

ESSAYS ON ECONOMIC CONSEQUENCES OF A POLITICAL CONFLICT:  
2015 RUSSIA TÜRKİYE DISPUTE

A THESIS SUBMITTED TO  
THE GRADUATE SCHOOL OF SOCIAL SCIENCES  
OF  
MIDDLE EAST TECHNICAL UNIVERSITY

BY

CANAN YÜKSEL YÜCEL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF DOCTOR OF PHILOSOPHY  
IN  
THE DEPARTMENT OF ECONOMICS

JANUARY 2024



Approval of the thesis:

**ESSAYS ON ECONOMIC CONSEQUENCES OF A POLITICAL CONFLICT:  
2015 RUSSIA TÜRKİYE DISPUTE**

submitted by **CANAN YÜKSEL YÜCEL** in partial fulfillment of the requirements  
for the degree of **Doctor of Philosophy in Economics, the Graduate School of  
Social Sciences of Middle East Technical University** by,

Prof. Dr. Sadettin KİRAZCI  
Dean  
Graduate School of Social Sciences

---

Prof. Dr. Onur YILDIRIM  
Head of Department  
Department of Economics

---

Prof. Dr. Erol TAYMAZ  
Supervisor  
Department of Economics

---

**Examining Committee Members:**

Prof. Dr. İbrahim Semih AKÇOMAK (Head of the Examining Committee)  
Middle East Technical University  
Department of Science and Technology Policy Studies

---

Prof. Dr. Erol TAYMAZ (Supervisor)  
Middle East Technical University  
Department of Economics

---

Assoc. Prof. Dr. Dilem YILDIRIM KASAP  
Middle East Technical University  
Department of Economics

---

Prof. Dr. Meltem DAYIOĞLU TAYFUR  
TED University  
Department of Economics

---

Prof. Dr. Seyit Mümin CILASUN  
TED University  
Department of Economics

---



**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

**Name, Last Name:** Canan Yüksel Yücel

**Signature:**

## **ABSTRACT**

### **ESSAYS ON ECONOMIC CONSEQUENCES OF A POLITICAL CONFLICT: 2015 RUSSIA-TÜRKİYE DISPUTE**

**YÜKSEL YÜCEL, Canan**

**Ph.D., The Department of Economics**

**Supervisor: Prof. Dr. Erol TAYMAZ**

**January 2024, 149 pages**

The main objective of this study is to analyze the economic impact of the political conflict between Russia and Türkiye which began after Türkiye shot down a Russian warplane on the Syrian border on 24 November 2015. In response, Russia announced a package of economic sanctions, some of which restricted bilateral tourism activities. As the second most important country in terms of the number of visitors coming to Türkiye, these measures by Russia had a profound impact on the Turkish tourism sector. We examine the impact of these restrictions on the Turkish tourism sector and their spillover to other sectors using micro-level datasets.

The dissertation consists of three essays. In the first essay we document the differential impact of the political shock on tourism establishments, using an establishment-level dataset constructed from administrative records. In the second essay, we analyze the impact on the labor market using a matched employer-employee dataset. This essay provides a comprehensive overview of the tourism labor market and an empirical analysis of the employment and earnings trajectories of the long-tenured workers in the post-2015 period.

The third essay examines the transmission of the shock to non-tourism firms through trade relations. Using administrative records on firms' balance sheets and firm-to-firm trade transactions, we show that firms in non-tourism firms that traded with tourism firms in 2015, were also negatively affected by this political shock.

**Keywords:** Job displacement, Earnings losses, Transmission of shocks, Production network, Economic sanctions

## ÖZ

### POLİTİK SÜRTÜŞMELERİN İKTİSADİ SONUÇLARI: 2015 YILI TÜRKİYE- RUSYA GERİLİMİ

YÜKSEL YÜCEL, Canan

Doktora, İktisat Bölümü

Tez Yöneticisi: Prof. Dr. Erol TAYMAZ

Ocak 2024, 149 sayfa

Bu tezin temel amacı, 24 Kasım 2015 tarihinde Suriye sınırında bir Rus savaş uçağının Türkiye tarafından düşürülmesinin ardından Rusya ile Türkiye arasında başlayan politik gerilimin ekonomik etkilerini analiz etmektir. Rusya, bu olay sonrası ikili turizm faaliyetlerini kısıtlayan maddeler de içeren bir dizi ekonomik yaptırım kararı almıştır. Türkiye'ye gelen ziyaretçi sayısı bakımından ikinci önemli ülke olan Rusya'nın bu tedbirleri Türkiye turizm sektörünü derinden etkilemiştir. Bu tezde turizm faaliyetlerini hedefleyen söz konusu kısıtlamaların turizm sektörü üzerindeki etkileri ve diğer sektörlerde şokun yayılma boyutu, mikro düzeydeki veri setleri kullanılarak incelenmektedir.

Tez üç makaleden oluşmaktadır. İlk makalede, idari kayıtlardan derlenen iş yeri düzeyinde veriler kullanılarak, politik şokun turizm sektöründeki iş yerleri üzerindeki etkisi ortaya konmaktadır. İkinci makalede, birebir eşleşmiş iş yeri-çalışan verileri kullanılarak sektörde uzun süreli çalışanların şok sonrası dönemdeki ücret ve istihdam durumları analiz edilmektedir. Ayrıca bu makale, turizm sektöründeki çalışanlara dair kapsamlı bir genel betimleme sunmaktadır.



Üçüncü makale, şokun ticari ilişkiler yoluyla turizm dışı firmalara yayılma boyutunu ele almaktadır. Firma bilançolarına ve firmadan firmaya ticari işlemlere ilişkin idari kayıtlar kullanılarak, 2015 yılında turizm firmalarının tedarikçisi veya müşterisi olan turizm dışı sektördeki firmaların da bu politik şoktan olumsuz etkilendiği gösterilmektedir.

**Anahtar Kelimeler:** İşten çıkarılma, Kazanç kayıpları, Şokların yayılımı, Üretim Ağı, İktisadi yaptırımlar

*Ođlum Erkin'e*

## ACKNOWLEDGMENTS

I am deeply grateful to my supervisor Prof. Dr. Erol Taymaz for his guidance, encouragement, and belief in me. I have been very lucky to have the opportunity to work with him which was an invaluable experience. This thesis would not have been possible without him. He kept me motivated and determined whenever I felt exhausted and gave me the strength to go on. This ten-year journey, which was prolonged by my leaving and returning with an amnesty law, was completed thanks to him.

I would like to thank Prof. Dr. İbrahim Semih Akçomak, Assoc. Prof. Dr. Dilem Yıldırım Kasap, Prof. Dr. Meltem Dayıođlu Tayfur and Prof. Dr. Seyit Mmin Cılasun who took part in my thesis jury and contributed with their valuable suggestions. I am indebted to all my teachers at METU, especially Prof. Dr. Fikret Őenses.

I am grateful to the Ministry of Science and Technology for allowing me to use the excellent datasets. I owe special thanks to Ramazan Seyfeli, Aytunç Ayhan and Muhammet Yurt who have always been helpful with my studies at GBS.

I owe special thanks to my colleague Salih for his guidance throughout the process of thesis topic selection. I am indebted to Eda for her continuous support and help. I am obliged to my friends Aslıhan, Evren, and Yasemin for their friendship and support. I am grateful to Nihan for being by my side and I thank Sine for her help.

I want to thank my uncle Ali, for his help in arranging accommodation. Most importantly, my devoted parents Yasemin and Fethi, my aunt Leyla and my brother Hakan deserve my sincere gratitude for their unconditional support and love. Completing this program with a small kid would be impossible without my parents' help. I would like to thank Ali, my understanding husband, for his encouragement and support. I dedicate this work to my son Erkin, as an apology for the time I stole from his childhood. Finally, I congratulate myself on rising from the ashes!

## TABLE OF CONTENTS

PLAGIARISM.....	iii
ABSTRACT .....	iv
ÖZ.....	vi
DEDICATION .....	viii
ACKNOWLEDGMENTS .....	ix
TABLE OF CONTENTS .....	x
LIST OF TABLES .....	xii
LIST OF FIGURES/ILLUSTRATIONS/SCHEMES .....	xiv
LIST OF SYMBOLS/ABBREVIATIONS .....	xvi
CHAPTERS	
1. INTRODUCTION.....	1
2. THE IMPACT OF THE POLITICAL SHOCK ON TOURISM:	
FIRM-LEVEL ANALYSIS .....	6
2.1 Introduction .....	6
2.2 Tourism Sector in Türkiye .....	8
2.3 Literature Review .....	15
2.4 Empirical Framework and Data .....	16
2.4.1 Data .....	16
2.4.2 Empirical Framework.....	18
2.4.3 Empirical Findings .....	30
2.5 Conclusion.....	36
3. THE IMPACT OF THE POLITICAL SHOCK ON TOURISM:	
WORKER-LEVEL ANALYSIS .....	39
3.1 Introduction .....	39
3.2 Outlook of the Labor Market.....	43
3.3 Data .....	46
3.3.1 Long Tenured Workers .....	52
3.3.2 Classifying Long Tenured Workers .....	67
3.4 Empirical Framework.....	74

3.4.1	Differential Impact on Tourism Workers.....	74
3.4.2	Displaced Long-tenured Workers .....	82
3.5	Conclusion .....	87
4.	THE PROPAGATION OF THE SHOCK THROUGH TRADE LINKAGES .....	88
4.1	Introduction.....	88
4.2	Literature Review.....	90
4.3	Data and Empirical Framework .....	92
4.3.1	Data .....	92
4.3.2	Empirical Framework .....	95
4.4	Conclusion .....	101
5.	CONCLUSIONS.....	103
5.1	Main Findings .....	103
5.2	Main Policy Implications .....	107
5.1	Main Limitations and Future Research.....	108
	REFERENCES .....	110
	APPENDICES	
A.	ESTIMATION OUTPUTS FOR CHAPTER 2 .....	114
B.	ESTIMATION OUTPUTS FOR CHAPTER 3 .....	122
C.	CURRICULUM VITAE.....	130
D.	TURKISH SUMMARY / TÜRKÇE ÖZET .....	131
E.	THESIS PERMISSON FORM / TEZ İZİN FORMU .....	149

## LIST OF TABLES

Table 2.1 Tourism Intensity of Turkish Provinces in 2015.....	11
Table 2.2 Number of Foreign Visitors in Türkiye (Million people) .....	12
Table 2.3 Specifications for Treatment and Control Groups .....	24
Table 2.4 Number of Establishments in the Treatment and Control Groups (Thousand) .....	25
Table 2.5 Number of Firms in the Treatment and Control Groups (Thousand) .....	26
Table 3.1 Number of Employees in the Accommodation Sector (1000 people) .....	45
Table 3.2 Number of Workers across Quarters (Thousand people).....	48
Table 3.3 Descriptive Statistics for All Workers in the Tourism Sector.....	49
Table 3.4 The Regional Distribution of Workers in Tourism Firms (%).....	50
Table 3.5 Nominal Daily Wages of Long-tenured Workers .....	53
Table 3.6 Long-tenured Workers in the Tourism Sector.....	55
Table 3.7 Number of Observations in 2017-2018 (Thousand) .....	58
Table 3.8 Number of Observations in 2019-2020 (Thousand) .....	59
Table 3.9 Grouping Long-tenured Workers .....	68
Table 3.10 Base Regressions for Log-transformed Real Daily Wages .....	84
Table 3.11 Regressions for Real Monthly Wages and Days Worked .....	85
Table 3.12 Regressions with Interactions: Log-transformed Real Daily Wages .....	85
Table 3.13 Regressions with Status Indicator Variable .....	86
Table 4.1 Summary Statistics for Upstream and Downstream Exposure Ratios .....	95
Table 4.2 Coefficient Estimates for Sales Growth .....	97
Table 4.3 Coefficient Estimates for Employment Growth.....	98
Table 4.4 Coefficient Estimates for Profit Variables .....	99
Table A.1 TTvsRO: Comparison of Tourism Establishments in Affected Regions to Restaurants in Unaffected Provinces .....	114
Table A.2 TT2vsRO: Comparison of Tourism Establishments in Affected Regions Excluding İstanbul to Restaurants in Unaffected Provinces ...	115
Table A.3 TTvsTO: Comparison of Tourism Establishments in Affected and Unaffected Provinces .....	116

Table A.4 TT2vsTO: Comparison of Tourism Establishments in Affected Provinces Excluding İstanbul and Unaffected Provinces .....	117
Table A.5 TTvsTORO: Comparison of Tourism Establishments in Affected Provinces and Tourism and Restaurants in Unaffected Provinces.....	118
Table A.6 TTvsTORO: TT2vsTORO: Comparison of Tourism Establishments in Affected Provinces excluding İstanbul and Tourism and Restaurants in Unaffected Provinces .....	119
Table A.7 TTvsTORO: Comparison of Tourism Establishments in Affected Provinces and Restaurants....	120
Table A.8 TTvsTORO: Comparison of Tourism Establishments in Affected Provinces Excluding İstanbul and Restaurants .....	121
Table B.1 TTvsRO: Comparison of Workers in Tourism Sector in Affected Provinces and Workers in Restaurants in Unaffected Provinces .....	122
Table B.2 TT2vsRO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Workers in Restaurants in Unaffected Provinces .....	123
Table B.3 TTvsTO: Comparison of Workers in Tourism Sector in Affected and Unaffected Provinces .....	124
Table B.4 TT2vsTO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Unaffected Provinces .....	125
Table B.5 TTvsTORO: Comparison of Workers in Tourism Sector in Affected Provinces to Workers in Tourism and Restaurant Sectors in Unaffected Provinces .....	126
Table B.6 TT2vsTORO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul to Workers in Tourism and Restaurant Sectors in Unaffected Provinces .....	127
Table B.7 Comparison of Workers in Tourism Sector in Affected Provinces and Workers in Restaurants .....	128
Table B8 TTvsR: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Workers in Restaurants .....	129

## LIST OF FIGURES

Figure 2.1 Tourism Income of Türkiye .....	9
Figure 2.2 Number of Arrivals (Million people).....	10
Figure 2.3 Nights spent (Million days) .....	10
Figure 2.4 Travel Income and Number of Russian Tourists .....	13
Figure 2.5 Annual Change in Tourism Income by Type of Expenditure (%).....	14
Figure 2.6 Separation and Accession in Tourism Firms (Thousand people) .....	15
Figure 2.7 Province-level Share of Russian Tourists in 2015 (%).....	21
Figure 2.8 Russian Tourist Intensity (Average of 2013-2015) .....	23
Figure 2.9 Number of Jobs by Region (Annual % change) .....	27
Figure 2.10 Number of Jobs by Region (Thousand) .....	27
Figure 2.11 Real Daily Wages (Log-transformed).....	28
Figure 2.12 Real Monthly Wages (Log-transformed).....	28
Figure 2.13 Total Days Worked (million).....	29
Figure 2.14 Monthly Wage Bill (Real, log-transformed).....	29
Figure 2.15 Estimation Results: Days Worked .....	31
Figure 2.16 Regression Results: Real Daily Wages.....	33
Figure 2.17 Regression Results for Real Monthly Wages (Log-transformed).....	34
Figure 2.18 Regression Results for Monthly Wage Bill (Log-transformed, real) ...	35
Figure 3.1 Number of Employees at Accommodation Sector (1000 people) .....	43
Figure 3.2 Permanent and Seasonal Workers (1000 people) .....	44
Figure 3.3 Distribution of Employees in Accommodation Sector by Firm Size (%) .....	44
Figure 3.4 Annual Change in Employment in the Accommodation Sector (%).....	46
Figure 3.5 Regional Distribution of Russian Visitors (Million people).....	51
Figure 3.6 Nominal Daily Wage: Long-tenured Workers vs. All Workers .....	53
Figure 3.7 Nominal Daily Wages of Long-tenured Workers in Tourism Sector (Log-transformed, median) .....	57
Figure 3.8 Age and Nominal Daily Wage by Nonemployment Duration in 2016...	60



Figure 3.9 Nonemployment Duration and Relative Nominal Wages in 2017-2018.....	61
Figure 3.10 Regional Distribution of Long-tenured Workers (% Share) .....	62
Figure 3.11 Comparison of Nominal Daily Wages Among Provinces.....	63
Figure 3.12 Days Worked Among Affected and Unaffected Provinces.....	63
Figure 3.13 Difference in Nominal Monthly Wage between Provinces.....	64
Figure 3.14 Difference in Rates of Being Employed Among Provinces .....	65
Figure 3.15 Difference in Rates of Changing Firm and Sector Among Provinces .....	66
Figure 3.16 Nominal Monthly Wage Levels .....	67
Figure 3.17 Wage of Subgroups of Long-tenured (LT) Workers relative to All LT .....	71
Figure 3.18 Wages by Status Group (Difference of log-transformed daily wages) .....	72
Figure 3.19 Wages across Similar Subgroups (Difference of log daily wages) .....	73
Figure 3.20 Real Daily Wage of LT Workers in Affected Tourism Firms.....	78
Figure 3.21 Days Worked by LT Workers in Affected Tourism Firms .....	80
Figure 3.22 Real Monthly Wage of LT Workers in Affected Tourism Firms.....	81
Figure 4.1 Upstream Exposure in 2015 by Sector .....	94
Figure 4.2 Downstream Exposure in 2015 by Sector .....	94
Figure 4.3 Upstream and Downstream Impact on Sales.....	100

## **LIST OF ABBREVIATIONS**

CBRT	Central Bank of Republic of Türkiye
EIS	Entrepreneur Information System
GDP	Gross Domestic Product
LFS	Labor Force Survey
SSI	Social Security Institution
TURKSTAT	Turkish Statistical Institute
UNWTO	United Nations World Tourism Organization

## **CHAPTER 1**

### **INTRODUCTION**

Unilateral economic sanctions are a prominent instrument of foreign policy in international affairs. Economic sanctions are welcomed in the political arena because they are seen as a more peaceful alternative to military intervention. The United States, in particular, makes extensive use of economic sanctions in the form of trade restrictions on selected countries (Yang et al., 2009). Russia, a frequent target of U.S. economic sanctions, became a sanctioning party in late 2015 in response to the political conflict with Türkiye.

On September 30, 2015, Russia had launched a military intervention in the Syrian civil war in support of the Syrian government, and Türkiye shot down a Russian warplane on the Syrian border on 24 November 2015. Russia responded to this event by announcing a package of special economic measures against Türkiye on November 28, 2015. Most of the sanctions came in effect in January 1, 2016. These sanctions restricted imports of some Turkish goods, restricted Turkish companies from operating in certain economic fields in Russia, halted charter flights to Türkiye and banned Russian tour operators from selling trips to Türkiye. In addition to the impact on construction companies and food exporters, these measures had a significant impact on Türkiye's tourism sector, as Russia is Türkiye's second largest trading partner. In this thesis, we are interested in the economic effects of the measures that restricted tourism activities between the two countries.

