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The economic implications of the COVID-19 outbreak on tourism industry: Empirical evidence from Turkey

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Abstract

The novel coronavirus (COVID-19) pandemic has caused tremendous fear and uncertainty and affected health, economy, and social life in an unprecedented form worldwide. Yet, the level of knowledge on its economic implications is very limited. Therefore, it is of paramount importance to explain the health, social, and economic impacts of COVID-19. Because the tourism is one of the most affected industries by the pandemic, this study aims to explain the effects of COVID-19 cases and deaths, global fear, and government responses on Turkey's tourism industry. Empirical findings show that the tourism industry reacts negatively to new cases, number of deaths, and global fear measures. Also, government containment and health measures and economic supports positively affect the tourism industry. Furthermore, government stringency policies drive down the tourism industry's performance. The findings of this study provide significant implications for tourism and travel firms, policy makers, and future research.

Keywords

COVID-19 outbreak, pandemic, tourism industry, government responses, global fear, Turkey

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Introduction

The novel coronavirus disease (COVID-19), which was first officially reported in Wuhan, China, in December 2019, quickly spread all over the world and was declared an official pandemic by the World Health Organization on 11 March 2020 (Williams, 2020). This pandemic represents a new global fear and risk in economic and social life (Wagner, 2020). There has been an extraordinary uncertainty around the globe as to the deadly impact of the pandemic. Although several vaccines have been developed and have started to be administered, the availability and effectiveness of the vaccine across the globe continue to stir uncertainties surrounding the pandemic (Suess et al., 2022). Due to the shortage of vaccine supply to prevent the disease and limited medical treatment for it, the government authorities in most countries responded to the pandemic with alternative interventions, such as lockdowns, restraints, and quarantines (Gössling et al., 2021; Ozdemir et al., 2021). Further travel restrictions and border closures have been imposed in many countries and regions to prevent the spread of the virus (Qiu et al., 2020).

Pandemic-induced fear, uncertainty, and lockdowns have had substantial adverse effects on the global economy. Certainly, tourism and travel industry is one of the most adversely affected industries in the global economy (Foo et al., 2020; Gössling et al., 2021; Sharma et al., 2021; Uğur and Akbıyık, 2020; Zenker and Kock, 2020; Zheng et al., 2021). International, regional, and local restrictions disrupted various segments of the tourism and travel industry that includes international travel, domestic travel, day trips, air transportation, cruises, public transportation, accommodation, restaurants and so on. That is, the pandemic has caused a distription to both tourism demand and supply with about 60–70% loss of production in the tourism industry at global level (Liew, 2020; Uğur and Akbıyık, 2020).

In a recent study, Goodell (2020) argues that COVID-19 is an opportunity for researchers to investigate the pandemic stock market relationship. In this context, many recent studies have focused on general stock market performance of other sectors, such as manufacturing industry, agriculture, banks, and technology (Al-Awadhi et al., 2020; Baek et al., 2020; He et al., 2020; Mazur et al., 2020). However, the extant research mainly focused on the mere relationship between stock market performance of the firms and the COVID-19 pandemic, while the role of policies and strategies developed by government authorities in fighting against the pandemic is largely ignored. These policies and strategies that the governments offer during the pandemic are critical for the economy in general and the tourism industry in particular (Sharma and Nicolau, 2020). Although examination of the impact of government responses can offer essential insights in this context, our current knowledge regarding the economic implications of the pandemic in general and related policies to cope with the pandemic in particular on the tourism industry are still insufficient (Aburumman, 2020; Méndez and Arias, 2021; Rahman et al., 2020). That is, there is a significant research gap about the impact of the government responses to pandemic on the tourism industry market during the COVID-19 pandemic in the literature and thus further research is needed to examine the relationship between the COVID-19 pandemic outbreak and the tourism industry's performance.

Accordingly, the purpose of this study is to examine the effect of the COVID-19 pandemic and government responses on the tourism industry in Turkey. The number of tourist arrivals to Turkey was about 51.2 million in 2019, which is about 12% higher than 2018 (Ugur and Akbiyik, 2020). Turkey has generated approximately 37 billion USD in tourism revenues in 2019. Tourism industry is also a vital sector for employment because with more than 2.3 million people employed in the tourism industry in Turkey (TURKSTAT, 2019). Considering the share of the tourism industry in

Turkey's economy, and the potential adverse effects of the COVID-19 pandemic on the tourism industry, this study attempts to answer the following research questions:

(1) To what extent does the COVID-19 pandemic-related cases and deaths affect the tourism industry in Turkey?
(2) To what extent does the global fear affect the tourism industry in Turkey during the COVID-19 pandemic?
(3) To what extent does the government stringency policies, health measures, and economic incentives related to the COVID-19 pandemic affect the tourism industry in Turkey?

