirleyebilir, kısa ve uzun vadeli hedefler belirleyebilir, uluslararası tanıtım faaliyetlerine gereken önemi verebilir, kurumlar arası koordinasyonu sağlayabilir, sektöre uygun teknolojik altyapıyı ve nitelikli personeli hızla sağlayabilir ve diaspora desteğini sağlayabilir. Etkisini değerlendirmek ve hastaların yurtdışından beklentilerini dikkate almak gibi adımlar atılabilir. Bu sonuçlara göre ekonomik olarak büyümeye devam eden Türkiye'nin sağlık turizmi gelirleri artmaya devam edecektir. Politika yapımcılar, ekonomik büyüme planlarında sağlık turizmine daha fazla önem vererek hem ekonomik büyümeyi hem de tıbbi turizm gelirlerini artıracabileceklerdir.