Tourism is an important sector for the Turkish economy with both direct and indirect effects on growth. The direct effect is observed through the sectors that provide goods and services to tourists such as accommodation, tour operator services, while other sectors that depend on tourism-related sectors are also indirectly affected.

There is also an “induced effect” that occurs through changes in the income of workers in tourism-related sectors (CBRT, 2016). It is important to understand how and through which channels the conflict has affected Türkiye’s tourism sector. This information, in turn, will help the authorities to design effective policies to mitigate the negative effects of such a sectoral shock.

Türkiye and Russia had been good allies until this event, so much so that Türkiye was described in the international press as “*a hub for Russian sanctions violations.*”<sup>1</sup> Therefore, this political dispute between Türkiye and Russia was unanticipated. We assume that it is an unexpected and exogenous sectoral shock.

The sanctions were announced at the end of 2015, during the low season for tourism activities, and their effects were mostly observed in 2016. The nature of the shock (being unanticipated and exogenous) provides a good opportunity to empirically analyze its outcomes. We aim to evaluate the consequences of the shock on all the parties involved: establishments (production side), workers (labor market) and trading partners of tourism sector.

In the following chapter, we analyze the impact of the shock on tourism firms. Our analysis is based on data acquired from administrative records of firms’ balance sheets and income statements linked to employee records from the Social Security Institution (SSI). The micro-level data were obtained from the Entrepreneur Information System (EIS), which is available for working on-site by the Turkish Ministry of Industry and Technology.

In this chapter, we provide some descriptive statistics to show the importance of the tourism sector in the Turkish economy. Then, we conduct a difference-in-differences analysis at the establishment level. Our sample consists of establishments that were continuously active during the period 2013-2015. We estimate the average effect of the shock on the outcome variable of the establishment for each quarter in the period 2016-2019.

---

<sup>1</sup> <https://www.petersandpeters.com/2023/10/05/turkey-a-hub-for-russa-sanctions-violations/>

This allows us to understand how an establishment's performance indicators responded immediately in the first quarters of 2016, how the magnitude of the effect changed in subsequent quarters, and how long the effect lasted. Our identification strategy uses the variation in Russian tourist intensity across 81 provinces. The 81 provinces of Türkiye correspond to the NUTS-3 level classification of regions. The impact of the shock is expected to be larger in provinces that are popular destinations for Russian tourists. Also, the shock is expected to be more influential in provinces where tourism is an important sector. To account for these two dimensions, we base our empirical identification on the ratio of the number of Russian tourists coming to a province to the size (defined as the total number of employees) of the tourism sector in each province.

We then perform a cluster analysis at the 2-digit industry level to determine the industries most similar to tourism in terms of selected criteria such as average size and age, regional distribution of employment, average wage rate. According to the cluster analysis, the most similar sectors to accommodation are “56 - food and beverage services, or restaurants for short” and “65 - insurance activities”. Given the size of total employment in the sector, we choose restaurants as our control sector. We then compare the outcomes of establishments in the control group with those of establishments in the treated tourism sector in the affected provinces. The regressions include some pre-shock covariates (such as establishment size, firm size, firm age) and are estimated for different treatment and control group definitions. Our results provide evidence of the negative impact of the shock on affected tourism establishments.

More than one million workers were employed in tourism-related sectors in the pre-shock period which means a significant part of the labor force was affected from the shock. In addition to the production side, it is also important to understand the repercussions on the labor market. With this aim, we shift our focus to the employees and analyze the labor market impact of the shock in the third chapter. The chapter starts with a comprehensive overview of the employees in the tourism sector, based on the matched employer-employee dataset which was acquired from the EIS and cover the period 2012-2021.

We provide some descriptive statistics to document the main characteristics of the tourism labor market, based on both macro- and micro-level data. We then empirically examine the labor market outcomes of long-tenured workers. We define long-tenured workers as workers who have been employed in the same establishment for at least 9 quarters in the period 2013-2015.

Consistent with the literature on job displacement, this group of workers is chosen to represent the human capital of the sector with its expertise and know-how. The empirical analyses in this chapter are twofold. First, we show how the 2015 tourism shock changed the position of long-tenured workers in the tourism sector relative to a control group of long-tenured workers employed in firms not directly affected by the shock. We use a difference-in-differences framework. The identification strategy is the same as in the second chapter.

Second, we run individual-level fixed-effects regressions to find out how the sector's human capital was affected by this shock. We use panel fixed effects regressions to identify the employment and earnings trajectories of these workers in the post-crisis period. Together with worker- and firm-specific controls in the regressions, we try to understand the effect of being displaced after the crisis and of changing the establishment/sector/city of employment on the worker's wage in the post-crisis period.

We find that post-crisis earnings of long-tenured workers who changed establishment or sector are lower than those who remained with their pre-crisis employer and sector, while the effect of changing province of employment on wages depends on the model specification. Moreover, we find that long-tenured workers who changed establishment or sector after a period of non-employment earn less than those who changed without being non-employed in 2016. To understand the economy-wide effects of the shock, it is not enough to analyze only firms and employees within the sector. In addition to the impact on producers and workers in tourism, what happened to non-tourism sector is also important. It is important to support these analyses by including the effects of the shock on non-tourism sectors as well.

The fourth chapter fills this gap by examining the transmission of the shock to non-tourism firms through trade relations. We proxy the exposure of a non-tourism firm to the political shock with the share of sales (purchases) to (from) tourism firms in the firm's total sales (purchases) in the pre-shock period. Using this ratio, we try to measure the impact of the shock on firms' post-shock performance in terms of annual changes in sales, employment, and profits.

Empirical results provide evidence for the upstream and downstream propagation of the shock. We find that sales growth of firms that had trading relationships with tourism firms in 2015, declined by about 8 percent in 2016. We find that the upstream propagation of the tourism shock (8 percent) is stronger than the downstream propagation (7.2 percent). This is because the product of tourism firms is a final good/service that is sold directly to the final consumer, rather than being an input to another firm.

This paper makes several contributions to the literature. First, the establishment-level analysis in Chapter 2 combines an administrative dataset of establishments with a large political shock to examine the impact on the performance of the tourism sector. The political shock and subsequent economic sanctions led to the involuntary displacement of many workers in the tourism sector. We find that the treated group of workers suffered income losses, consistent with the findings of the job displacement literature. The fourth chapter of the thesis relates to the production network literature, which shows the role of the production network on firm outcomes such as sales, profits or employment and the transmission of shocks through input-output linkages. The fifth chapter concludes by summarizing main findings. It also discusses the limitations of our analyses and talks about future research options.

## **CHAPTER 2**

### **THE IMPACT OF THE POLITICAL SHOCK ON TOURISM: FIRM-LEVEL ANALYSIS**

#### **2.1. Introduction**

The tourism sector contributes significantly to GDP and employs a large proportion of the workforce. The sector is also important as a source of foreign exchange inflows. In addition to the tourism sector's direct impact on service exports, it also affects other related sectors through tourist spending on services such as package tours, food and beverages, transportation, clothing and footwear. This triggers an "induced effect" that occurs through changes in the income of workers in tourism-related sectors (CBRT, 2016). Türkiye is a popular tourist destination that attracts tourists from all over the world. In 2022, Türkiye was visited by 51.4 million tourists and generated 46.5 billion USD in tourism revenues. These facts make the tourism sector particularly important for Türkiye, which is a large emerging market economy suffering from structural current account deficits.

The tourism sector is dependent on external developments such as the economic conditions of trading partners, security risks in the neighborhood, terrorist attacks and the emergence of a pandemic. The tourism sector is particularly sensitive to local and global political developments and is strongly affected by geopolitical risks related to wars, terrorism, social unrest and political tensions within and between states. Türkiye's geographical location and proximity to the Middle East and North Africa make it more vulnerable to such geopolitical risks. The political turmoil and civil war in Syria, which has been complicated by the involvement of global powers and many neighboring countries, including Türkiye, is a good example to analyze the impact of geopolitical risks on the tourism sector in Türkiye.



Russia was an important trading partner for Türkiye in 2013-2015, with approximately 4 million Russian citizens visiting Türkiye and exports to Russia accounting for nearly 4 percent of Türkiye's total exports. Russia and Türkiye were both involved in the Syrian civil war, but supported rival groups. Russia launched a military intervention in support of the Syrian government in September 2015, while Türkiye supported the Syrian opposition. In addition to their support for rival groups in the Syrian war, relations between Türkiye and Russia further deteriorated when Türkiye shot down a Russian warplane on the Syrian border on November 24, 2015. In response, Russia announced a series of economic sanctions against Türkiye that restricted imports of some Turkish goods (mainly agricultural products such as tomatoes and oranges), restricted Turkish companies from working in certain sectors (such as construction, architecture, and engineering), halted charter flights to Türkiye, suspended visa-free travel for Turkish citizens, and banned Russian tour operators from selling tours to Türkiye. These measures had a significant impact on the Turkish economy, especially on tourism. The main objective of this chapter is to analyze how this political conflict with Russia affected the performance of tourism firms relative to a comparison group of firms. In particular, we are interested in the firm-side effects of the sanctions imposed by Russia that aimed at restricting the travel of Russian citizens to Türkiye.

The firm-level analysis in this chapter contributes to the literature by combining an administrative dataset of firms with a large political shock to examine its impact on firm performance in the tourism sector. Although some macro-level estimates of the overall impact of the shock on economic growth have been conducted (CBRT, 2016), to the best of our knowledge, the economic impact of the Russia- Türkiye conflict on the tourism sector has not been examined using a micro-level dataset. This analysis also contributes to the literature on the impact and effectiveness of economic sanctions.

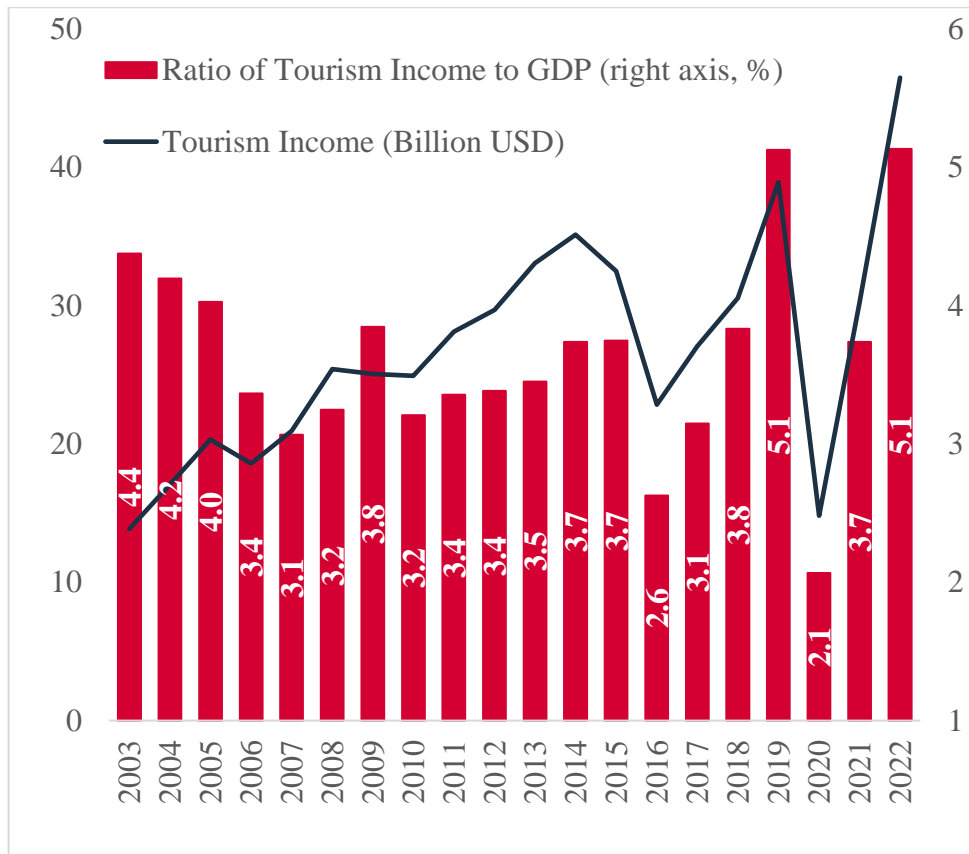
Before the crisis, Russia ranked second in terms of the total number of foreign visitors to Türkiye. Nearly 30 percent (Germany 19.3 percent and Russia 11.2 percent) come from Germany and Russia. Therefore, the sanctions led to a decrease in the number of Russian tourists and annual travel revenues in 2016. In the next section, we discuss the significance of this shock for Türkiye and the role of tourism in the Turkish economy.

The third section provides a review of the related literature. The fourth section presents our data and their main characteristics. We use the accommodation sector with the two-digit sector code "55" according to the NACE Rev. 2 classification to represent the tourism sector. Using a firm-level dataset constructed from administrative records, we document some descriptive statistics showing how tourism firms performed in the post-crisis period in terms of indicators such as total number of employees, total number of days worked, and wages paid. Taking advantage of the fact that the shock is entirely unexpected and exogenous, the fourth section formalizes the impact of the shock on tourism firms empirically. Using a difference-in-differences (DiD) framework a la Wooldridge (2021), we estimate the average impact of the shock on the firm's outcome variable for each quarter in the period 2016-2019. In our empirical framework, we use both sectoral and regional information on firms for identification. We use the variation in tourism intensity across provinces and the regional preferences of Russian tourists to determine our treatment and control groups. We also conduct a cluster analysis to find a sector similar to tourism that is not directly exposed to the political shock, which can be proxied as a control group. This section provides a detailed discussion of the empirical methodology used and the choice of treatment and control groups. The empirical results show that tourism firms in affected provinces performed worse than tourism firms in unaffected provinces and also than food and beverage firms in unaffected provinces. The fifth section concludes.

## **2.2. Tourism Sector in Türkiye**

Türkiye is a popular destination for foreign visitors and attracts tourists from a wide range of countries. In 2022, according to the United Nations World Tourism Organization (UNWTO) rankings, Türkiye ranks 4th (after France, Spain and USA) in terms of international tourist arrivals and 6th in terms of tourism receipts. The ratio of tourism income to gross domestic product (GDP) has an average of 3.1 percent in the period 2007-2022 (Figure 2.1). In 2022, tourism income were USD 46.5 billion and travel exports accounted for 45.7 percent of total service exports. In addition to its direct contribution to growth, the tourism sector is also important for employment as it employs a large share of the labor force.

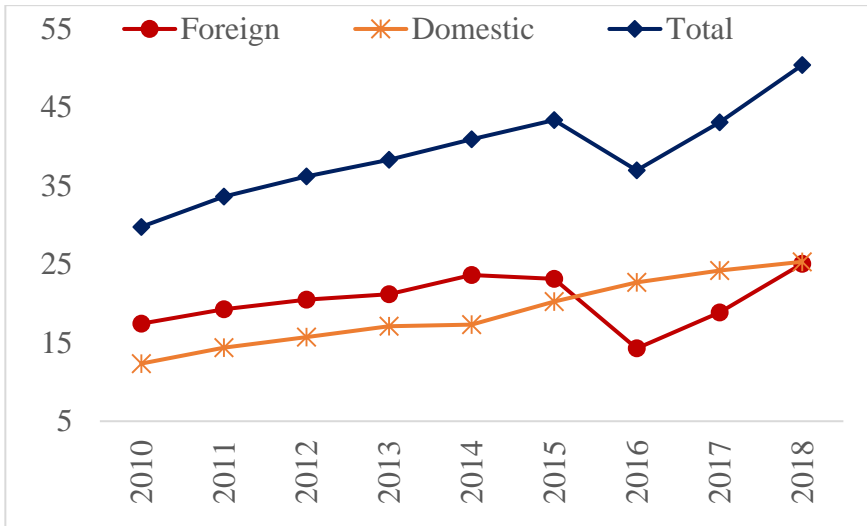
Aldan, et al. (2016) indicate that 8.8 percent of the total service sector workforce is engaged in tourism-related activities during the period 2008-2014, while OECD (2022) measures tourism-related employment in Türkiye as 8.1 percent of the labor force in 2019.



Source: TURKSTAT.

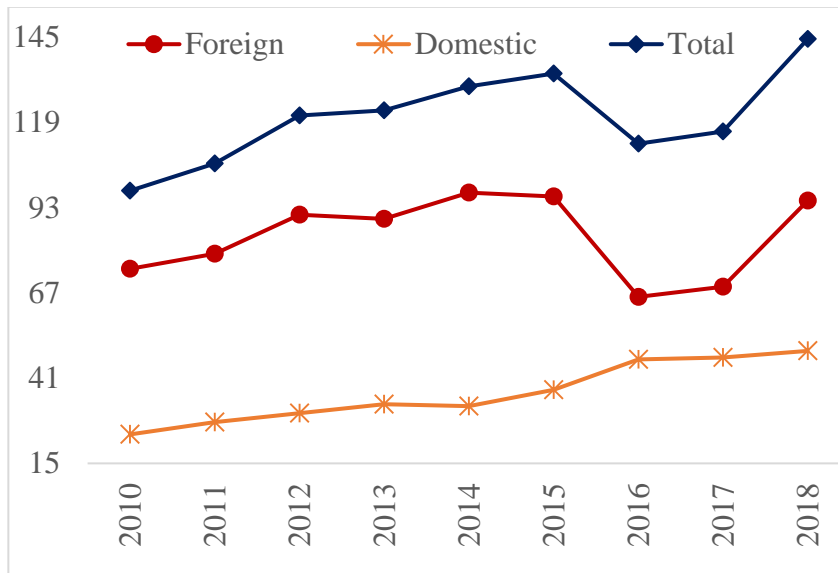
Figure 2.1 Tourism Income of Türkiye

A large part of Türkiye’s tourism income is tracked from travel income, which is recorded under services revenues in the balance of payments statistics. Travel receipts are available at foreign visitors and citizens living abroad detail for the years 2003-2011. In 2011, the travel income generated by foreign tourists were 3.7 times higher than those of Turkish citizens living abroad. Therefore, foreign visitors are the main driver of Türkiye’s travel income. The preferences and consumption patterns of foreign visitors and citizens are different. Average length of stay is shorter and the per capita expenditure is lower among Turkish citizens (Figure 2.2 and 2.3).



Source: Ministry of Culture and Tourism

Figure 2.2 Number of Arrivals (Million people)



Source: Ministry of Culture and Tourism

Figure 2.3 Nights spent (Million days)

The regional preferences of foreign visitors and citizens also differ as seen in tourism intensity of each province (Table 2.1). Foreign intensity of a province is the ratio of total nights foreign visitors spent in that province to its population. Domestic visitor intensity is the ratio of the number of total nights spent by Turkish citizens to that province's population.