In so doing, this study provides novel information as a first attempt to fill the existing research gaps in the extant literature on the economic implications of the COVID-19 pandemic outbreak on the tourism industry in Turkey. Also, analyzing the relationship between government responses to the COVID-19 pandemic and the tourism industry's performance can provide critical political implications for policy makers and provide guidance for future research.

Government responses to the COVID-19 pandemic in Turkey

Prior to conducting our empirical investigation to answer these research questions, we provide a brief summary of the lockdown, health, and economic policies implemented by the Turkish government during the pandemic period. With the emergence of COVID-19 in China, the Turkish government immediately implemented some mild measures. The first case in Turkey was seen on 11 March 2020. After the first case, the mild measures proposed by the government were strengthened. Specifically, government responses included health and stringency measures and economic measures. First, primary, secondary, high school, and university education was completely suspended. Distance education decision was taken for all educational institutions because these measures remained in effect for longer than initially put forth. Second, visits to the hospital or doctor's offices were banned with the exception of emergency and places of worship were closed. Third, sports, cultural, artistic, scientific, and similar activities were all suspended without a clear guidance. Fourth, beauty salons were closed and restaurants were only allowed to provide services for delivery and takeouts were allowed in restaurants.

Furthermore, although initially only partial curfews were declared depending on the spread of the virus in parts of the country, this measure was generalized to those who were over the age of 65. Domestic and international flights were also suspended. Public transportation was restricted to operate with 50% passenger capacity. Mandatory military service that is required by law for Turkish citizen to serve in the military was postponed. The COVID-19 Scientific Committee was formed and a pandemic guide was published. A 14-days mandatory quarantine requirement has been the initiated for citizens and visitors arriving from abroad. A COVID-19 pandemic hotline was created and emergency medical supplies were imported. Some hospitals in which at least two of the specialists in infection, chest and internal diseases and clinical microbiology worked were decleared as pandemic hospitals where only patients experiencing complications related to the pandemic were admitted. The Ministry of Health has started to share the COVID-19 statistics on a daily basis. The use of masks in closed areas is made mandatory and free masks were distributed to general public. The treatment of the COVID-19 has decleared to be covered by the government in both state-owned and private hospitals.

From an economic policy perspective, the Ministry of Industry and Technology prepared an action plan to reduce the adverse effects of the pandemic on the national and regional economy

through the Development Agencies. A general tax deferral, tax exemptions, and deferral and exemptions on loan payments were implemented. Credit support was provided to small-scale enterprises by the state banks. Value added tax rates in domestic air transport were reduced. Stock financing support was provided to exporting companies. Working allowance and minimum wage support were implemented for a limited time. Direct financial support was provided to the Turkish Airlines. Although are evaluated in two groups for the period April 2020–October 2020 (Bakir, 2020; Turan and Celikyay, 2020; Bayram et al. 2020). Although a clearly working strategy did not exist in dealing with the adverse effect of the pandemic, many governments have implemented varying strategies. In Turkey, many of the restrictions were expected to last only a few months. However, the measures remained in place due to continued severity of the pandemic. Therefore, we expect these measures collectively to have an adverse effect on the tourism industry.

Methodology and data

This paper sets up the following models to explore the impact of cases, deaths, global fear, and government responses on Turkey's tourism industry. We used the publicly traded tourism companies in the Borsa Istanbul, which is the largest stock exchange in Turkey, as a proxy for the tourism industry in Turkey. The question of whether such a proxy could reflect the real state of the tourism industry is important. There is an extensive literature on the nature of the links between the stock market and the real economy. Theoretically, the discounted cash flow valuation model implies that stock prices reflect investors' expectations about corporate earnings or real economic variables, such as industrial production (Choi et al., 1999). Additionally, if stock returns reflect general economic conditions (crisis, political instability, etc.), the stock market is expected to reflect general economic activity (Gallegati, 2008). Many empirical studies discover strong correlations between the stock market and the real economy (Pan and Mishra 2018).