Antalya, Muğla and Nevşehir are the first three popular provinces for both foreign and domestic visitors. However, the ranking changes for other provinces. For instance, the following provinces with high intensity ratios are Bolu, Çanakkale and Trabzon for domestic visitors, while they are Aydın, İstanbul, İzmir and Denizli for foreign visitors.

Table 2.1 Tourism Intensity of Turkish Provinces in 2015

Province Name	Nights Spent (Million)		(Million)	Visitor Intensity	
	(A) Foreign Visitors	(B) Turkish Citizens	(C) Population	Foreign (A/C,%)	Domestic (B/C,%)
Antalya	61.4	9.1	2.3	26.8	4.0
Muğla	11.5	3.2	0.9	12.7	3.5
Nevşehir	0.8	0.6	0.3	2.9	2.1
Aydın	2.5	1.1	1.1	2.4	1.0
İstanbul	13.1	4.4	14.7	0.9	0.3
Denizli	0.6	0.4	1.0	0.6	0.4
İzmir	2.4	2.4	4.2	0.6	0.6
Çanakkale	0.2	0.6	0.5	0.4	1.1
Trabzon	0.3	0.8	0.8	0.4	1.1
Yalova	0.1	0.1	0.2	0.4	0.5
Bolu	0.1	0.4	0.3	0.2	1.4
Balıkesir	0.2	0.8	1.2	0.2	0.6
Ankara	0.9	1.9	5.3	0.2	0.4
Bursa	0.5	0.9	2.8	0.2	0.3
Karabük	0.0	0.1	0.2	0.1	0.4

Source: SSI, TURKSTAT.

Tourism income had an increasing trend in 2010-2014 period, but slowed down in 2015 which is partly related to the terror attacks in Türkiye and increased geopolitical risks because of the Syrian-Iraq war in the neighborhood (Figure 2.1). Moreover, the decrease in the number of Russian tourists in 2015 had also played role in this fall.

Developments in the Russian economy have a direct impact on Türkiye's tourism sector as Russia is the second country in terms of the number of foreign visitors coming to Türkiye. The largest share of foreign visitors to Türkiye comes from Germany. In 2014, the number of German and Russian tourists in Türkiye was 5.3 million (15.2% of total tourists) and 4.5 million (12.9% of total tourists), respectively.

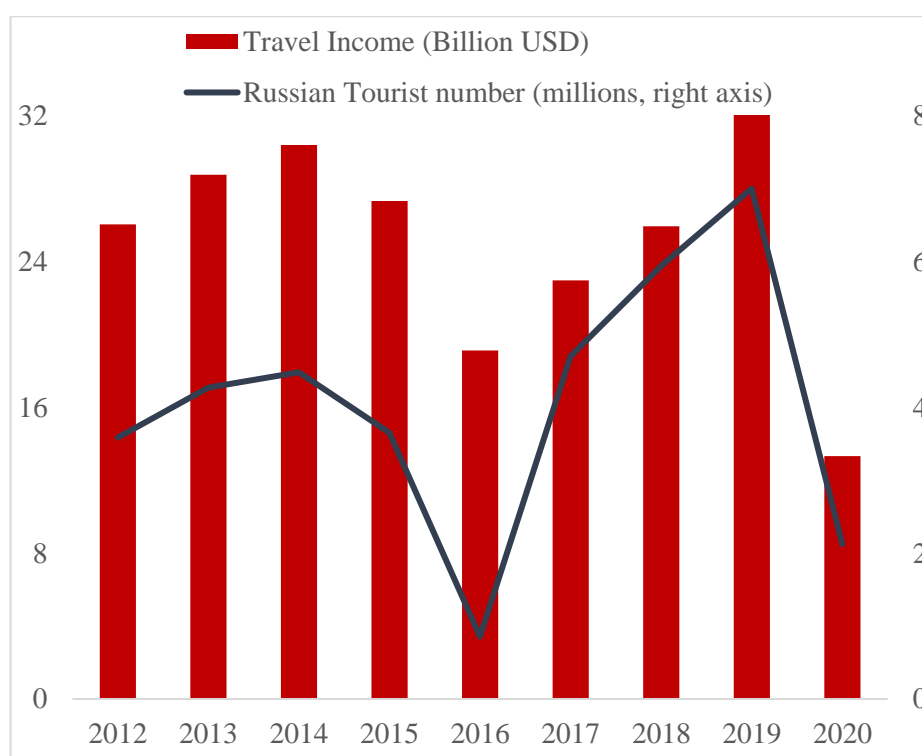
In 2015, although still in second place, we observe a decrease in the number of Russian tourists. In 2015, the number of Russian tourists decreased by 17 percent to 3.7 million (10.2% of total tourists) (Table 2.2). The developments in the Russian economy have direct impact on Turkish tourism sector since Russia ranks the second country in terms of number of foreign visitors coming to Türkiye. The largest share of foreign visitors in Türkiye are from Germany. In 2014, the number of German and Russian tourists in Türkiye were 5.3 (15.2% of total tourists) and 4.5 million (12.9% of total tourists), respectively. However, in 2015, although still ranked 2nd, we observe a fall in the number of Russian tourists. The number of Russian tourists fell by 17 percent to 3.7 million (10.2% of total tourists) in 2015 (Table 2.2). This is mostly related to worsening economic conditions in Russia that began in the second half of 2014. The sharp devaluation of the Russian ruble, international economic sanctions imposed on Russia because of the political tensions with Ukraine-Crimea and the fall in prices of crude oil, which is a major export of Russia, were responsible for the worsening of the Russian economy (Ministry of Development, 2018). These factors led to a fall in the number of Russian visitors in 2015 and affected Türkiye's travel income negatively (Figure 2.4).

Table 2.2 Number of Foreign Visitors in Türkiye (Million people)

	2012	2013	2014	2015	2016	2017	2018	2019
Germany	5.0	5.0	5.3	5.6	3.9	3.6	4.5	5.0
Russia	3.6	4.3	4.5	3.7	0.9	4.7	5.9	7.0
UK	2.5	2.5	2.6	2.5	1.7	1.7	2.3	2.6
Bulgaria	1.5	1.6	1.7	1.8	1.7	1.9	2.4	2.7
İran	1.2	1.2	1.6	1.7	1.7	2.5	2.0	2.1
Georgia	1.4	1.8	1.7	1.9	2.2	2.4	2.1	2.0
Netherlands	1.3	1.3	1.3	1.2	0.9	0.8	1.0	1.1
France	1.0	1.0	1.0	0.9	0.6	0.6	0.7	0.9
USA	0.8	0.8	0.8	0.8	0.5	0.3	0.4	0.6
Greece	0.7	0.7	0.8	0.8	0.6	0.6	0.7	0.8
Total	31.3	33.8	35.9	35.6	25.3	32.1	39.0	44.7

Source: TURKSTAT.

In addition to this declining trend in 2015, the number of Russian tourists coming to Türkiye was further affected by political tensions in late 2015, which arose after Türkiye shot down a Russian warplane on the Syrian-Turkish border on November 24, 2015. Subsequently, Russia announced a series of economic sanctions, some of which were directly aimed at restricting the number of Russian tourists coming to Türkiye. Together with the continued weak performance of the Russian economy, these sanctions exacerbated the negative outlook in bilateral economic relations. In 2016, the number of visitors from Russia decreased by 76.6 percent, and Türkiye's travel revenues decreased by 30 percent (Figure 2.4).

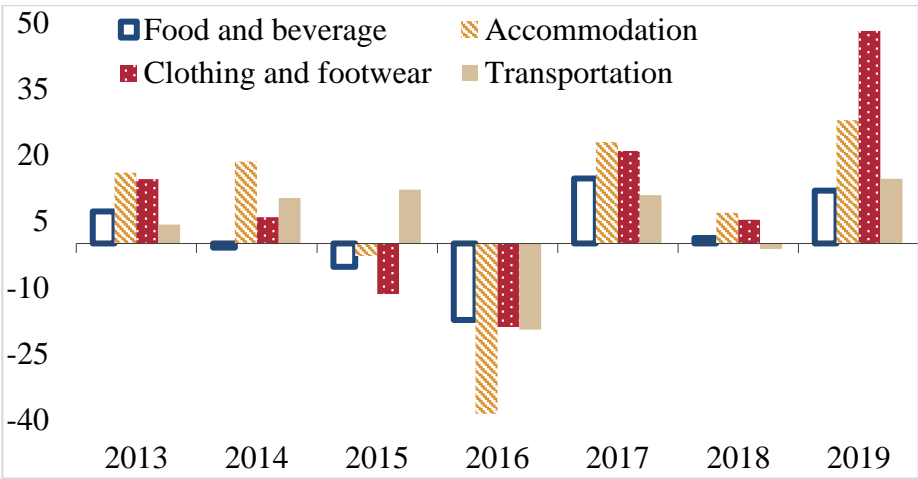


Source: CBRT, TURKSTAT.

Figure 2.4 Travel Income and Number of Russian Tourists

Figure 2.5 shows the annual change in tourism income for main expenditure groups. Services of food and beverages, accommodation, transportation and clothing account for 60 percent of total individual expenditures of visitors. In 2016, all these spending groups recorded annual decreases while the change was most prominent in the accommodation group (-38.6 percent).

These macro-level indicators give hint on the destructive impact of the political shock on the tourism sector. The micro-data also provides evidence on this worsening in the tourism sector. 2012-2020 annual firm registry data acquired from Entrepreneur Information System (EIS) indicates that tourism firms witnessed an average annual fall in net sales by 10.3 percent in 2016, while 25<sup>th</sup> and 75<sup>th</sup> percentiles of change in net sales were -46.8 percent and 24.3 percent, respectively. Hit by the political tension, 832 tourism firms were closed in 2016 and those which continued operating tended to decrease employment.<sup>2</sup> The annual change in employment in 2016 was -11.7 percent on average, while 25<sup>th</sup> and 75<sup>th</sup> percentiles were -36.8 and 10.0 percent, respectively.



Source: TURKSTAT.

Figure 2.5 Annual Change in Tourism Income by Type of Expenditure (%)

To understand the causes of the decline in employment, we conducted a simple turnover analysis. For each worker in the tourism sector, we identified the exit and entry dates. Entry is defined as the quarter in which a worker became employed for the first time, or changed firms and started working for a different firm than in the previous quarter, or started working again after being unemployed for at least one quarter. On the other hand, separations are defined as the quarter in which a worker was last employed or changed firms and started working in another firm in the following quarter or left a job and started working again after more than one quarter.

<sup>2</sup> 832 of the tourism firms, having positive employment in 2015, had zero employment in 2016.



We sum the number of separations and entry rates by firm for each quarter to get a rough understanding of the turnover in the sector. Accordingly, we observe that the decrease in entries was more pronounced than the increase in separations. This implies that tourism firms responded to this shock by reducing the number of people they hired rather than by firing more workers. Therefore, the observed decline in total employment in the tourism sector in 2016 was largely sustained by a decrease in entries into the labor market rather than an increase in separations. (Figure 2.6)



Source: EIS and authors' calculations.

Figure 2.6 Separation and Accession in Tourism Firms (Thousand people)

### 2.3. Literature Review

Economic sanctions are a prominent instrument of foreign policy in international affairs. Sanctions can take various forms such as restrictions on trade, on financial activities, or on travel. The United States, in particular, frequently uses economic sanctions in the form of trade restrictions with selected countries to impose costs on their adversaries (Yang et al., 2009). There is a rich literature analyzing the effectiveness of such economic sanctions theoretically (Smeets, 2019).

The political tension between Türkiye and Russia arouse interest in the literature dealing with economic sanctions. Hall et al. (2021) discuss economic sanctions imposed by various states on tourism. Their focus is on what strategies firms or states follow when faced with such sanctions. In case of Türkiye-Russian dispute, they point that Turkish tourism firms followed policies to attract more visitors from Turkish citizens and from other countries such as Iran and Azerbaijan to compensate for the decrease in the number of Russian visitors.

We aim to assess the impact of Russia's restrictions on tourism activities on the Turkish tourism sector using establishment-level data. To the best of our knowledge, this is the first attempt to identify the establishment- and province-level consequences of the tourism restrictions. Other related studies focus either on the net effect of the sanctions on macroeconomic aggregates (Başıhoş et al., 2015; Bilgiç-Alpaslan et al., 2015) or on their impact on the course of bilateral relations between the two countries (Agha, 2021; Bali, 2022). A study close to ours is Aytun and Özgüzel (2021), which analyzes the economic consequences of the sanctions that restricted the exports of some Turkish products. Using customs and firm-level data, they conclude that the restrictions resulted in a trade loss of about USD 3 billion for Turkish exporters.

## **2.4. Empirical Framework and Data**

### **2.4.1. Data**

We acquire data from the Entrepreneur Information System (EIS) of Türkiye and construct a matched employer-employee dataset. This data is maintained by the Ministry of Industry and Technology and available for on-site working. The EIS brings together large-scale confidential administrative datasets from multiple sources including the Ministry of Treasury and Finance, the Ministry of Trade and the Social Security Institution (SSI). We benefit from three main datasets in this thesis: 1) Quarterly SSI records at employee level, 2) balance sheet and income statements reported annually by firms, 3) annual firm registry indicating the four digit sector and location (the province) of all registered firms in Türkiye. Data are available for 2012-2021 period.

We are mainly interested in tourism firms operating in the “accommodation” sector (NACE Rev.2 code: 55). Our dataset covers the period 2012-2021 but for the regressions we cut the sample at 2019, before the pandemic of 2020. In the data, one can observe both firm and establishment identities<sup>3</sup>. The difference between the two becomes particularly important for the province information.

Location information is available at both the firm and establishment level. The former is biased towards large cities as it shows the province of the headquarters, while the latter shows exactly where the establishment operates. For example, the headquarters of a grocery store chain may be located in İstanbul but it also has branches in Bilecik. If we were to use the province information in the firm-level data, we would count both of these branches in İstanbul since they are recorded with the location of the headquarters. However, the establishment-level data distinguishes between branches in İstanbul and Bilecik. The province information is crucial for our identification strategy and therefore, we conduct the empirical analysis at the establishment-level.

The data include establishment-level values of total number of days worked (by total number of employees), average real daily and monthly wages paid, and total wage bill for each quarter as well as the four digit sector code and the province of activity.

We are interested in the impact of the shock on establishments in the tourism sector that were continuously active in the period 2013-2015. There are 7,516 such firms in the tourism sector with 8,596 establishments. 18.2 percent of these establishments are located in İstanbul and 27 percent of them are located in Antalya, Muğla, Edirne, Kırklareli, Artvin and Ardahan. Our dataset also includes establishments in the food and beverage service sector (we refer to this sector as restaurants for short), which are used in the control group definitions. In the period 2013-2015, there were 41,919 establishments in this sector, 32.4 percent of which were located in İstanbul.

---

<sup>3</sup> An establishment/workplace/plant is defined as a single physical location operating in one predominant activity. Throughout the thesis, establishment/workplace/plant are used interchangeably to refer to this definition. On the other hand, a firm/company is an establishment or a combination of establishments. A firm/company is unified under the same ownership even it provides a professional service in more than one location.

## 2.4.2. Empirical Framework

This section aims to formalize the impact of the political conflict with Russia on tourism establishments. The shock was unexpected and the subsequent tourism-specific sanctions targeted only the tourism sector. These conditions create a natural experiment for an econometric analysis. We conduct a difference-in-differences (DiD) analysis quantifying the average impact of the shock on establishment-level performance indicators for the “treated” group relative to the “control” group of establishments that were not directly exposed to the shock.

DiD estimation is popular in the labor economics literature for estimating the causal effects of structural or policy changes. This method is suitable for analyzing how a certain policy/shock led to the differentiation of two groups that were similar before the policy/shock. DiD estimator  $\hat{\beta}_{DiD}$  represents the average impact of the policy/shock on the treated group relative to a comparison group that was not subject to that treatment.

$$\hat{\beta}_{DiD} = (\bar{Y}_{treated,post} - \bar{Y}_{treated,pre}) - (\bar{Y}_{control,post} - \bar{Y}_{control,pre}) \quad (1)$$

The unexpected nature of the treatment is important for  $\hat{\beta}_{DiD}$  to reflect the casual treatment effect. In our case, the political conflict with Russia was unanticipated and we can confidently assume that the shock had no causal effect prior to its realization. The second key identifying assumption to be satisfied in the DiD setup is that the average outcome of the treated and comparison groups would have evolved in parallel in the absence of the treatment. In our analysis we use several control groups and test the parallel trend assumption for each definition of the treatment and control groups. For some of the control group specifications and the dependent variables, the tests did not confirm this assumption. To overcome this problem, we first included some time-invariant covariates including 2013 values of establishment size, size and age of the affiliated firm, average proportion of female workers and average age of workers in the establishment. However, the parallel trend assumption still did not hold for the wage variables. The standard tests could validate the parallel trend assumption only when the dependent variable was the total number of days worked in an establishment.

As a solution, we used Coarsened Exact Matching (CEM) method to generate a more comparable estimation sample. CEM is a method developed by Iacus et al. (2011) that minimizes the imbalances in some user-determined observable covariates between the treatment and control groups. We use the k-to-k CEM method to match a treatment group establishment with a control group establishment whose pre-shock (2015q2) values of age, total number of employees, proportion of female workers are similar to the treated establishment. The parallel trend assumption is verified for most cases in this matched sample.<sup>4</sup>

As long as the parallel trends and no anticipation assumptions hold, a two-way (individual and time) fixed effects (TWFE) regression would give the consistent estimate of the average treatment effect on the treated (ATT). However, when there is heterogeneity of treatment effects over time or cohorts, the static specification may give negative  $\hat{\beta}_{DiD}$  despite all ATT values are positive (Rambachan and Roth., 2023). To overcome such drawbacks, Wooldridge (2021) proposes a TWFE framework where one can control for the heterogeneities in the treatment effects across time and covariates and can test for the existence of parallel trends and no anticipation assumptions. The empirical analysis in this chapter uses this framework. In our case, everyone receives the treatment (i.e., hit by the shock) at the same time (namely, in late 2015), but the ATT is allowed to differ in each quarter of the post-crisis period. This specification allows the effect of the shock to be different in each of the post-shock periods. The basic framework can be represented by the following equation:

$$\ln(y_{irt}) = \alpha_i + \beta_{did,t}(w_{it} \times time_t) + d_i * time + \gamma X_{i,2013} * time_t + \theta_t + \mu_{rt} + \varepsilon_{irt} \quad (2)$$

$$w_{it} = d_i * post_t \quad post_t = 1 \text{ if } year \geq 2016$$

$$time_t = t \text{ if } t \in [2016q1, 2019q4]$$

$y_{irt}$  represents the outcome variable for establishment  $i$  operating in province  $r$  at time  $t$ . In our framework we use several dependent variables including the total number of days worked, paid real monthly wage bill, average real daily and monthly wages.