Another important question about proxy is how the index is calculated. Eight tourism companies listed on the Borsa Istanbul are taken into account while calculating the tourism index. The companies (and abbreviations for their shares) are as follows: Ulaslar Tourism Investment (ULAS), Marmaris Altınyunus (MAALT), Petrokent Tourism (PKENT), Altınyunus Çeşme (AYCES), Marti Hotel (MARTI), Eurasia Petrol and Tourism (AVTUR), Tek-Art Tourism (TEKTU), and Utopya Turizm (UTPYA). The group return performances (index) of tourism companies are calculated within the framework of their weights determined in accordance with the index theme at the beginning of the relevant index period. The weight coefficient is the number that adjusts the weight of the share in the index. In the indices, the market value of the part in actual circulation is taken into account by multiplying this coefficient. The weights of the shares determined at the beginning of the index period only change according to the movements in prices during the index period. The weight of the share in the index does not change due to equity conditions (BIST, 2021).

In equations (1) and (2), α_0, α_1, …, α_7 represent the estimation parameters, while the subscript $_t$ and ε indicate the period and the error term, respectively. Tour, Cases, Death, and USD/TRY show tourism industry, the number of new cases, new deaths, and the exchange rate (Turkish Lira units per unit of USD), respectively. Global fear is represented by the Chicago Board Options Exchange Volatility Index (Cboe VIX), which is known as the fear index for investors and shows volatility and panic in the market (Just and Krzysztof, 2020). It is a useful indicator in the literature that represents the global panic and fear in financial markets during crisis periods (Just and Krzysztof, 2020; Koçak et al., 2021; Salisu and Akanni, 2020; Sarwar and Khan, 2019).

$$Tour_t = \alpha_0 + \alpha_1 Cases_t + \alpha_2 Death_t + \alpha_3 USD/TRY_t + \alpha_4 G\_Fear_t + \alpha_5 Gov\_Resp_t + \varepsilon_t \quad (1)$$

$$Tour_t = \alpha_0 + \alpha_1 Cases_t + \alpha_2 Death_t + \alpha_3 USD/TRY_t + \alpha_4 G\_Fear_t + \alpha_5 Stringency_t + \alpha_6 Cont\_Health_t + \alpha_7 Eco\_Support_t + \varepsilon t \quad (2)$$

This study uses the indices developed by the COVID-19 Government Response Tracker (OxCGRT) to measure governments' responses to the COVID-19 outbreak (Hale et al., 2020). The government's efforts against COVID-19 are evaluated in three aspects: Stringency, containment-health, and economy. Index scores range from 0 to 100. These scores are a measure of how many of the relevant indicators and to what degree a government has applied. A higher score implies an increasing degree of the government response. Finally, the government response index is calculated using the arithmetic mean of these three indices.

The stringency index primarily monitors the strictness of restrictions on human behavior, that is, lockdown-type policies. It also records all sequential containment and closing policy indicators and public information campaigns. In this context, the stringency index is calculated considering social distance measures, school closing, workplace closing, cancellation of public activities, gathering restrictions, closure of public transport, homestay requirements, and domestic and international travel restrictions.

The containment and health index is based on some criteria, such as "sequestration" restrictions and closures, testing policy and contact tracing, short-term investment in healthcare, and vaccine investment. Within the framework of these criteria, calculations are made using all health system policy indicators.

The economic response index monitors some criteria, such as income support, debt/contract reduction, and financial and international support. In this context, all economic policy indicators are used in the calculation (Ashraf, 2020).

Also, the aggregated form of the three indicators is represented by the government response variable. The index records information on how governments' response has changed across all indicators, namely, becoming stronger or weaker throughout the pandemic. Hence, the effect of the government's responses to the pandemic on the tourism industry is analyzed through both disaggregated and aggregated data.

Table 1 provides summary information about the data of the variables used in the investigation. Data are daily and the period range covers from 02 January 2020 to 05 October 2020. The natural logarithm of the series is taken for (i) a convergence of descriptive statistical values and (ii) efficiency of coefficient sizes. Table 1 provides summary information about the data of the variables used in the investigation. Descriptive statistics and the correlation matrix are shown in Appendixes 1 and 2.

For a time series analysis, if variables under consideration are non-stationary, then the traditional t, Wald, and F test statistics obtained from the traditional ordinary least squares (OLS) method provide biased and inefficient outputs, implying the spurious regression problem. Hence, the first step in a time series analysis is to examine the stationarity levels of variables through unit root tests. This paper performs the unit root tests developed by Dickey and Fuller (1981) and Phillips and Perron (1988) to determine the order of integration of the variables.

Subsequently, if the series are not stationary, the cointegration relationship should be confirmed before the regression parameter estimation. For the cointegration test, the Hatemi-J (2008) cointegration test which takes structural breaks into account is followed in the current study. For this cointegration test, the following equation is used for the analysis

$$Y_t = \alpha + \beta' x_t + u_t t = 1, 2, 3 \ldots, n \quad (3)$$

Table 1. Summary information about the data.

Abbreviation	Variable type	Explanation	Source
Tour	Dependent variable	Borsa istanbul tourism index	Investing database (2020)
Cases	Explanatory variable	Number of new cases	Johns Hopkins coronavirus resource center (2020)
Death	Explanatory variable	Number of new deaths	Johns Hopkins coronavirus resource center (2020)
USD/TR	Control variable	Exchange rate	Investing database (2020)
G_Fear	Explanatory variable	Cboe VIX volatility index	Investing database (2020)
Eco_support	Explanatory variable	Economic support index	Hale et al. (2020)
Stringency	Explanatory variable	Stringency index	Hale et al. (2020)
Cont_Health	Explanatory variable	Containment and health index	Hale et al., (2020)
Gov_Resp	Explanatory variable	Overall government response index	Hale et al. (2020)

Equation (3) is expanded by two structural breaks parameters. D_{1t} and D_{2t} are dummy variables representing structural breaks in the model. The model with the structural breaks is defined as

$$Y_t = \alpha_0 + \alpha_1 D_{1t} + \alpha_2 D_{2t} + \beta_0 x_t + \beta_1' D_{1t} x_t + \beta_2' D_{2t} x_t + \ u_t \tag{4}$$

The null hypothesis that there is no cointegration between variables is estimated using three models: Level shift (C), level shift with trend (C/T), and regime shift (C/S) models. The following statistics are used to estimate these models

$$ADF^* \ = \ \inf_{(\tau_1,\ \tau)_2 \in T} ADF(\tau_1,\ \tau_2) \tag{5}$$

$$Z_t^* \ = \ \inf_{(\tau_1,\ \tau_2) \in T} Z_t(\tau_1,\ \tau_2) \tag{6}$$

$$Z_\alpha^* \ = \ \inf_{(\tau_1,\ \tau_2) \in T} Z_\alpha(\tau_1,\ \tau_2) \tag{7}$$

$$T \ = \ (0.15nn,\ 0.85n) \tag{8}$$

These test statistics have non-standard distributions and Hatemi-J (2008) provides new critical values using Monte-Carlo simulations. The test statistics are the minimum values obtained for all τ_1 and τ_2 values of these three tests ($\tau_1 \in$ T1 = (0.15, 0.70) and $\tau_2 \in$ T2 = (0.15 + τ_1, 0.85)).

Finally, parameters are estimated using the dynamic OLS (D-OLS) method developed by Stock and Watson (1993). The D-OLS estimator is a dynamic method which can eliminate the possible endogeneity and autocorrelation problems. Additionally, the robustness of the parameter estimation is checked with the fully modified OLS (FM-OLS) estimator proposed by Phillips and Hansen (1990) and the canonical cointegration regression (CCR) estimator proposed by Park (1992).

Empirical results

The unit root tests' findings are reported in Table 2. As is seen, all variables contain a unit root in level values and are not stationary. When the first differences of the variables are considered, it is

Table 2. Unit root tests.

Variable	Augmented Dickey-Fuller (Adf)		Phillips-Perron unit root test (PP)	
	Level	First difference	Level	First difference
Tour_Stock	−0.305	−11.722[a]	−0.511	−12.125[a]
Cases	−1.159	−10.641[a]	−0.1.558	−11.453[a]
Death	−1.322	−11.386[a]	−1.409	−11.944[a]
USD/TR	−0.261	−13.271[a]	−0.273	−13.269[a]
G_Fear	−1.937	−3.137[a]	−2.182	−16.248[a]
Gov_Resp	−2.076	−10.126[a]	−2.165	−14.377[a]
Eco_support	−1.311	−13.396[a]	−1.332	−13.975[a]
Stringency	−2.356	−8.043[a]	−2.349	−14.571[a]
Cont_Health	−2.489	−9.681[a]	−2.327	−11.049[a]

[a]shows 1% statistical significance.

seen that all of them are stationary [*I(1)*]. In this case, before the parameter estimation, the co-integration relationship should be confirmed.