---

<sup>4</sup> In the appendix we will report the parallel trend test results for each of the treatment-control group combination.

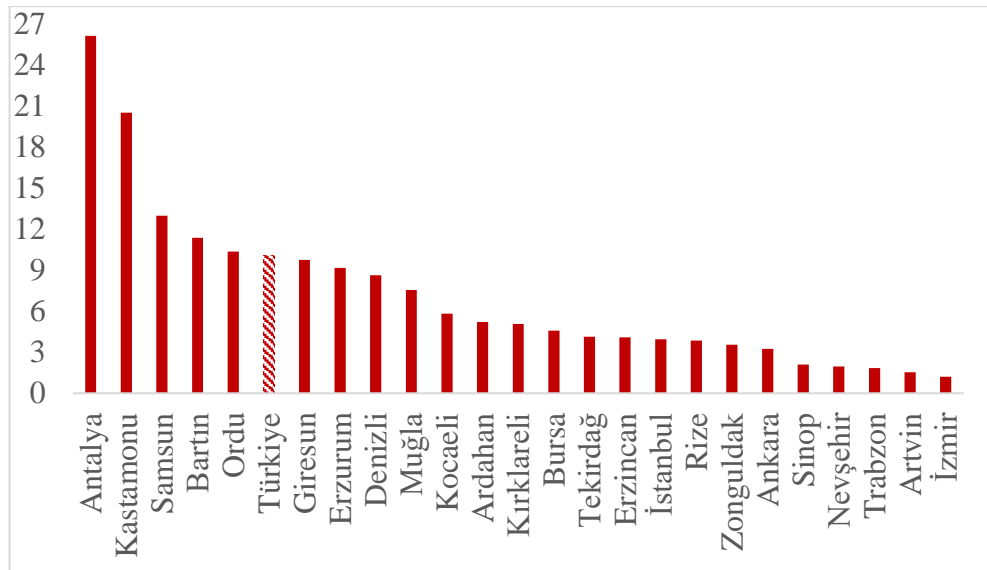
We control for establishment-level, year-quarter, and time-province fixed effects. The latter is to control for the possibility of establishments from different regions having different trends in performance as the regions of Türkiye vary in development levels (Akgündüz, et al., 2022).  $X_i$  is the time-constant covariates for establishment characteristics. It is calculated as the deviation of  $X_i$  for an establishment from the mean of  $X$  in the treated sample. We include the following pre-shock covariates: 2013 values of establishment size, size and age of the affiliated firm, average proportion of female workers and average age of workers in the establishment. The treatment status variable is  $d$ .  $d_i=1$  for the treated group of establishments exposed to the political shock. The main parameter of interest is  $\beta_{did,t}$ . It will show the differential effect of the shock on the outcome variable in treated establishments relative to those in the control group, for each quarter  $t$  in the period 2016-2019.

The most crucial step in the DiD analysis is to define the treatment and the treated group clearly. In our set-up, the treatment event is the political shock in 2015 and the sanctions imposed by Russia which aimed to restrict tourism. The shock we are analyzing is sector-specific, hence sector is one key variable for choosing the treatment and control group of establishments. Treated sector is the tourism (i.e. accommodation) sector.

We also need a control/comparison sector which was structurally similar to the tourism sector in 2015 and was not directly exposed to the shock. For this purpose, we conduct a cluster analysis at two-digit sector level (NACE2). We compare the following variables for tourism and non-tourism sectors: (i) Herfindahl-Hirschman index of geographical concentration that shows the extent to which employment in a particular industry is distributed among provinces (ii) Average plant-size (iii) Share of female employees (iv) Geometric average of log-transformed daily wage (v) Standard deviation of log-transformed daily wage (vi) Average age of workers (vii) Average age of firms in that industry. The cluster analysis suggests that the most similar sectors to tourism (NACE2: 55 accommodation) are 56 “food and beverage service activities” (for short: restaurants) and 65 “insurance, reinsurance and pension funding, except compulsory social security activities” (for short: insurance).

We believe that the insurance sector does not meet the conditions we are looking for. First, the insurance sector is quite small compared to the tourism sector, such that the total number of days worked in the tourism sector in 2015 is almost 40 times higher than the insurance sector. In addition, total employment in the insurance sector grew by 1.8 percent in 2016 while it declined by 17.6 percent and 1.9 percent in the tourism and restaurants, respectively. Considering these differences, we chose our control sector as restaurants.

The other dimension we need to consider when selecting the treated and control groups is the location of the establishment. The degree of the impact of the shock on tourism firms is expected to be heterogeneous across provinces. First of all, tourism is more important in some provinces, especially those in the coastal regions of Türkiye. Therefore, the provinces where tourism is an important economic activity would be more vulnerable to the shock. Second, the establishments operating in the provinces that were popular among Russian visitors in the pre-crisis period are also likely to be more affected, since the shock is the political conflict with Russia and the sanctions restricted only Russian visitors. To test for the existence of such regional heterogeneity, we look for some measurable criteria to differentiate the provinces.



Source: Ministry of Culture and Tourism.

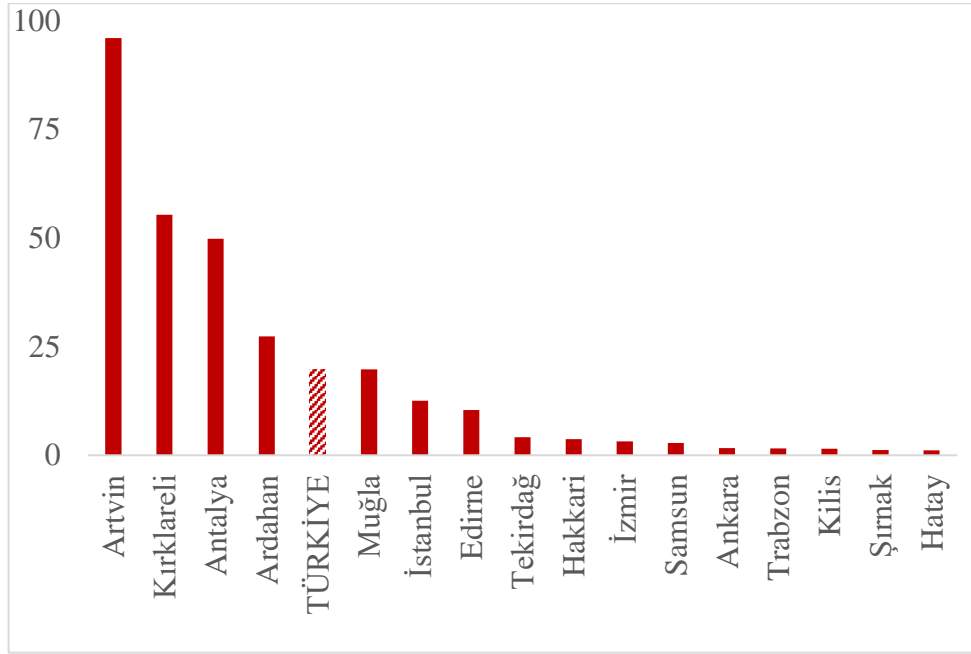
Figure 2.7 Province-level Share of Russian Tourists in 2015 (%)

The first candidate would be the ratio of Russian tourists to the total number of tourists in each province. This ratio will represent the vulnerability of that province to the decrease in the number of Russian visitors due to the political shock. The Ministry of Culture and Tourism publishes the number of visitors by nationality for each province. Using this data for 2015, we calculate the ratio of the total number of Russian visitors to the total number of foreign visitors in each province. This ratio represents the pre-crisis importance of Russia for the tourism firms in that province. Figure 2.7 shows this ratio.

The share of Russian visitors (in the total number of foreign visitors coming to the province) captures the importance of Russian tourists, but this measure does not contain any information about the importance of the tourism sector for the province. However, the magnitude of the shock is also related to the importance of the tourism in the province. To account for both dimensions, we base our identification on the ratio of the number of Russian tourists to the size (total number of employees) of the tourism sector in each province. This ratio will reflect both the role of tourism as an economic activity (proxied by the total number of employees in the tourism sector) and the role of Russia in tourism activities (proxied by the number of Russian visitors) in that province.

Figure 2.8 plots the pre-crisis average of this Russian Tourist Intensity (RTI) ratio in the period 2013-2015. Having popular destinations like Antalya, Muğla, İstanbul in the top rankings is expected but having Artvin, Ardahan and Kırklareli with high ratios may look surprising. The reason for these provinces to have high ratios is the small value of the denominator i.e., the number of employees in the tourism sector in these provinces. In the three years before the political shock (i.e. the period 2013-2015), the average number of Russian tourists coming to Artvin and Kırklareli were roughly 30,000 and 20,000, respectively which were too high compared to the number of people working in the tourism sector in these provinces. This led to high values of Russian Tourist Intensity ratios for these provinces. However, due to the small number of firms and workers in these cities, their relative importance in the affected region group is small compared to Antalya, İstanbul and Muğla provinces.





Source: TURKSTAT, SSI and authors' calculations.

Figure 2.8 Russian Tourist Intensity (Average of 2013-2015)

Antalya is an important tourist destination of Türkiye and around 30 percent of the total visitors coming to Türkiye in the period 2013-2015 were hosted by Antalya. Moreover, 78 percent (2.8 million) of the total Russian tourists (3.7 million) visiting Türkiye in 2015 arrived in Antalya<sup>5</sup>. Hence the calculated intensity variable in Antalya is higher than the country average. Muğla and İstanbul are also important tourist destinations but their calculated intensity ratios are lower than Türkiye average. This is because these provinces attract more tourists from countries other than Russia such that the share of Russian visitors (in the total number of foreign visitors) in 2015 in İstanbul and Muğla were 5.1 and 7.5 percent, respectively. Pre-shock average of Russian tourist intensity (RTI) ratio ranges between 0 and 96 over 81 provinces. We divide provinces into two groups based on the value of RTI. First group where RTI is higher than 10 is “the affected region”. Artvin, Kırklareli, Antalya, Muğla, İstanbul, Edirne and Ardahan belong to this group. Rest of the 74 provinces are “the unaffected regions” group.

<sup>5</sup> In 2015, total number of foreign visitors in Türkiye was 36.2 million and the share of Russian tourists was 10.1 percent ( $100 \times 3.7/36.2$ ).

In sum, our identification strategy uses the variation in tourism intensity across 81 provinces. We combine sectoral and regional variation to form our control and treatment groups and tried different specifications as summarized by Table 2.3. We compare tourism firms and restaurants in different provinces based on their degree of exposure to the shock measured by RTI. İstanbul may dominate the affected region group as it is a crowded city being center for many economic activities. Therefore, we also compare tourism establishments and restaurants in the affected provinces by excluding İstanbul (Antalya, Muğla, Artvin, Kırklareli, Ardahan, Edirne) in some of the specifications.

Table 2.3 Specifications for Treatment and Control Groups

Model	Treated Group		Control Group	
	Sector	Region	Sector	Region
TTvsR	T	Affected	R	All
TT2vsR	T	Affected \ İstanbul	R	All
TTvsRO	T	Affected	R	Unaffected
TT2vsRO	T	Affected \ İstanbul	R	Unaffected
TTvsTO	T	Affected	T	Unaffected
TT2vsTO	T	Affected \ İstanbul	T	Unaffected
TTvsTORO	T	Affected	T, R	Unaffected
TT2vsTORO	T	Affected \ İstanbul	T, R	Unaffected

Notes: T and R stand for tourism firms and restaurants, respectively. The affected provinces (Artvin, Kırklareli, Antalya, Muğla, İstanbul, Edirne and Ardahan) are those in which Russian tourist intensity is above 10. In the specifications named with TT2, we exclude İstanbul from the affected provinces.

Our estimation sample consists of establishments, which were continuously active in 2013-2015. TTvs.TO provides a comparison of the tourism establishments in the affected (with  $RTI > 10$ ) and unaffected regions. TTvs.RO compares tourism establishments in the affected (Antalya, İstanbul, Muğla, Artvin, Kırklareli, Ardahan, Edirne) region and restaurants in the unaffected (all remaining) provinces. TTvs.TORO compares tourism establishments in the affected provinces to tourism establishments and restaurants in the unaffected provinces. In the specification TTvs.R, tourism establishments in the affected provinces are compared to the restaurants in all regions.

The parallel trend assumption in the matched sample of establishments is satisfied in most cases for the equations with establishment-level covariates. Whenever we cannot validate this assumption by tests, we compare the estimation results with and without trend term. The existence of non-parallel pre-shock trends does not have practical importance as the estimation results are not much sensitive to inclusion of the trend term. In sum, the matching helped us to solve the potential impact of non-parallel trends on the estimation results. In the regressions, we use total days worked, total wages paid (i.e. wage bill), averages of daily and monthly real wages as establishment-level performance outcomes.

Table 2.4 Number of Establishments in the Treatment and Control Groups (Thousand)

	TT	TO	TT\İstanbul	T	RO	R	TORO
2013-15	3.9	4.7	2.3	8.6	25.0	41.9	29.7
03.16	3.7	4.4	2.2	8.1	23.4	39.3	27.8
06.16	3.6	4.3	2.2	8.0	22.5	37.8	26.8
09.16	3.5	3.7	2.1	7.2	21.7	36.4	25.4
12.16	3.3	3.6	2.0	7.0	21.1	35.5	24.8
03.17	3.2	3.5	1.9	6.7	20.1	33.7	23.6
06.17	3.2	3.5	2.0	6.6	19.4	32.7	22.9
09.17	3.2	3.4	1.9	6.5	19.1	32.2	22.5
12.17	3.0	3.3	1.9	6.3	18.7	31.5	22.0
03.18	3.0	3.2	1.8	6.2	18.2	30.5	21.4
06.18	3.0	3.2	1.9	6.2	17.6	29.6	20.8
09.18	3.0	3.1	1.8	6.1	17.3	29.1	20.4
12.18	2.9	3.0	1.8	5.9	17.0	28.4	20.0
03.19	2.8	2.8	1.7	5.6	15.8	26.6	18.6
06.19	2.8	2.8	1.7	5.6	15.4	25.9	18.2
09.19	2.8	2.7	1.7	5.5	15.1	25.5	17.8
12.19	2.7	2.6	1.6	5.3	14.9	25.0	17.5

Notes: TT and TO mean tourism sector in affected and unaffected regions, respectively. TT\İstanbul stand for tourism sector in affected provinces except İstanbul. T and R indicate respectively tourism and restaurants in all regions. RO stand for restaurants in unaffected provinces, while TORO shows the sum of TO and RO.

Pre-match sample includes 8596 establishments and 7516 firms in the tourism sector. 45.3 percent of these establishments are in the affected region (Table 2.4 and 2.5). Among the treated tourism establishments (3891), 40.3 percent (1567) of them are in İstanbul. 18 percent of the establishments are in the other affected provinces.

The number of tourism firms (establishments) in the affected region annually decreased by 5.9 percent (6.3 percent) and 9.5 percent (11.2 percent), respectively in the second and the third quarter of 2016.

Table 2.5 Number of Firms in the Treatment and Control Groups (Thousand)

	TT	TO	TT\İstanbul	T	RO	R	TORO
2013-2015	3.4	4.1	2.0	7.5	22.7	37.6	26.8
03.16	3.3	3.9	1.9	7.2	21.2	35.2	25.1
06.16	3.2	3.8	1.9	7.0	20.4	33.9	24.2
09.16	3.1	3.4	1.9	6.5	19.7	32.7	23.1
12.16	3.0	3.4	1.7	6.3	19.2	32.0	22.6
03.17	2.8	3.2	1.7	6.1	18.3	30.4	21.5
06.17	2.9	3.2	1.7	6.0	17.7	29.4	20.9
09.17	2.8	3.1	1.7	6.0	17.5	29.0	20.6
12.17	2.7	3.0	1.6	5.8	17.1	28.4	20.1
03.18	2.7	3.0	1.6	5.7	16.6	27.5	19.6
06.18	2.7	2.9	1.6	5.6	16.1	26.7	19.0
09.18	2.7	2.8	1.6	5.5	15.8	26.2	18.7
12.18	2.6	2.8	1.6	5.4	15.5	25.7	18.3
03.19	2.5	2.6	1.5	5.1	14.5	24.1	17.1
06.19	2.5	2.6	1.5	5.1	14.1	23.4	16.7
09.19	2.5	2.5	1.5	5.1	13.8	23.1	16.3
12.19	2.4	2.5	1.5	4.9	13.6	22.6	16.1

Notes: TT and TO mean tourism sector in affected and unaffected regions, respectively. TT\İstanbul stand for tourism sector in affected provinces except İstanbul. T and R indicate respectively tourism and restaurants in all regions. RO stand for restaurants in unaffected provinces, while TORO shows the sum of TO and RO.

The data may include workers who are registered in more than one establishment. Number of jobs combines this information with the number of workers in the establishment. For example, if the total number of workers is 20 and half of the workers work in 2 different establishments, the number of jobs would be 30 (10+10\*2). Figure 2.10 shows the annual change in the number of jobs among regions. In 2016, the number of jobs decreased in all regions while the fall was more limited in the unaffected region. In the affected region that excludes İstanbul, the number of jobs decreased by 36.5 percent in 2016q2. In this region, the recovery was quicker compared to İstanbul (Figure 2.9 and Figure 2.10).

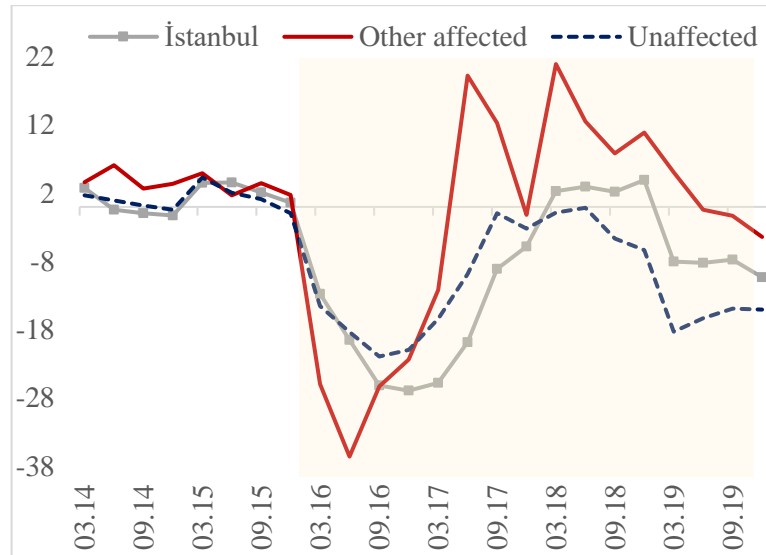


Figure 2.9 Number of Jobs by Region (Annual % change)

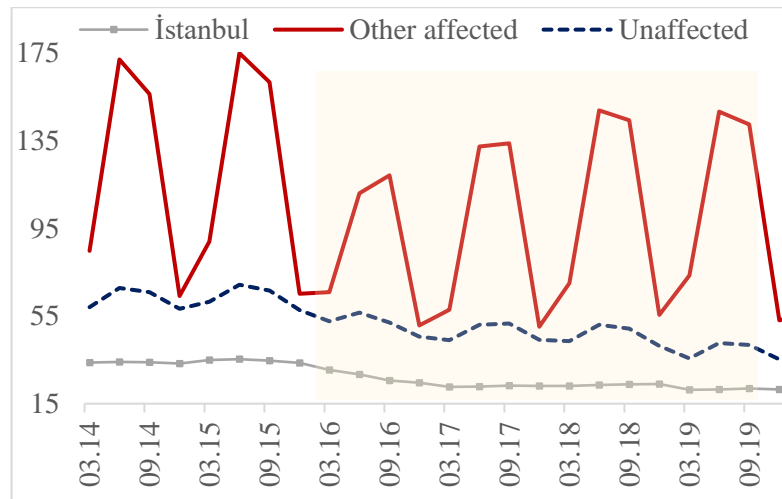


Figure 2.10 Number of Jobs by Region (Thousand)

Figure 2.11 and 2.12 compare averages of real daily and monthly wages paid in the tourism sector. In İstanbul, average wages seem to be relatively higher compared to other regions as shown by positive wage differences. In 2016, the real daily wages in the unaffected tourism establishments increased sharply probably reflecting the minimum wage hike in January 2016. Average real daily wages paid by tourism establishments in İstanbul and other affected regions decreased relative to those paid by tourism establishments in unaffected region.

Compared to the end of 2015, the average real daily wages in 2016q3 were 16 percent and 12 percent higher in the unaffected region and İstanbul, respectively; while it was 1 percent lower in other affected provinces (Figure 2.11). Relative to the establishments in the unaffected region, the real monthly wage paid by the establishments decreased in all affected provinces (Figure 2.12). The deterioration in wages was higher in other affected regions than in İstanbul. This may be due either to the decrease in the number of high-paid workers in other affected provinces or to a kind of hoarding behavior of establishments in this region.

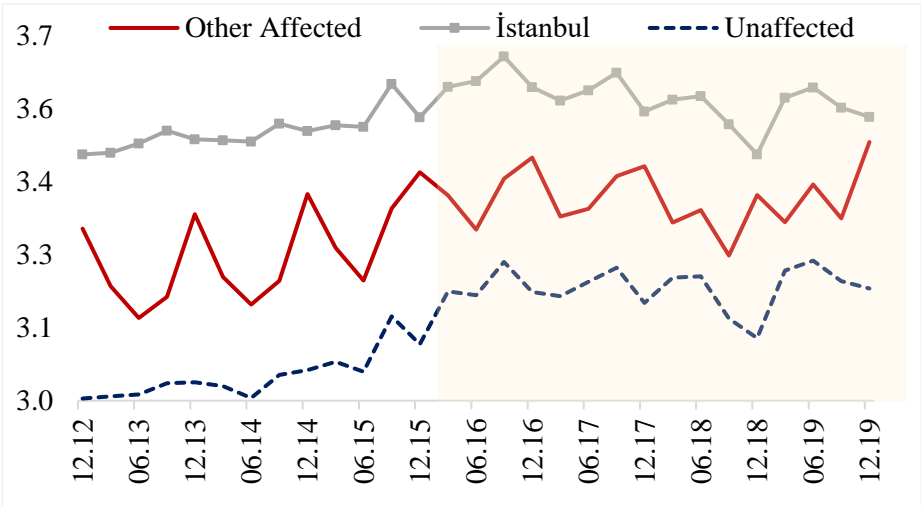


Figure 2.11 Real Daily Wages (Log-transformed)

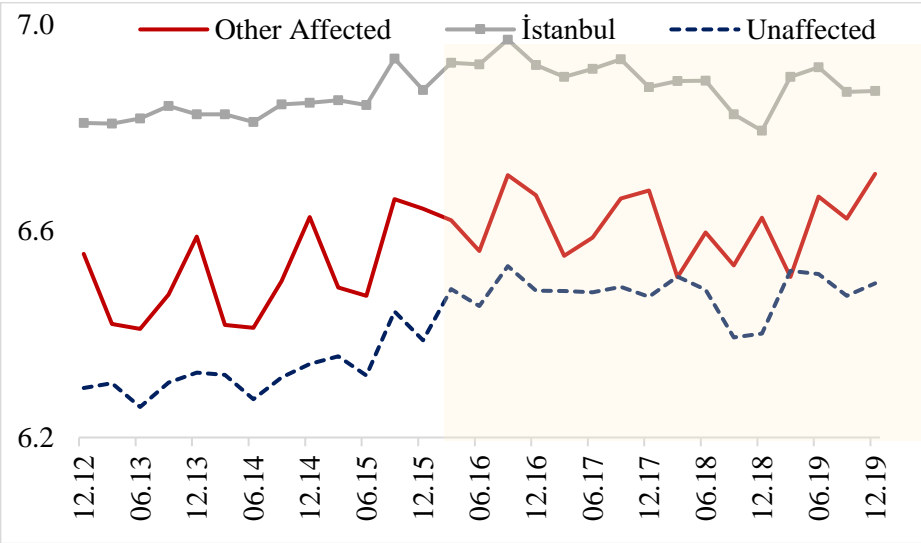


Figure 2.12 Real Monthly Wages (Log-transformed)

The total number of days worked decreased in all regions in 2016 (Figure 2.13). The annual decrease was highest in other affected provinces (-26 percent), compared to that in İstanbul (-20 percent) and in unaffected region (-11 percent). Given the movements in real monthly wages and the number of days worked, the total monthly wage payment by establishments (i.e. the wage bill) in other affected region annually decreased by 21 percent in 2016 (Figure 2.14). The wage bill in unaffected region did not change much in 2016 thanks to the increase in monthly wages.

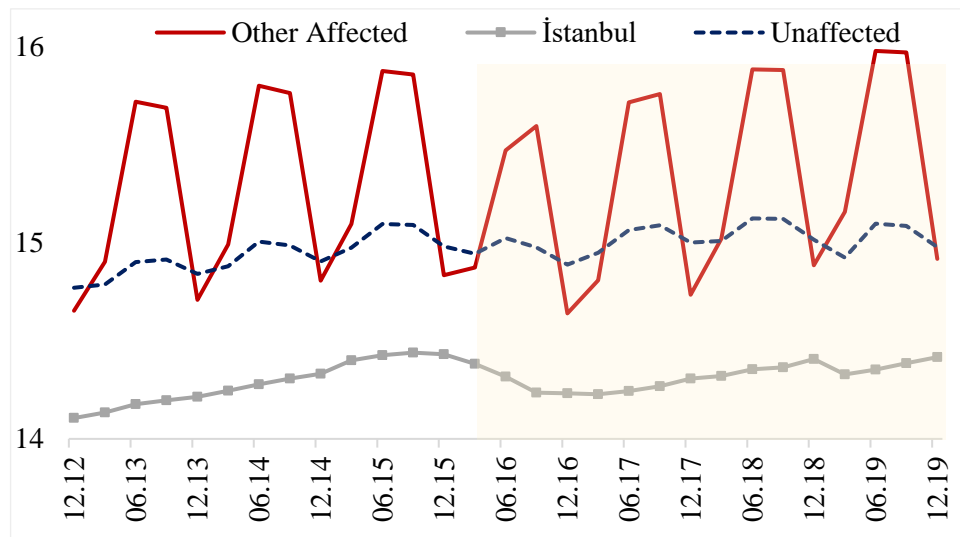


Figure 2.13 Total Days Worked (million)

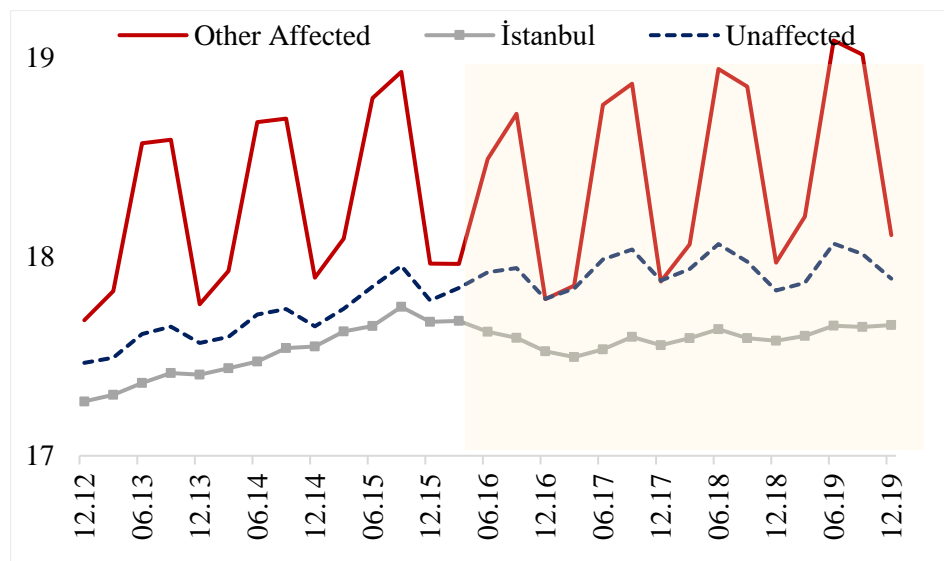


Figure 2.14 Monthly Wage Bill (Real, log-transformed)

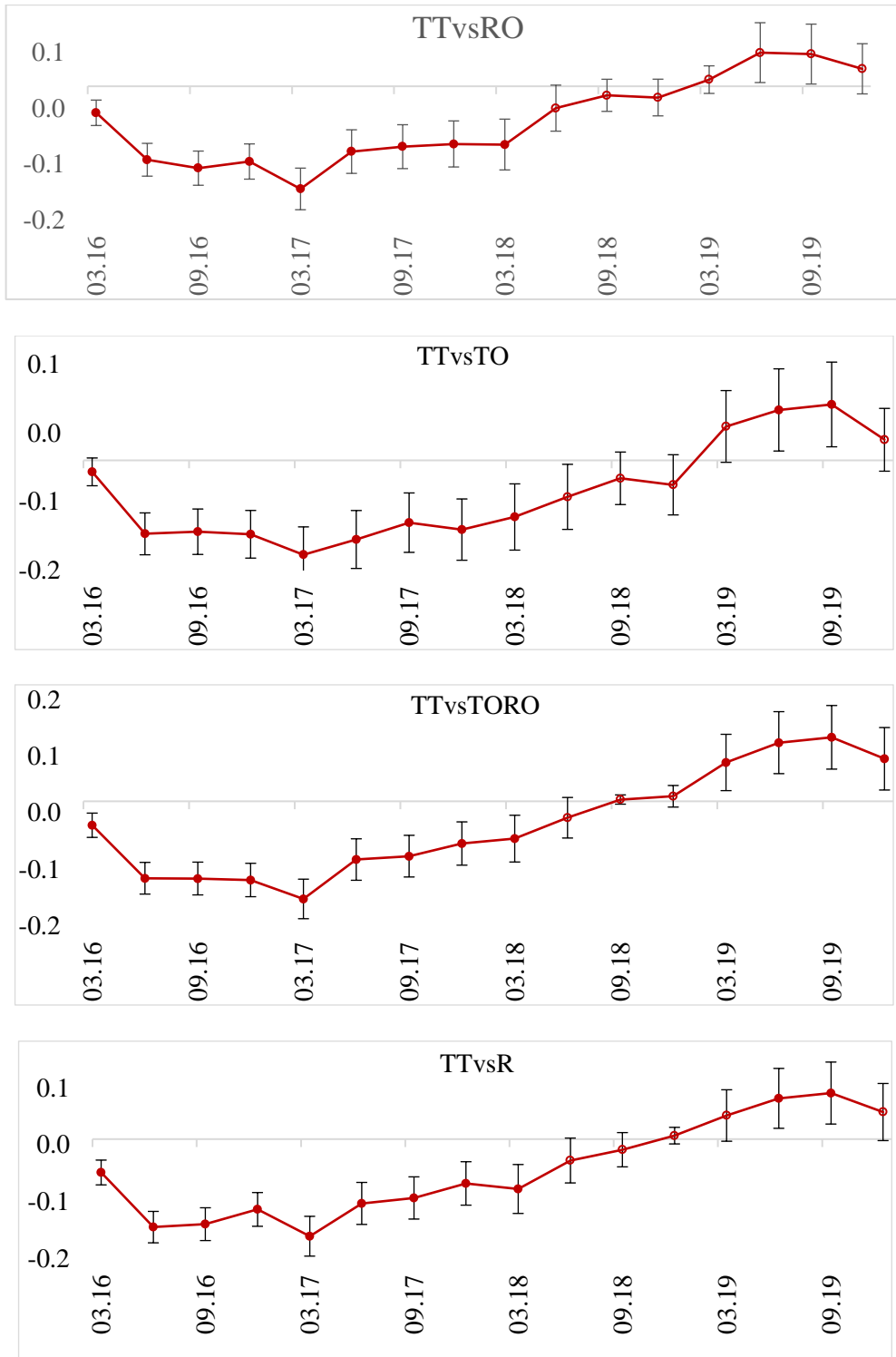
### 2.4.3. Empirical Findings

We present the regression results for the specifications and the dependent variables for which the parallel trend assumption holds. Our estimation sample consists of establishments, matched by CEM method, which were continuously active in 2013-2015. Figure 2.15-2.17 show the coefficient  $\beta_{did,t}$  in equation (2) that measures the differential impact on the outcome variable of establishments in the treated group compared to those in the control group for each control group definition. For robustness, we also tried the same regressions with excluding İstanbul from the treatment group (TT2). The results of two treatment group definitions are similar. The estimation output tables for all treatment and control group definition (in provinces Antalya, Muğla, Edirne, Artvin, Ardahan and Kırklareli) are presented in Appendix A.

The dependent variables are the total number of days worked in the establishment, average of daily and monthly wage in real terms and total monthly real wage payments (wage-bill). All the dependent variables are in log-transformed form, hence  $e^{\hat{\beta}} - 1$  would give the percentage impact of the shock on the outcome of the treated establishment. The results are based on equation (2) enriched by pre-crisis establishment-level covariates. The parallel trend assumption is verified in most of the treated and control group combination. For the cases where the test can not verify the assumption, we compare the estimation results from equations with and without the linear trend difference term. The estimated coefficients do not differ much between two specifications which enables us to conclude that our results are not sensitive to the existence of non-parallel pre-shock trend.

In addition to the political shock, there is another major policy in the estimation period. The national minimum wage was increased by 30 percent in January 2016. This hike was substantially higher than previous minimum wage increases, which were announced twice a year and at levels close to the inflation rate. The increase in 2016 was nearly seven times higher than the cumulative inflation in the second half of 2015 (3.9 percent). Minimum wage is important in wage determination of all employees and also affects firm behavior, which necessitates us to pay due attention to this policy.





Notes: The estimated coefficients from Equation (1) are displayed. The treatment group is tourism firms in affected provinces (TT). Control groups RO and TO are restaurants and tourism firms in unaffected region, respectively. Control group R includes all restaurants while TORO control group consists of tourism firms and restaurants in unaffected region. If an estimated coefficient is shown with a blank marker with no color fill, that coefficient is insignificant at 5 percent (with  $p\text{-value} > 0.05$ ). The vertical bars indicate the 95 percent confidence interval.

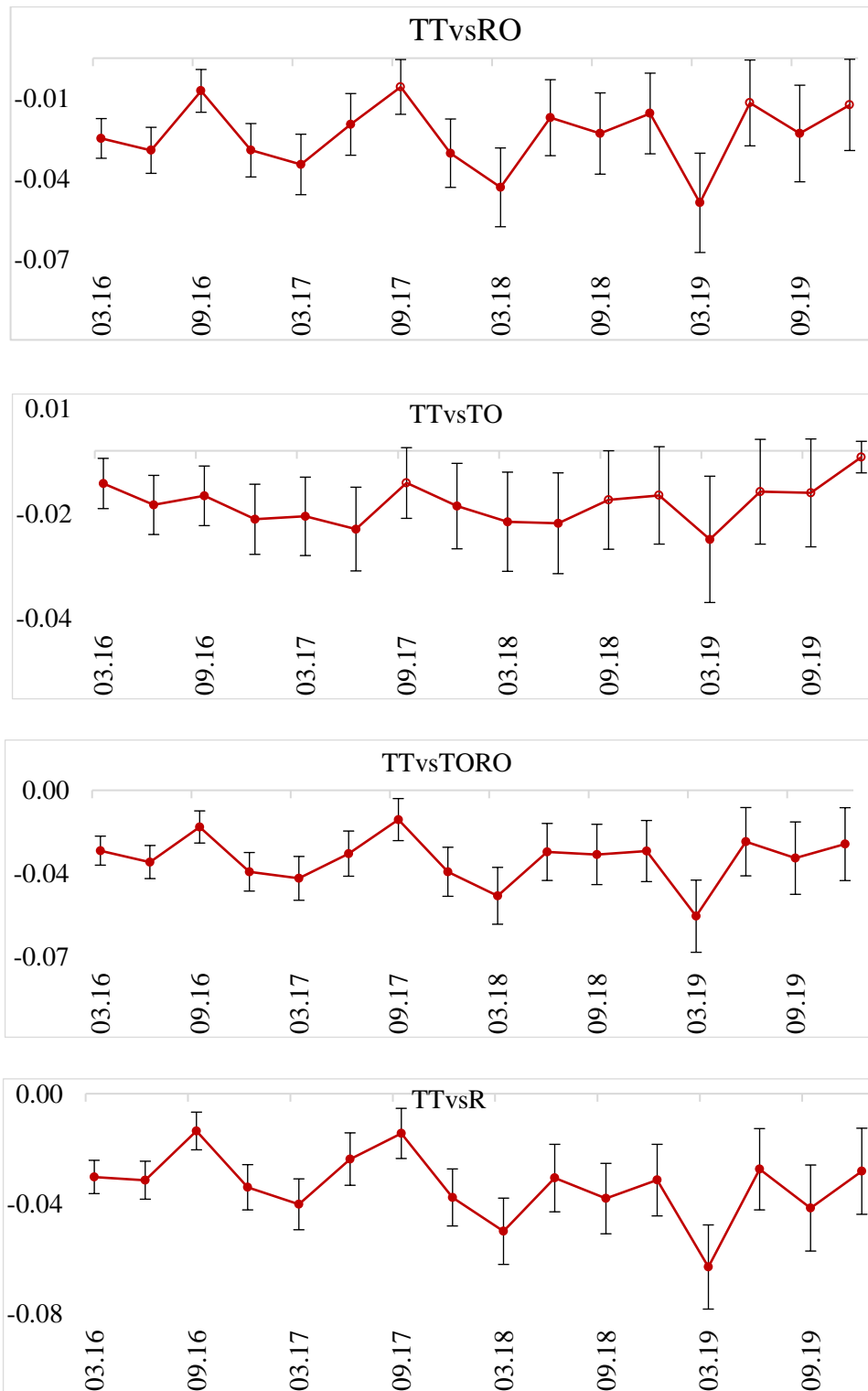
Figure 2.15 Estimation Results: Days Worked

Figure 2.16 plots the estimated coefficients that compare total days worked in tourism establishments in affected provinces (TT) to the 4 control groups of establishments. We use this outcome as it reflects both the change in the total number of employees and the length of days worked by them. Estimation results imply negative and significant coefficients for 2016-2017 period in all four comparisons.