Table 3 presents the Hatemi-j (2008) cointegration test results. Accordingly, the estimation results obtained from the level shift model (C) the level shift with trend model (C/T) reject the null hypothesis of no cointegration. These findings support the co-movement between the number of cases, deaths, global fear, exchange rate, government responses, and Turkey's tourism industry during the COVID-19 period. The first break date indicated by the test results is 01 April 2020. COVID-19 first cases were detected in Turkey on March 11. The number of cases increased rapidly in the following days. In April 2020, the government announced that it was suspending curfews, travel restrictions, and face-to-face education. The first days of April were the days when the lockdown increased Turkey's measures (Bakir, 2020). The second break date is May 3–4, 2020. This date corresponds to the days when the first wave started to decline, the number of daily cases decreased to thousands, and government measures began to be stretched (TCCB, 2020).

Following the cointegration analysis, the D-OLS regression parameter estimates are reported in Table 4. For the pandemic, two different models are estimated to explain the effects of disaggregated government responses on the tourism industry. Findings show that COVID-19 case and death numbers have a negative and significant effect on the tourism industry in both models. These results support the arguments that the tourism industry is heavily affected by the COVID-19 pandemic (Duarte Alonso et al., 2020; Liew, 2020; Williams, 2020). The global fear index reflects fear and panic in the financial market and has a strong and negative effect on tourism industry's performance in the first model (Salisu and Akanni, 2020). These findings confirm that the tourism industry in Turkey reacts negatively to an increase in global panic and fear. However, the exchange rate, the control variable in the model, has a positive effect on the tourism industry. The probable reason for this finding may be that increases in the exchange rate make tourism products and services and stock prices relatively discounted for foreign investors (Dogru et al., 2019).

The findings regarding the effects of government responses on the tourism industry can be explained as follows. The government stringency index has a reducing effect on the tourism industry ($\alpha_5 = -0.021, p < .10$). Tourism industry reacts negatively to social distance rules, quarantine and the lockdown in Turkey. While lockdowns save lives, they also bring considerable costs to society due to reduced economic activities. Therefore, government actions, such as lockdowns and travel

Table 3. Hatemi-J (2008) test results.

	Hatemi-J (C/S)	Hatemi-J (C/T)	Hatemi-J (C)
Modified ADF test	−7.282	−10.784*	−9.991*
First break point	0.406	0.406	0.406
First break date	April 01	April 01	April 01
Second break point	0.540	0.533	0.533
Second break date	May 04	May 03	May 03
Modified Phillips test (Z_t)	−7.329	−10.991*	−10.623*
First break point	0.406	0.406	0.406
First break date	April 01	April 01	April 01
Second break point	0.540	0.540	0.540
Second break date	May 04	May 04	May 04
Modified Phillips test (Z_α)	−85.725	−93.661	−96,053
First break point	0.406	0.406	0.406
First break date	April 01	April 01	April 01
Second break point	0.533	0.540	0.540
Second break date	May 03	May 04	May 04

Note: *, ** and *** show 1%, 5% and 10% statistical significance, respectively. Critical values are obtained from Hatemi-J (2008).

Table 4. D-OLS estimation results.

Independent variable	(1)	(2)
Cases	−0.028*** (−1.83)	−0.061* (−2.95)
Death	−0.096** (−2.31)	−0.023*** (−1.78)
USD/TR	3.287* (7.63)	2.702* (6.82)
G_Fear	−0.419* (−6.12)	−0.344 (−5.15)
Stringency		−0.021*** (−1.87)
Cont_Health		0.089*** (1.84)
Eco_ support		0.083* (4.58)
Gov_Resp	0.095** (2.36)	
Intercept	0.465 (0.58)	0.086 (1.17)
Adj. R^2	0.726	0.766

Note: *, ** and *** show 1%, 5% and 10% statistical significance, respectively. Long-run variance estimate is carried out as follows: Bartlett kernel, Newey-West fixed bandwidth = 4.00. Values in brackets indicate t-statistics.

restrictions aiming to achieve social distancing are expected to affect stock returns directly and indirectly. The expected direct impact of the stringency measures on the tourism industry is negative (Ashraf, 2020). On the other hand, if these measures reduce the pandemic's impact in the long term, tourism industry may be positively affected.

Furthermore, containment and health index has a positive effect on the tourism industry's performance ($\alpha_6 = 0.089$, $p < .10$). Health measures, such as government information campaigns, treatment options, testing, and contact tracking, had great success in South Korea and Japan. Better health policies also increased investors' confidence about the control of the pandemic by the

Table 5. Robustness check.