Total number of days worked in the treated group of establishments decreased compared to that of tourism establishments (TO) or restaurants (RO) or both (TORO) in unaffected region. Same result appears when we compare treated tourism establishments with all restaurants. Total number of days worked in the treated group was around 15 percent lower than that in the control group for two years. In 2016q1 the impact was around zero while it became evident in 2016q2-2016q4. After 5 quarters, the differential impact on the treated group of establishments was nearly -20 percent. Starting from 2017, the adverse impact diminished gradually.

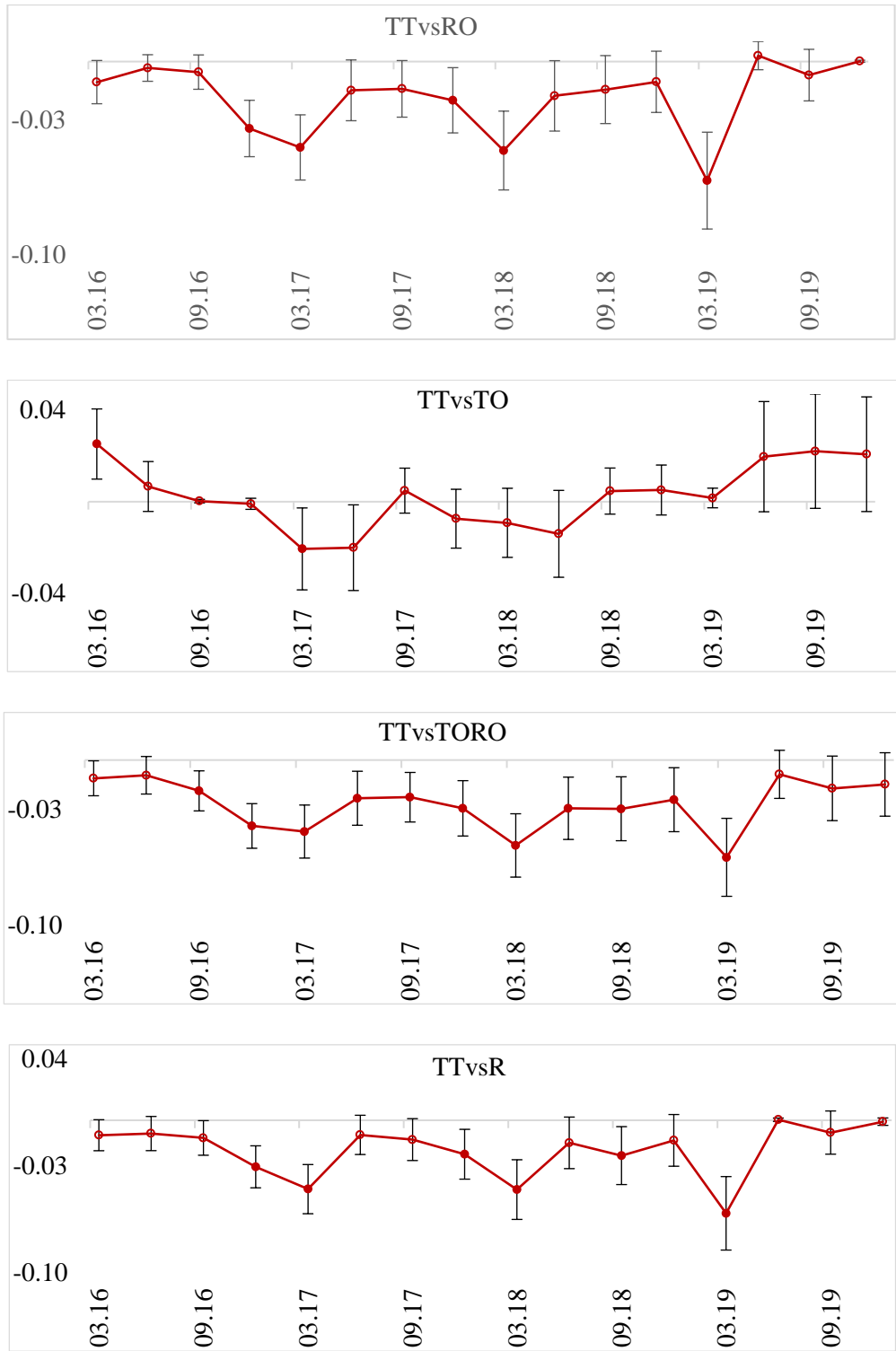
Figure 2.17 plots the differential impact of the political shock on the average daily wage paid by the establishments in the treatment group compared to those paid by control group of establishments. The estimated differential impact for each control group definition was slightly negative and persisted in the whole sample period. Related to the seasonality in tourism, the estimated impact also fluctuates such that it decreases in high-season periods (second and third quarters) and increases during October-March.

The average daily wage paid by tourism establishments in the affected region was 1-2 percent lower than that of tourism establishments in unaffected provinces in each quarter. The daily wage paid by treated tourism establishments was around three and four percent lower in 2016 and 2017 respectively, compared to the average daily wage paid by restaurants in unaffected region (RO). The magnitude of the impact seems to be higher when treated tourism establishments are compared to restaurants in all provinces (R). When we include the restaurants in affected regions to the control group (TTvsR), the differential impact becomes higher. It reaches -6 percent and is more persistent such that in 2018 it was still -4 percent.



Notes: The treatment group is tourism establishments in affected provinces (TT). Control groups RO and TO are restaurants and tourism firms in unaffected region, respectively. Control group R includes all restaurants while TORO control group consists of tourism firms and restaurants in unaffected region. If a coefficient is shown with a blank marker with no color fill, that coefficient is insignificant at 5 percent (with  $p\text{-value} > 0.05$ ). The vertical bars indicate the 95 percent confidence interval.

Figure 2.16 Regression Results: Real Daily Wages



Notes: The treatment group is tourism firms in affected provinces (TT). Control groups RO and TO are restaurants and tourism firms in unaffected region, respectively. Control group R includes all restaurants while TORO control group consists of tourism firms and restaurants in unaffected region. If an estimated coefficient is shown with a blank marker with no color fill, that coefficient is insignificant at 5 percent (with  $p\text{-value} > 0.05$ ). The vertical bars indicate the 95 % confidence interval.

Figure 2.17 Regression Results for Real Monthly Wages (Log-transformed)

We want to note that the estimated decrease in the average daily wage paid by treated tourism (TT) establishments may be driven by two things. It may be because they began to offer lower wages compared to the control group or the relative number of high-paid workers may have decreased in the TT group. What we see is the net effect.

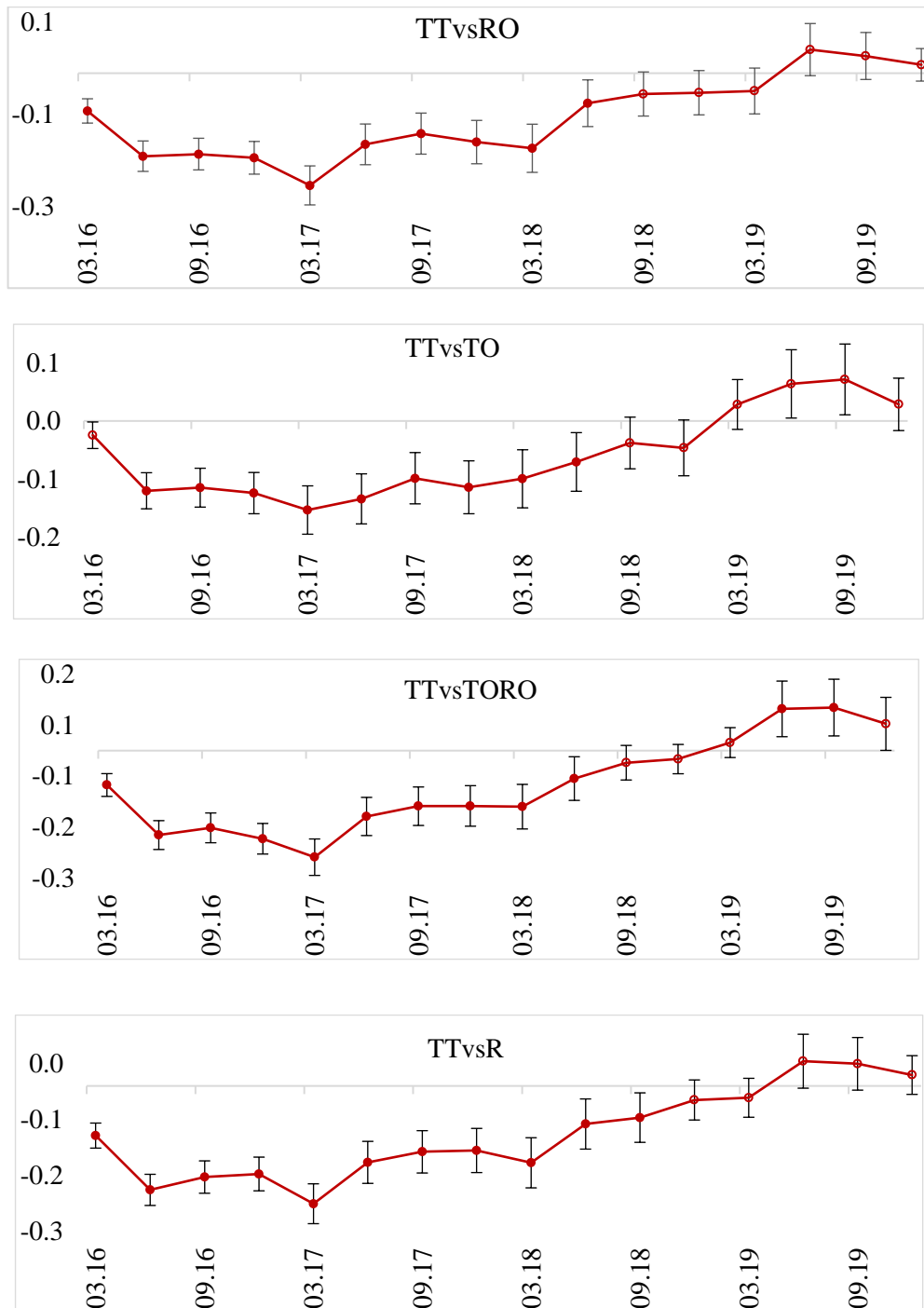


Figure 2.18 Regression Results for Monthly Wage Bill (Log-transformed, real)

Tourism establishments in affected and unaffected regions do not differ much in terms of the paid average monthly wage (Figure 2.18). However, when comparison group includes restaurants (TTvsR or TTvsRO), the differential impact is negative and persistent. The average monthly wage paid by treated tourism establishments remain 2% lower than restaurants even in 2017-2018. The highest impact is estimated during 1<sup>st</sup> and 4<sup>th</sup> quarters which is probably due to the seasonality in the tourism sector.

As a last comparison, we present how total monthly wage payments of the treated tourism establishments changed compared to the comparison groups of restaurants (R), other tourism establishments (TO) and restaurants in untreated regions (RO) or both tourism and restaurant establishments in unaffected regions (TORO). The impact on monthly wage bill reflects both the changes in the monthly wage and the number of employees. This variable may be interpreted as the labor cost.

Compared to other tourism establishments, total monthly wage paid by the treated tourism establishments (TT) was lower by 10-15 percent in the first two years after the shock. When compared to restaurants in unaffected regions, the monthly real wage bill of the treated tourism establishments were around 16 percent lower in 2016 and 2017.

## **2.5. Conclusion**

The economic sanctions announced by Russia in response to the downing of a Russian warplane by Türkiye included restrictions on bilateral tourism activities. Russia is the second most important country in terms of the number of foreign visitors to Türkiye, so the sanctions had a significant impact on the Turkish tourism sector. In this chapter, we analyze the differential impact on tourism sector establishments.

The shock affected the whole tourism sector, but it is expected to have a stronger impact on tourism establishments located in regions preferred by Russian tourists. Our identification strategy uses the variation in Russian tourist intensity across 81 provinces. We calculate this measure as the ratio of the total number of Russian visitors in a province to the size of the tourism sector in that province.

Based on this measure, we divide the provinces into two groups: (i) Affected region: Antalya, Muğla, İstanbul, Edirne, Artvin, Kırklareli and Ardahan (ii) Unaffected region: The rest of the 74 provinces. We form our treatment group as tourism establishments in affected regions. For robustness, we also compare by excluding establishments in İstanbul from the treatment sample.

We compare the establishment-level outcomes of the treated tourism sector with (i) other tourism establishments, (ii) restaurants, (iii) restaurants in unaffected provinces, (iv) tourism establishments and restaurants in unaffected region. To ensure the validity of parallel pre-shock trends, we construct a matched estimation sample using coarsened exact matching.

Our results show that the total days worked in the treated group of tourism establishments decreased by 10-15 percent in the first year of the shock, the negative differential impact gradually decreased after 2017 and disappeared by end-2018. If the treated sample excludes tourism establishments in İstanbul, the negative differential impact is stronger in the short-run, reaching 20-25 percent in 2016q2 (Tables A1-A8). The evolution of the total days worked in the two treated groups (all and excluding İstanbul establishments) relative to the control groups including restaurants (R, RO, TORO) is similar after 2016. However, when comparing treated and untreated tourism establishments, the total number of days recover faster when we exclude İstanbul from treatment group.

When we compare the average real daily wage between treated and control groups, it decreased by about 2 percent compared to other tourism establishments. Excluding İstanbul from the treated sample does not change the results much. The deterioration is higher and more persistent when treated tourism establishments are compared to the restaurants. The average daily wage paid by a tourism establishment in the affected region decreased by 3-4 percent in the low season periods (4<sup>th</sup> and 1<sup>st</sup> quarter). The average real monthly wage paid by tourism establishments in affected and unaffected regions did not differ in 2016, and in 2017-2018 it was around 1 percent lower for tourism establishments in the affected region.

When İstanbul is excluded from the treated sample, the difference-in-differences coefficients become slightly positive, indicating an improvement of around 1 percent in the average monthly wages. The deterioration in the monthly wage paid by treated tourism establishments is more pronounced and hovers around 5 percent compared to restaurants. The total monthly wage bill of an establishment depends on the monthly wage level and the number of employees. In 2016, the wage bill of treated tourism establishments was around 12 percent lower than that of other tourism establishments, and the negative differential effect gradually decreased thereafter. Compared to the restaurants in 2016, the wage bill of all treated tourism establishments was 17-20 percent (25 percent if İstanbul establishments are excluded) lower.

These estimates should be interpreted as the average effect in the group of treated tourism establishments in the affected provinces. It should be noted that the differential impact of the shock may not be homogeneous across provinces. Different districts in a province may have different ratios of Russian tourist intensity, which would cause the differential impact to differ among districts in the same province. We cannot test this due to data limitations. District information for firms is available, but we do not have the distribution of the number of Russian tourists across districts.

The treated group of tourism establishments suffered from declining output in the face of reduced demand following the political shock. The estimation results show that the shock affected the labor demand of the tourism establishments sharply, while the impact on wages was more limited. The minimum wage hike may have limited the adjustment through lower wages rather than decreasing employment.



## CHAPTER 3

### THE IMPACT OF THE POLITICAL SHOCK ON TOURISM: WORKER-LEVEL ANALYSIS

#### 3.1. Introduction

Worker displacement has been a popular area of research since the 1990s. There is a rich literature documenting the reemployment and earnings patterns of displaced workers, measuring the costs of displacement, and analyzing the sources of these costs. Moreover, in addition to earnings and employment, recent literature has analyzed other potential effects of job displacement on outcomes such as household expenditures (Stephens 2001), health (Schaller and Stevens, 2015), mortality (Sullivan and von Wachter 2009), academic performance of children of displaced workers (Rege, et al., 2011), and crime (Rege, et al., 2019). The political shock of 2015 severely affected the tourism sector, resulting in the displacement of a large proportion of workers in 2016. Thus, this chapter is related to the literature on job displacement as it focuses on the impact of the shock on workers in the tourism sector.

The displacement literature agrees that displacement worsens workers' long-term earnings and employment trajectories. The studies find that involuntary job separations result in persistent earnings losses ranging from 15 to 30 percent of pre-displacement earnings. The magnitude of the estimated loss varies depending on the sample design, the time period analyzed, and the location. Earlier work in this area (e.g., Kletzer, 1989; Topel, 1990) used survey data (such as the US Displaced Workers Survey), while much of the more recent work (including Couch and Placzek 2010; Schmieder et al. 2010; Davis and von Wachter 2011; Schmieder, et al. 2023) uses administrative data inspired by the seminal study by Jacobson, LaLonde, and Sullivan (1993; hereafter referred to as JLS). Most of the subsequent studies in the literature benefited from JLS:

This literature has also motivated research aimed at understanding the sources of displaced workers' earnings losses. Employer effects and match effects (i.e., the loss of valuable specific worker-employer matches) stand out as the main explanatory factors. The employer effect would be strong if the workers are systematically displaced from higher-paying firms and rehired by lower-paying firms. Fackler et al. (2021) and Schmieder et al. (2023) provide evidence for this channel for Germany and conclude that forgone firm wage premiums explain most of the long-run wage losses of displaced workers in Germany. On the other hand, Lachowska et al. (2020) and Moore et al. (2019) conclude that firm pay premiums are less important in explaining the wage losses of displaced workers in the United States. Lachowska et al. (2020) find that more than half of displaced workers' wage losses in Washington after the Great Recession are due to the loss of specific worker-employer matches (the so-called matching capital). They find that the firm-specific component plays a negligible role in the earning losses of displaced workers in the US. Their findings support the existence of specific human capital unique to the pre-displacement firm/sector that is not valued by other firms or sectors (Kletzer, 1989).