	FM-OLS estimator		CCR estimator	
	(1)	(2)	(1)	(2)
Cases	−0.080** (−2.41)	−0.057* (−2.83)	−0.070* (−6.41)	−0.055* (−2.77)
Death	−0.072** (−2.06)	−0.049*** (−1.79)	−0.073** (−2.08)	−0.048** (−1.99)
USD/TR	3.187* (7.81)	2.844* (7.42)	3.184* (7.76)	2.842* (7.33)
G_Fear	−0.481* (−9.29	−0.331* (−5.11)	−0.484* (−8.98)	−0.334* (−5.27)
Stringency		−0.040** (−2.07)		−0.038*** (−1.89)
Cont_Health		0.117** (2.33)		0.110** (2.36)
Eco_ Support		0.087* (4.58)		0.082* (4.39)
Gov_Resp	0.113* (3.10)		0.109* (3.16)	
Intercept	0.326 (0.42)	0.551 (0.86)	0.324 (0.45)	0.564 (0.78)
Adj. R^2	0.825	0.868	0.824	0.871

Note: *, ** and *** show 1%, 5% and 10% statistical significance, respectively. Values in brackets indicate t-statist

government (Ashraf, 2020; Béland et al., 2020; Hale et al., 2020). Therefore, the expected impact of health measures on financial markets is positive, and the findings of the paper are in line with these expectations.

The tourism industry shows a positive and significant response to the economic support of the government ($\alpha_7 = 0.083$, $p < 01$). This finding points to the critical importance of economic incentives for the tourism industry during the pandemic. The Central Bank of Turkey supported the general economy with an expansionary monetary policy including not only decreases in interest rates but also increases in monetary base. The government has provided significant tax cuts and exemptions in many industries, including tourism. It applied tax cuts in airline transportation. The Turkish government provided support to reduce the labor costs of companies with its short work allowance. In tourism, the government implemented the "Safe Tourism Certification Program" with various tax reliefs (World Tourism Organization, 2020). Our study confirms that the related supports are adequate. Finally, the overall government respond index, which consists of health, stringency, and economic measures, positively affect tourism industry's performance. Thus, the ultimate effect of government responses on the tourism industry is supportive ($\alpha = 0.095$, $p < .05$).

To check the D-OLS findings' robustness, regression parameters are also re-estimated utilizing alternative estimators, such as FM-OLS and CCR (see Table 5). According to the results, the tourism industry reacts negatively to COVID-19, global fear, and stringency index and positively to health measures, economic supports, and overall government responses. Also, the adjusted R^2 values of the estimation models range from 0.82 to 0.87. Accordingly, the estimations are highly compatible with the initial D-OLS estimates.

Discussion and conclusion

The COVID-19 pandemic has caused unprecedented challenges around the world with extreme fear and uncertainty. The pandemic has deeply affected the public health, overall economy, and social aspects of our lives. While research on developing effective vaccines and treatment options has been ongoing and some progress has been made in this context, the research on economic implications of the pandemic is still in its early stages. In this context, analyzing the effects of COVID-19 pandemic

on the tourism industry contributes to develop more effective policies against the current and future pandemics or similar external shocks that might occur in the future. Therefore, we examined the effect of the COVID-19 pandemic outbreak on the tourism industry in Turkey. We also analyzed the effect of the government responses to fight against the COVID-19 pandemic on the tourism industry.

The results show that the tourism industry has been adversely affected by the pandemic and this effect has increased with increases in the number of COVID-19 related cases and deaths. This finding suggests that the tourism industry has high degree of sensitivity to pandemic, and developing strategies to cope with the COVID-19 pandemic outbreak is critical to the development of the tourism industry. Also, the global fear index, which represents fear and panic in the economy, appears to adversely affect the tourism industry, which makes tourism industry even more vulnerable to the pandemic or other severe external shocks. Furthermore, while tourism industry responds positively to the government's health measures and economic incentives, the industry reacts negatively to stringency measures. However, these stringency measures can positively affect the tourism industry in the long run by contributing to the reduction of the number of cases and deaths.