In the empirical literature, the most common proximate causes of worker displacement are plant closures and mass layoffs involving large reductions in employment (Abbott, 2008). In the literature that uses administrative data, separations during mass layoffs are commonly used to identify the displaced workers, and job displacement is defined as “*an event when a worker with some degree of tenure leaves a stable job during a mass layoff*” (Schmieder et al., 2023). The sample of displaced workers is selected from long-tenured workers because they are the ones who are likely to keep their jobs in the absence of a mass layoff event, and very few of these workers are likely to have moved voluntarily. Moreover, they have a lot to lose in terms of (job-, firm- or sector-) specific human capital. When constructing the sample of long-tenured workers, the first step is to decide on the tenure length. Jacobson, et al (1993) defines displaced workers conditional on 6 years of tenure, while most other papers including Davis and Von Wachter (2011), Moore and Scott-Clayton (2019), Schmieder et al. (2023) require three-years of tenure. The second step in selecting the displaced worker sample is to determine the mass layoff event when employment decreases by more than 30 percent.

A mass layoff is assumed to occur when employment declines by at least 30 percent (JLS, 1993). Although it is possible that some separations during mass layoffs are due to quits or layoffs for other reasons, it is generally assumed that the vast majority of separations are involuntary for economic reasons. A recent paper by Birinci et al (2023) argues against such identification of involuntary separations without using the exact reason for separation. They use Canadian job separation records and find that only 25 percent of mass layoff separations were due to displacement. However, associating mass layoffs with large increases in the unemployment rate is the most reasonable method in the absence of detailed data on the reasons for quits. In our case, the political conflict in late 2015, which specifically affected the tourism sector, provides us with a natural experiment to analyze the impact of job displacement on workers in the tourism sector. Unlike the other papers in the literature, we do not need to search for a reference period of mass layoffs.

Tourism is a labor intensive sector and involves the employment of a significant number of workers. In Turkey, tourism-related activities account for nearly 9 percent of employment in the service sector (Aldan, et al., 2016), which means that the 2015 political shock affected a large part of the labor force. The purpose of this chapter is to analyze the labor side effects of the shock. First, we compare the labor market outcomes (namely wages and days worked) of the long-tenured workers in the tourism sector with those of workers in the control group. Second, we try to understand how the earnings trajectory of a long-tenured worker in the tourism sector changed after the political shock. We compare employees within the tourism sector and try to understand the role of becoming unemployed or changing firm/sector in the earnings patterns in the post-crisis period.

There is no specific class of tourism in the system of classification of economic activities, which makes it impossible to track employment in tourism directly from labor force statistics. Tourism is dispersed within different industries. As defined by UNWTO, “*tourism entails people’s travelling and staying at places outside their usual environment for leisure or business purposes*”. The definition of UNWTO places accommodation at the heart of tourism activities.

Throughout the chapter, we proxy the employees and establishments in the tourism sector with workers and establishments in the accommodation sector with two-digit industry code “55” according to the NACE-Rev-2 classification. Hereafter tourism sector refers to accommodation sector.

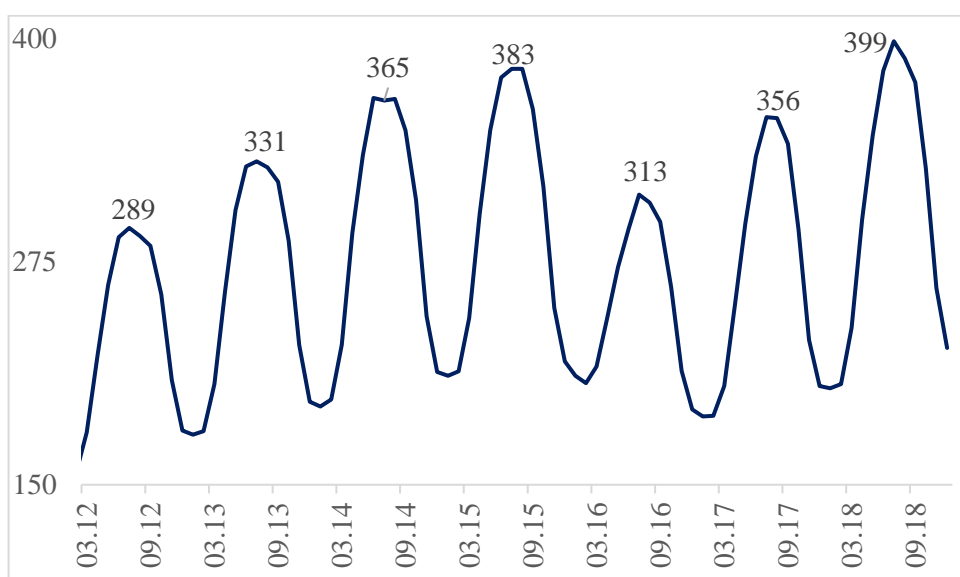
This chapter begins with a detailed outlook of the tourism labor market, based on macro-level indicators made publicly available by the Social Security Institution (SSI). The third section presents some descriptive statistics on the main characteristics of workers (including long-tenured workers) in the tourism sector, based on a worker-employer matched dataset covering the period 2012-2021. Then, the fourth section presents the empirical framework and the estimation results of the labor market outcomes of the employees.

The empirical analyses in this chapter are twofold. First, we estimate how the tourism shock of 2015 changed the position of long-tenured workers in the affected tourism firms relative to a control group of workers who were not directly exposed to the shock. To do this, we use a difference-in-differences (DiD) setup. We find that long-tenured workers in the tourism sector faced income losses relative to a control group of similar workers in other tourism firms or restaurants.

Secondly, we aim to understand how the human capital of the sector was affected by this political shock. For this, we narrow our sample to the long-tenured workers in the tourism sector. Consistent with the literature on job displacement, this group of workers is chosen to represent the human capital of the sector with their expertise and know-how. Using fixed-effects panel data regressions, we estimate the effect of being displaced after the crisis or changing firm, changing sector or changing city of employment on the worker's earnings in the post-crisis period. We find that, on average, workers who changed firm and/or changed sector earn less than other long-tenure workers who remained with their pre-crisis employer and sector. The impact of changing province on post-shock wages is found to be positive in some of the specifications. But the impact is not robust such that the coefficient loses significance in some other specifications. Section 5 concludes the Chapter.

### 3.2. Outlook of the Labor Market

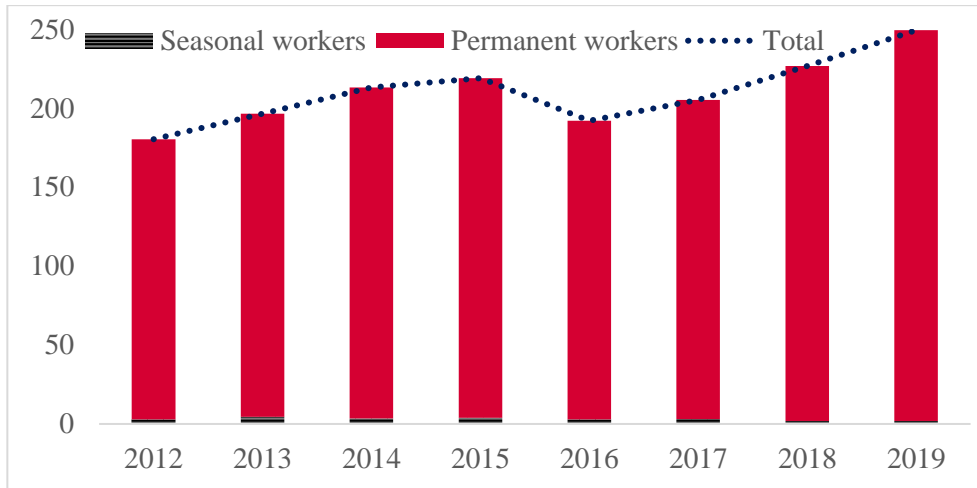
In this section we use the monthly and annual employment bulletins published by the Social Security Institute (SSI) to give a brief description of the employees in the tourism sector. The SSI publishes the distribution of the compulsorily insured employees by activity groups where, the activity level is available at the two-digit European Standard Classification Nace-Rev-2 including 99 sectors. The data include only employees covered by Article 4-1/a of Act 5510 on Social Security and General Health Insurance. The data include the number of compulsorily insured employees in each sector broken down by male/female, private/public and permanent/seasonal. The annual bulletins also include the regional distribution of the employees in each sector.



Source: SSI

Figure 3.1 Number of Employees at Accommodation Sector (1000 people)

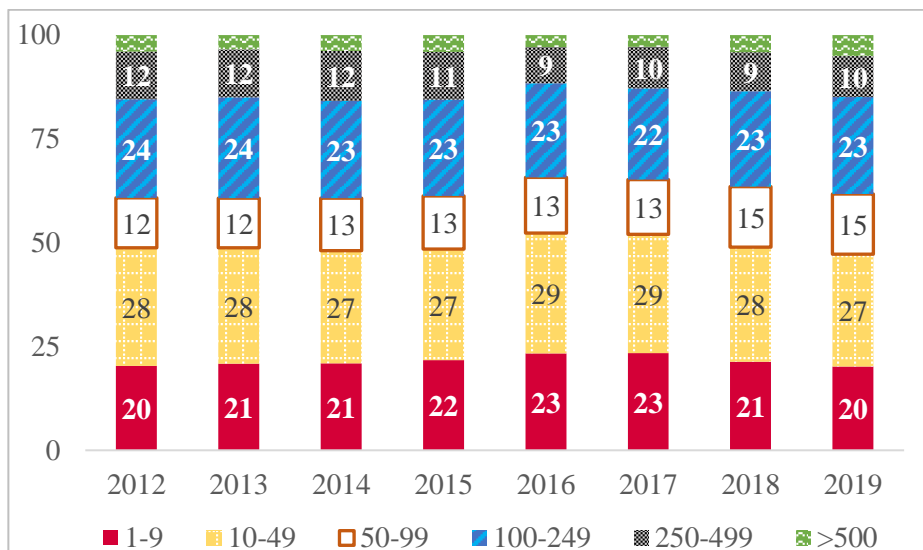
There is strong seasonality in the tourism sector (Figure 3.1). The number of employees increase in high season periods (the 2<sup>nd</sup> and 3<sup>rd</sup> quarters). The fall in employment in 2016 shows the impact of the shock. The peak point of employment decreased significantly in from 383 to 313. Figure 3.2 shows the number of seasonal and permanent workers in the sector. The degree of the shock's impact was different for these two groups. Annual decrease in the number of permanent and seasonal employees in 2016 was 12.1 and 24.8 percent, respectively.



Source: SSI.

Figure 3.2 Permanent and Seasonal Workers (1000 people)

The ratio of female workers is around 30 percent in the accommodation sector. In 2016, the decrease in employment was similar among men and women. Number of female and male workers decreased by 12.6 and 12.3 percent, respectively. Most of the employees in the accommodation sector work in small-scale firms. In 2015, almost half of the formal workers were employed at firms which employed less than 50 workers (Figure 3.3).



Source: SSI

Figure 3.3 Distribution of Employees in Accommodation Sector by Firm Size (%)

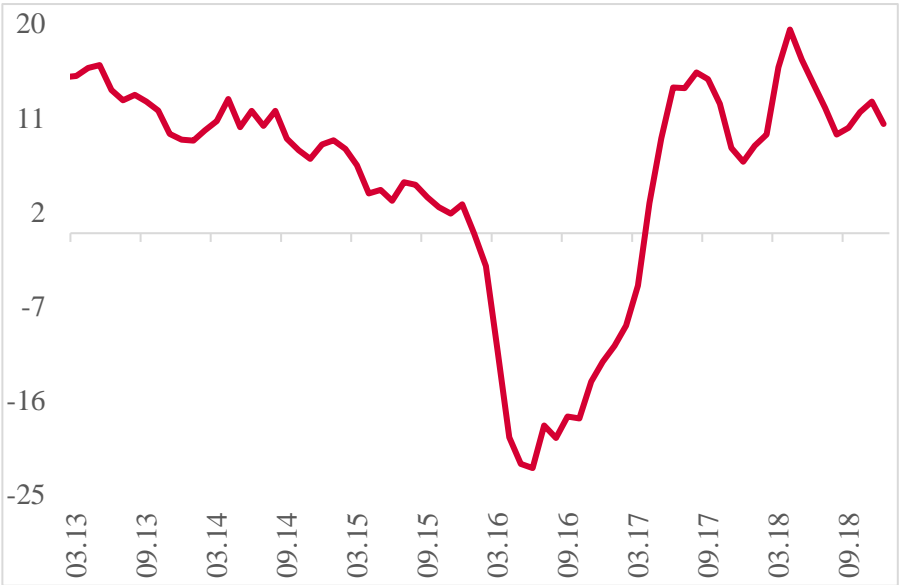
SSI's yearly bulletins contain information on activity and province distribution of the formal employees as well. Table 3.1 shows the first 20 provinces in terms of the number of employees in the tourism sector in 2015. Unsurprisingly, most of the workers in the sector are employed in the popular tourism destinations like Antalya, İstanbul and Muğla. The number of employees had decreased significantly in the top tourism destinations in 2016. In Antalya 12,770 fewer workers were employed in 2016 compared to 2015. Similarly, the number of employees in İstanbul, Muğla, and Aydın in 2016 was lower by 8141, 1782 and 1209, respectively compared to 2015.

Table 3.1 Number of Employees in the Accommodation Sector (1000 people)

	2012	2013	2014	2015	2016	2017	2018	2019
Antalya	57.5	62.3	66.4	65.4	52.6	56.4	66.0	76.5
İstanbul	36.0	40.2	45.2	47.3	39.1	41.6	46.1	51.2
Muğla	10.6	11.0	12.6	12.9	11.1	11.8	13.1	15.1
Ankara	8.1	8.8	9.3	10.1	9.5	9.7	10.1	9.9
İzmir	7.1	7.9	8.0	8.7	8.2	8.9	9.5	10.5
Aydın	4.0	4.6	4.6	5.2	4.0	4.8	4.8	5.2
Bursa	4.6	4.3	4.6	4.6	4.7	5.0	5.5	5.5
Nevşehir	2.6	2.6	3.1	3.5	2.5	2.9	3.7	4.8
Balıkesir	2.5	2.6	3.0	3.1	3.0	3.3	3.5	3.6
Afyon	2.5	2.8	2.7	3.1	3.1	3.1	3.2	3.6
Konya	2.4	2.5	2.4	2.6	2.9	3.0	3.1	3.1
Kocaeli	1.9	2.2	2.4	2.6	2.4	2.5	2.5	2.6
Denizli	2.1	2.2	2.4	2.5	2.2	2.4	2.4	2.5
Adana	1.6	1.8	2.1	2.3	2.1	2.3	2.3	2.5
Çanakkale	1.9	2.0	2.2	2.2	2.2	2.3	2.5	2.5
Trabzon	1.5	1.6	1.8	2.1	2.1	2.3	2.6	2.5
Mersin	1.9	1.8	1.8	2.0	2.0	2.1	2.2	2.2
Bolu	1.7	1.8	1.7	1.9	2.1	2.3	2.6	2.6
Gaziantep	1.5	2.0	2.1	1.9	1.7	1.6	1.7	2.0
Sakarya	1.3	1.6	1.7	1.7	1.7	1.6	1.7	2.3

Source: SSI

The sanctions imposed on Türkiye after the shutdown of Russian warplane also affected total employment in the tourism sector<sup>6</sup>. According to the monthly employment records of the SSI, the employment in the accommodation sector annually decreased by almost 25 percent in June 2016 (Figure 3.4). In other words, the decrease in the number of employed workers in the sector between June 2015 and June 2016 was as high as 85 thousand people. It should be noted that this is the impact on the formal workers. The impact would be much higher if the informal workers were included, given the high level of informality in the sector.



Source: SSI.

Figure 3.4 Annual Change in Employment in the Accommodation Sector (%)

### 3.3. Data

Given the general outlook of the sector based on macro-level statistics provided by the SSI, we would now like to present some descriptive information on the tourism employees based on micro-level data. We construct a matched employer-employee dataset acquired from the Entrepreneur Information System (EIS)<sup>7</sup>.

<sup>6</sup> Chapter 2 includes more details on the shock and the subsequent economic sanctions imposed by Russia.

<sup>7</sup> For more details on the data source, see Chapter 2, section 2.3.1.



The SSI data in the EIS cover all formal employees in the non-financial and private sectors of the Turkish economy. The data provide information on workers' identity, nominal daily and monthly wages, the number of days worked, their occupation, gender and age as well as the identity of the establishment and the firm of employment. The data allow us to track workers' quarterly earnings over a 10 year period. The earnings data are based on firm reports which are used to calculate tax liabilities and are therefore expected to be free of measurement error. In addition, since we have separate information on the number of days worked and the daily wage, we can decompose changes in monthly earnings.

It is possible to link the SSI dataset to firm balance sheets through the common firm identifiers. This allows us to control for firm characteristics such as firms' age, total employment, 4-digit sector code and geographic location in our analyses. To analyze the labor market impact of the shock on the tourism sector, we construct a worker-level dataset that covers all workers who have worked in the tourism sector during the period 2012-2020. To do this, we first identify tourism firms that operate in the "Accommodation" sector. Then for each year, we identify the workers registered in these tourism firms using the SSI employment data of the corresponding year. In this way, we find all the workers who have worked (even for one day) in a tourism firm for each year in our sample period. We append each year's data and obtain a dataset that includes all workers who have worked (even for one day) in a tourism firm in the period 2012-2020.

The SSI data is not one-to-one, i.e. there exist workers who are registered in multiple firms for the same quarter. In each year's employee data, such observations account for around 10 percent of total observations. To assign one unique firm to one worker for each quarter we apply the following procedure: First, we assign the worker to the firm where s/he works longer. But if there exists a tie (i.e a worker is registered as working for equal number of days in more than one firm in the same quarter), we first drop ties with less than 15 days worked. For example, we drop if a worker is registered for 13 days in 2 different firms for the same quarter. This helps us to get rid of 60 percent of tie-cases.

For ties with more than 14 working days, we assign the worker with the firm where s/he worked in the previous quarter or the subsequent quarter or randomly if neither of these two holds. After this cleaning procedure, we get one-to-one employer-employee matched data for tourism sector covering 2012-2020 period.

Our dataset on tourism sector includes 26,669,665 observations for 1,780,090 workers and 862,859 firms. The majority of the workers are employed in the “hotels and similar accommodation services” (subsector 5510). Seasonal working is common in the sector. Number of workers increase in peak seasons namely, the second and third quarters. On average, the number of workers in the first and last quarters is around 680,000 while it rises to 800,000 in the second and third quarters.

In 2012-2015 period, the number of workers at each quarter was higher than the previous year (Table 3.2). For instance, number of workers at 2015q2 had increased 10.3 percent compared to 2014q2. But in 2016 we see a year-over-year drop in the number of workers at all quarters. The annual decrease in the number of employees in the 2016q2 and 2016q3 were 7.7 and 6.6 percent, respectively. In total sample, the number of unique workers in 2016 decreased (by 45,411) to 1,072,347 from its 2015 value of 1,117,958. These figures show the negative impact of the political shock on the formal employment in the tourism sector.