Policy implications

This study provides empirical evidence that the tourism industry in Turkey has experienced significantly adverse effects from the COVID-19 pandemic outbreak, while government responses in the context of health measures and economic incentives were positively perceived by the tourism industry. Certainly, some businesses struggle to survive due to the pandemic and thus immediate and long-term government interventions are required for the tourism industry. The following policies can help reduce the negative impact of the pandemic shock to the tourism industry (Gössling et al., 2021; Kaushal and Srivastava, 2021; OECD Tourism Trends and Policies, 2020; Williams, 2020; World Tourism Organization, 2020).

First, governments should offer labor financing supports in the tourism and travel sector to prevent layoffs. Employee benefits packages will provide a degree of relief to many tourism companies during the pandemic. Second, one of the most critical issues for companies is financial constraint. The government should provide financial relief opportunities to firms that face financial constraints issues. Economy-wide liquidity injections and financial assistance should be offered specifically for companies in the tourism sector. Tax exemptions and forgiveness programs can further provide financial support or remove the burden on these companies during such periods. Third, Turkish government authorities can make remarkable legislative changes for businesses that operates in the tourism industry. For example, businesses may offer coupons to their customers to redeem in the event of cancellations instead of having to reimburse them cash. These types of exceptions could to some extent help tourism firms overcome liquidity problems. Fourth, in the travel industry, passengers want to ensure of their travel safety and health. Therefore, new measures of safety, hygiene, testing, and procedures that are designed to prevent the spread of the virus must be required in hotels, restaurants, and other tourism sectors. Some countries, such as Portugal and Israel, offer safe and clean labels to reassure visitors, while also promoting the use of digital tools in such services. Indeed, establishing trust would be essential to recover from the pandemic and revitalize tourism demand. Similarly, to ensure that tourist destinations are perceived as safe, sanitary specifications should be developed.

Furthermore, residents can be incentivized with tax credits to support domestic tourism and other local tourism activities such as staycations. Also, digital solutions should be developed and expanded to offer virtual museum applications and create virtual tourism experiences. The government should guide the operations of the stock market activities. Capital market activities should

be continuously monitored to ensure that high ethical standards are maintained. It should provide reliable and transparent environments, such as official websites, electronic and social media platforms, to enable investors to make informed investment decisions (Jelilov et al., 2020). Some studies establish a relationship between institutional quality and the pandemic shock's economic and financial impact (Erdem, 2020) The negative impact of the pandemic is lower in more democratic and legal countries with strong institutions. Therefore, in the face of any negative shocks, visitors' tourism demand is less affected in countries with more vital institutions (Bulut et al., 2020). For this reason, policies that will strengthen the institutional structure could provide significant benefits not only in the context of the tourism industry but also in the context of overall economy in the long term.

Recommendations for tourism firms

Tourism firms can implement the following recommendations to mitigate the adverse effects of the COVID-19 pandemic outbreak and preserve the value of their shares (Duarte Alonso et al., 2020; He et al., 2020; Nicola et al., 2020; Xiong et al., 2020). All the crises in history show that the changes experienced by the industries and related firms during the crisis do not last too long; that is, such crises are transitory in general. However, firms must maintain their strong balance sheets in times of crises so that they can quickly recover. It is important to note that investors are likely to make investments in firms that can protect their current and future cash flows. Although firms are likely to face challenges during pandemic, firms with strong business prospects and solid financial fundamentals can better cope with fluctuations in cash flows. Firms that can absorb the shocks caused by the pandemic can access substantial cash to support their growth with government financial incentives.

Tourism firms must provide assurances to their customers during the pandemic period in terms of their financial stability, maintaining their operations, and provide safe and healthy environments. Tourism firms should continue to inform their customers regularly in times of crises regarding their operations, and should pay more attention to transparency during these periods. Customers will remember how companies behaved during the pandemic and such behavior towards their customer will have a lasting effect on customers' future behavior. Furthermore, tourism and travel companies should avoid heavy discounts and promotions that may disrupt the supply and demand balance during the pandemic period. This type of behavior can affect profit margins by causing price wars in the industry, which is difficult to recover from thereafter. Instead, firms should consider value-added, innovative products or services that can be offered to customers during such times.

In addition to financial and customers, personnel is essential for tourism and travel companies. Firms must take urgent measures to protect the health of their employees. Following a pandemic-specific health protocol would be perceived as a socially responsible strategy that is appreciated by employees. During the pandemic, the production process and supply chains are interrupted in many sectors due to the pandemic related issues. Alternative supply scenarios should be determined in line with the occurrence of virus spread in different regions. Executives should work on alternative purchasing strategies and diversify their supply chain so that such problems are limited in the future.

Travel companies, especially airlines, have been largely affected by the pandemic, the implications of which were observed with the adverse returns in firms that are publicly traded. Travel companies can prevent their customers from changing their travel plans with more open and flexible offers, such as destination or date changes without charging them a fee in this process. These facilities contribute to customers' protection of their travel demand. Hotels and travel agencies

should practice similar procedures. This type of customer-oriented assistance will provide significant benefits to companies in the future through increased customer loyalty.

Certainly, innovative enterprises that offer more efficiency and lower costs to their customers are more likely to weather external shocks and remain financially stable during such times. In a recent study, Kocak et al. (2021) showed that market values of companies that use technology effectively are more resistant to health shocks. For this reason, companies that use technology more actively can gain competitive advantages. In times of crises and shocks, companies that prioritize technology in tourism and travel services may have an advantage over others. Therefore, tourism companies might take the advantage of such periods to refurbish their operations for continued growth by modernizing their virtual communication and technology infrastructures.

Limitations and recommendations for future research

Although this study makes significant contributions to the extant literature, it has some limitations. This study provides empirical evidence that global fear has adverse effects on the tourism industry in Turkey. In this context, the existence of a possible spillover effect on financial markets for tourism companies during the COVID-19 pandemic should be further investigated. Specifically, the spread of pandemic adverse shocks in global stock markets, such as the U.S, China, Germany, the UK, and Japan stock markets, should be analyzed. An important conclusion of this research is that government responses are essential for the tourism industry in adverse shocks. Also, there is limited literature about the multifaceted effects of government measures, support and lockdown policies on the tourism sector. The research established in this direction will provide important implications in developing policies against the current or future pandemics. Also, this study examined the pandemic's impact on the tourism industry from a stock market perspective. We used the stock market index to represent the tourism industry. However, the stock market index is about the returns of large-scale companies. The tourism industry generally consists of a large number of small and medium-sized enterprises. Therefore, the resilience of small- and medium-sized enterprises against pandemics should also be examined in future studies. Future research may focus on the impact of pandemics to both micro and macro level investigations. Apart from tourism supply dynamics, the pandemic can be included as a new variable in tourism demand models. Demand forecasting studies can be established from the pandemic perspective, and other relevant factors, such as country- and region-specific differences and institutional structure differences.

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Appendix 1

Descriptive statistics

	Tour_ Stock	Cases	Death	USA/TR	G_ Fear	Gov_ Resp	Eco_ Support	Stringency	Cont_ Health
Mean	5.008	5.408	2.598	1.919	3.329	3.735	2.947	3.577	3.758
Median	4.997	7.079	2.970	1.924	3.319	4.135	4.471	4.157	4.199
Maximum	5.559	8.476	4.844	2.071	4.415	4.367	4.471	4.329	4.349
Minimum	4.225	0.000	0.000	1.768	2.493	0.000	0.000	0.000	0.000
SD	0.298	3.161	1.682	0.085	0.409	0.984	2.062	1.207	0.949
Skewness	−0.547	−1.060	−0.642	−0.121	0.123	−2.445	−0.724	−2.059	−2.701
Kurtosis	2.962	2.250	1.886	2.115	3.227	9.008	1.544	6.080	10.471
Jarque-Bera	9.792	41.312	23.589	6.864	0.918	490.260	34.438	216.047	694.260
Probability	0.007	0.000	0.000	0.032	0.631	0.000	0.000	0.000	0.000
Sum	981.623	1060.116	509.300	376.140	652.617	732.142	577.620	701.282	736.734
Sum sq. Dev.	17.410	1948.679	551.904	1.439	32.672	189.017	829.684	284.299	175.983
Observations	196	196	196	196	196	196	196	196	196

Appendix 2

Correlation matrix

	Tour_ Stock	Cases	Death	USA/TR	G_Fear	Gov_ Resp	Eco_ Support	Stringency	Cont_ Health
Tour_Stock	1								
Cases	0.213	1							
Death	0.259	0.926	1						
USD/TR	0.682	0.740	0.743	1					
G_Fear	−0.405	0.416	0.354	0.107	1				
Gov_Resp	0.595	0.680	0.733	0.794	0.266	1			
Eco_support	0.801	0.485	0.499	0.800	−0.071	0.773	1		
Stringency	0.006	0.814	0.854	0.549	0.572	0.719	0.3101	1	
Cont_Health	0.421	0.756	0.822	0.765	0.366	0.917	0.599	0.869	1

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