Table 3.2 Number of Workers across Quarters (Thousand people)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Q1	523	579	632	709	708	723	799	690	749
Q2	656	715	775	855	789	867	913	835	754
Q3	652	711	771	844	788	897	908	844	844
Q4	547	593	650	713	679	766	736	690	767

Source: EIS

Table 3.3 shows the quarterly course of (1) total number of workers, (2) the number of days worked based on SSI premium payment days (3) mean age of workers in 2015 when the shock occurred (4) average share of woman (5) the median of log-transformed nominal daily wage for all workers in the dataset. The number of days worked follows a stable course throughout the sample except 2020, where the employment duration shortened due to the short-term working allowance implemented during the pandemic. In the pre-crisis period of 2012-2015, the average length of days worked was 25.8 days while it hovered around 25.5 days in 2016 (Table 3.3). Therefore, the shortening in days worked in the post-shock period was not significant, around 0.5 days at maximum.

Table 3.3 Descriptive Statistics for All Workers in the Tourism Sector

	Number of Workers	Days Worked	Age in 2015	Woman share	Log. nom. daily wage
2012q1	522,664	25.9	35.7	0.22	3.40
2012q2	656,188	26.0	34.8	0.23	3.41
2012q3	652,078	25.9	34.7	0.23	3.48
2012q4	546,722	25.8	35.2	0.22	3.47
2013q1	579,343	25.6	35.0	0.22	3.52
2013q2	715,056	25.7	34.2	0.23	3.56
2013q3	710,519	25.9	34.1	0.23	3.60
2013q4	593,165	25.7	34.5	0.22	3.56
2014q1	632,007	25.7	34.3	0.23	3.62
2014q2	775,110	25.7	33.5	0.24	3.68
2014q3	770,689	25.8	33.4	0.24	3.71
2014q4	650,164	25.8	33.7	0.23	3.67
2015q1	708,540	25.6	34.0	0.23	3.74
2015q2	855,283	25.7	33.0	0.24	3.80
2015q3	844,021	26.1	32.8	0.24	3.90
2015q4	713,395	25.7	33.4	0.23	3.79
2016q1	707,725	25.6	33.4	0.22	4.01
2016q2	789,366	25.5	33.3	0.23	4.01
2016q3	788,004	25.4	33.1	0.24	4.10
2016q4	678,583	25.7	33.2	0.22	4.04
2017q1	722,536	25.7	33.2	0.22	4.09
2017q2	866,802	25.7	32.9	0.24	4.18
2017q3	897,056	25.4	32.8	0.24	4.21
2017q4	766,116	25.9	32.9	0.23	4.11

Table 3.3 Descriptive Statistics for All Workers in the Tourism Sector  
(continued)

2018q1	799,393	25.5	32.8	0.23	4.25
2018q2	912,995	25.5	32.7	0.25	4.33
2018q3	907,659	25.7	32.6	0.25	4.29
2018q4	736,271	25.9	32.5	0.24	4.29
2019q1	690,390	25.7	31.7	0.26	4.48
2019q2	834,703	26.0	31.5	0.27	4.56
2019q3	844,171	26.1	31.4	0.27	4.53
2019q4	689,745	26.1	31.4	0.26	4.52

Notes: The values are based on non-missing number of observations in our matched employer-employee data for 2012-2020 period. Column (1) is the sum of employees in the tourism firms. Column (2) is the mean SSI contribution day, Column (3) is the mean age in 2015 when the shock hit the sector. Column (4) shows the mean share of women employees and Column (5) is the median log-transformed nominal daily wage.

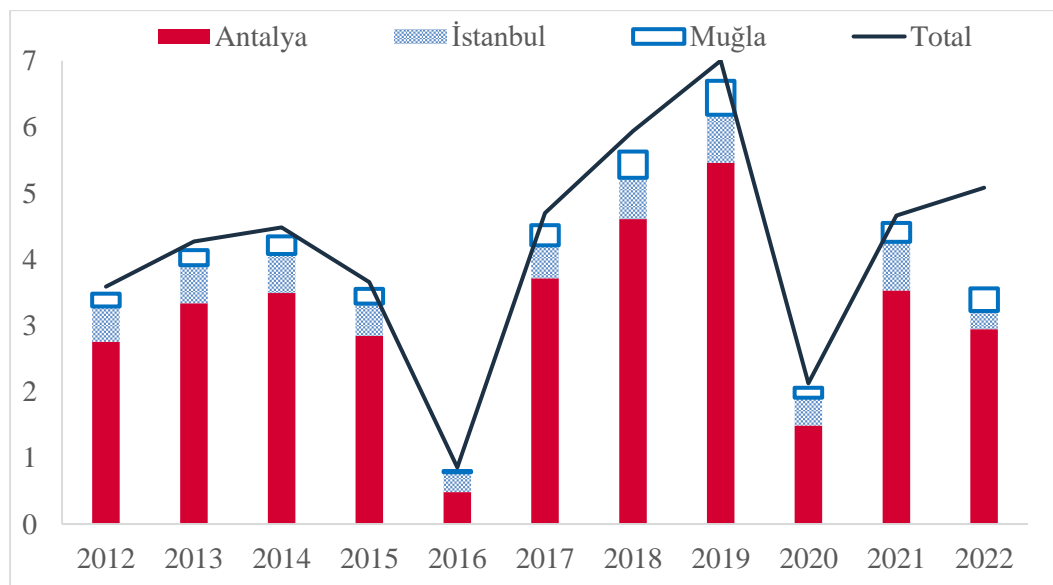
The majority of the workers are young such that the mean age does not exceed 35. But in the pre-crisis period, a pattern emerges such that the mean age decreases in 2<sup>nd</sup> and 3<sup>rd</sup> quarters compared to the 1<sup>st</sup> quarter. This may be due to seasonal workers entering the labor market in high season summer periods being younger. They may be lowering the mean age (Table 3.3) in second and third quarters. In Türkiye, labor force participation and employment rates of women are quite low. In the period 2013-2015, overall employment rate of women were around 30 percent. A similar pattern is observed in our sample of tourism sector such that the average share of woman ranges between 0.22 and 0.27 throughout the sample period.

Table 3.4 The Regional Distribution of Workers in Tourism Firms (%)

	İstanbul	Antalya	Ankara	Muğla	İzmir	Bursa	Aydın
Firm-level data	34.6	16.7	10.7	4.6	4.2	2.5	2.1
Est.-level data	25.7	21.7	6.9	6.6	5.3	2.4	2.4

The location of the tourism firms is important for our analysis because the shock was sectoral and regional in nature. The political shock affected the number of Russian tourists, so it is likely that tourism firms operating in regions preferred by Russian tourists are more affected than other tourism firms.

To identify the province of activity, the EIS data provide two options. The first includes location detail at the firm level while the other is at the establishment level. The firm-level data provides the province where the headquarters is located. That's why it is biased towards big cities (Table 3.4). On the contrary, the workplace data differentiates between different branches of same firm and provides the province in which each establishment operates separately. For example, let's assume there exists a firm X that has headquarter in İstanbul but also has establishments X1 in Bursa and X2 in İzmit. When we use the province information from firm-level data, we would associate all workers working in X, (X1 and X2) to İstanbul which would be misleading. Therefore, we take the province information from establishment-level data which enables us to associate X1 workers to Bursa and X2 workers to İzmit. Table 3.4 shows the first 7 provinces where workers in our sample are registered. The first row shows the shares calculated from firm-level data. Based on this data, 34.6 percent of observations are in İstanbul while shares of Antalya and Ankara are 16.7 and 10.7 percent, respectively. When we calculate the shares from establishment-level data, the first seven cities are same but the distribution changes. The shares of big cities like İstanbul and Ankara decrease -as expected- while those in Antalya, İzmir, Muğla and Aydın increase.



Source: Ministry of Culture and Tourism.

Figure 3.5 Regional Distribution of Russian Visitors (Million people)

The establishment-level data suggest that a high proportion (21.7 percent) of the total workers in our sample works in Antalya, the city most visited by Russian tourists (Figure 3.5). Among Russian visitors, there is a persistent demand for the Antalya region such that more than 70 percent of the total visitors from Russia arrive in Antalya. This high share of employees located in Antalya, according to the establishment-level data, is an advantage for our analysis as it makes our sample suitable for tracking the impact of the political shock that specifically affected Russian tourists.

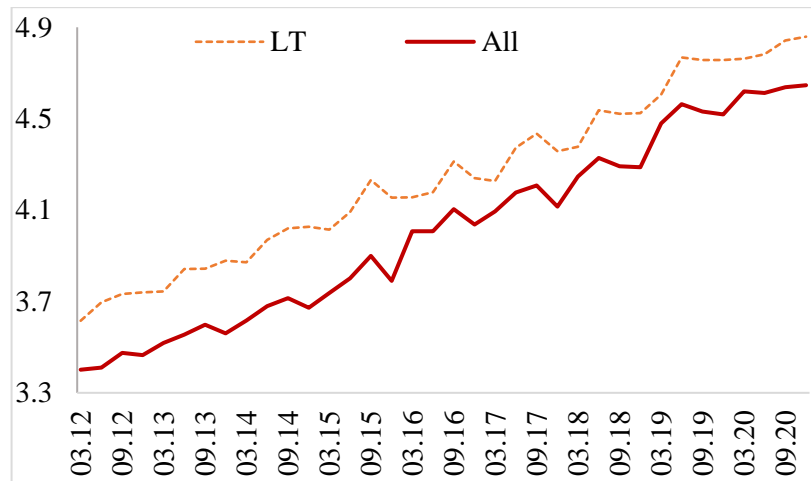
### **3.3.1. Long Tenured Workers**

We are interested in the differential adverse impact of the shock on human capital in the tourism sector. This requires an analysis among long-tenured workers, defined as workers having a stable job at the time of the crisis. In this subsection we will represent some descriptive statistics for the long-tenured workers. We classify workers with at least 9 quarters of job tenure in same establishment (LT) in 2013-2015 (i.e. the previous 3 years including the year of the shock) period as long-tenured workers (LT in short)<sup>8</sup>. In the literature, it is common to condition long-tenured length as three years or even six years as in JLS 1993. However, seasonality is high in the tourism sector, and therefore for defining an employee as long-tenured worker we require active employment in the last three years but we allow for one quarter to be missing each year. We condition tenure length to be between 9 and 12 quarters for long-tenured workers in the tourism sector.

It is important to understand how the characteristics of long-tenured (LT) workers compare to the rest of the sample. The mean age of all workers is more volatile and decreases in the second and third quarters which may be related to the young seasonal workers that enter the labor market during high seasons. The long-tenured workers are older and earn more than the whole sample averages (Figure 3.6). Long-tenured workers earn more than the sample average in both pre- and post-crisis periods.

---

<sup>8</sup> We tried different tenure lengths for defining LT group. We put the condition of working for at least 3 quarters in 2015 to ensure active employment when the shock appeared in end-2015.



Notes: Median of log-transformed nominal daily wage. Source: EIS, authors' calculations.

Figure 3.6 Nominal Daily Wage: Long-tenured Workers vs. All Workers

The LT workers earned 32 percent higher than all workers in 2015 (Table 3.5). An important reason behind this positive relation between wages and tenure could be related to the argument that workers acquire specific skills through on-the-job training and these skills rise with tenure leading earnings to rise as well (Kletzer, 1989). The demographic information in our data is limited to gender and age, which makes it difficult to decompose this wage premium as the data lack important information on workers' wage determination such as their education level, or marital status.

Table 3.5 Nominal Daily Wages of Long-tenured Workers

	Level (log, nom. daily wages)			Annual change (%)		Number of Workers (Thousand)	
	LT (a)	All (b)	(a)-(b)	LT	All	LT	All
2013	3.83	3.56	0.27	0.13	0.12	67.5	949.5
2014	3.97	3.67	0.30	0.14	0.11	69.6	1027.7
2015	4.12	3.81	0.31	0.15	0.14	70.1	1118.0
2016	4.22	4.04	0.18	0.10	0.23	62.2	1072.4
2017	4.35	4.15	0.20	0.13	0.11	57.7	1158.5
2018	4.49	4.29	0.20	0.14	0.14	55.9	1195.2
2019	4.72	4.52	0.20	0.23	0.23	49.6	1100.0

Notes: Long-tenured workers have worked for at least 9 quarters at the same establishment in the period 2013-2015. The first column shows the log-transformed yearly average daily wage levels among this group of workers. The second column named as "All" shows the same variable calculated from the whole sample including workers with shorter tenure lengths.

In 2016, the difference between the wages of LT workers and those of others shrank to 18 percent and stabilized around 20 percent over the 2016-2020 period. This narrowing of the wage gap is mainly due to the 23 percent increase in the median wage of the entire sample. In particular, we observe an upward shift in the median wage of all workers in 2016, which is likely related to the 30 percent increase in the minimum wage in January 2016 (Table 3.5). The minimum wage policy has a significant impact on the Turkish labor market due to the high share of workers earning close to the minimum wage. According to the 2017 LFS survey, 42.8 percent of wage and salary workers earn at or below the minimum wage in Türkiye (CBRT, 2021). This ratio is 72 percent in the accommodation and food beverage services. The median wage of all workers in our sample increased by 23 percent in 2016 while the increases of long-tenured workers seem to lag behind. This is because a larger share of workers in our sample earn around minimum wage and the official 30 percent increase in the minimum wage pushed up the median of the entire sample. On the contrary, long-tenured workers who earned more than others may not have received a wage increase as high as 30 percent in 2016. This may have led to a reduction in the wage gap between long-tenured workers and others in the post-crisis period. In the literature, the minimum wage increases are found to compress the wage distribution. What we observe in the data is also consistent with this argument.

Our main group of interest is the LT sample of workers who have at least nine quarters of job tenure in their same job in 2015, when the shock happened. There are 70,103 LT workers (with 2,352,300 observations) in our sample of tourism establishments. 20,049 of them are women. The mean woman ratio for LT workers is 0.29 in 2015, slightly higher than the whole sample average of 0.23 (Table 3.6). LT workers are older such that in 2015 the average age of LT group (37.1) is higher than the whole sample average of 33.3. 59 percent of LT workers are in the age range 35-54 in 2015. 42 percent of SF3 workers have age 35-44 while this ratio is only 24.1 among all workers. The ratios of workers at age 65+ are 0.1 percent among SF3 groups similar to the 0.2 percent share in all sample. After the crisis, we observe that the mean age of the long-tenured workers group increased gradually from an average of 37.1 in 2015 to 40.1 in 2019.



This increase in average age may be due to the fact that most of the LT workers, that became non-employed (either because of being unemployed, getting retired, moving abroad or due to shifting to informal jobs or to public or financial sectors) after the crisis, had age lower than the group's average. Drop of these young workers from the sample may have increased the mean age. This observation is consistent with the findings of Farber (2017) who concludes that job loss rates are strongly negatively correlated with workers' ages.

The mean number of days worked is 28.8 for LT workers in 2012-2019 period which is higher than the sample average of 25.2. This is not surprising since the long-tenured workers are more experienced workers who work for at least 3 years and hence they are more likely to work full-time. Length of days worked shorten in 2020, which is related to the policy measures during the pandemic.

Table 3.6 Long-tenured Workers in the Tourism Sector

	Number of Workers	Days Worked	Age	Age in 2015	Woman Share	Real Daily Wage	Nom. Daily wage
03.12	56,758	28.4	34.7	37.7	0.3	2.9	3.6
06.12	61,554	29.1	34.5	37.5	0.3	3.0	3.7
09.12	62,787	29.2	34.4	37.4	0.3	3.0	3.8
12.12	60,517	28.4	34.5	37.5	0.3	3.0	3.8
03.13	64,042	28.6	35.4	37.4	0.3	3.0	3.8
06.13	67,998	28.9	35.2	37.2	0.3	3.1	3.9
09.13	69,645	29.4	35.1	37.1	0.3	3.1	3.9
12.13	68,275	28.7	35.1	37.1	0.3	3.1	3.9
03.14	69,477	29.1	36.1	37.1	0.3	3.0	3.9
06.14	69,886	29.5	36.1	37.1	0.3	3.1	4.0
09.14	69,734	29.5	36.1	37.1	0.3	3.2	4.0
12.14	69,230	28.9	36.1	37.1	0.3	3.1	4.1
03.15	70,103	29.1	37.1	37.1	0.3	3.1	4.0
06.15	70,103	29.5	37.1	37.1	0.3	3.2	4.1
09.15	70,103	29.5	37.1	37.1	0.3	3.3	4.3
12.15	70,103	28.2	37.1	37.1	0.3	3.2	4.2

Table 3.6 Long-tenured Workers in the Tourism Sector (continued)

03.16	65,808	28.3	38.0	37.0	0.3	3.2	4.2
06.16	64,266	28.7	38.0	37.0	0.3	3.2	4.2
09.16	61,583	28.9	38.0	37.0	0.3	3.3	4.3
12.16	57,080	28.0	38.0	37.0	0.3	3.2	4.2
03.17	57,148	28.2	39.0	37.0	0.3	3.1	4.2
06.17	59,334	28.9	38.9	37.0	0.3	3.3	4.4
09.17	59,182	29.0	38.9	36.9	0.3	3.3	4.5
12.17	55,053	28.3	38.9	36.9	0.3	3.2	4.4
03.18	56,278	28.3	39.8	36.9	0.3	3.2	4.4
06.18	57,395	28.9	39.8	36.8	0.3	3.3	4.6
09.18	56,846	28.9	39.8	36.8	0.3	3.2	4.5
12.18	53,188	28.4	39.7	36.7	0.3	3.2	4.5
03.19	49,910	28.5	40.2	36.2	0.3	3.2	4.6
06.19	50,785	29.0	40.1	36.1	0.3	3.4	4.8
09.19	50,441	29.0	40.0	36.0	0.3	3.3	4.8
12.19	47,361	28.4	39.9	35.9	0.3	3.3	4.8

Notes: Long-tenured workers have worked for at least 9 quarters at the same establishment in the period 2013-2015. The columns show the followings: (1) Total number of employees (2) Average number of days worked (3) Age (4) Age in 2015 when the shock happened. (5) Mean woman ratio among workers (6) and (7) median log-transformed real and nominal daily wages.

In 2020, several measures were taken to limit human mobility and to prevent the spread of COVID-19. These measures harmed the service sector especially transportation, accommodation and restaurants. To balance the adverse effects on employment, Türkiye implemented short-term working allowance in 2020. But unfortunately, this policy was not applied in 2016.

Ministry of Labor and Social Security defines the short-term working allowance as “an application that provides income support to employees working in workplaces where the weekly working time is reduced temporarily by at least 1/3 due to a general financial, sector-based or regional crisis or compelling reasons or whose activities are partly or completely ceased for at least four weeks”. The shortening of working day in 2020 implies that workers in the tourism sector benefited from this policy.

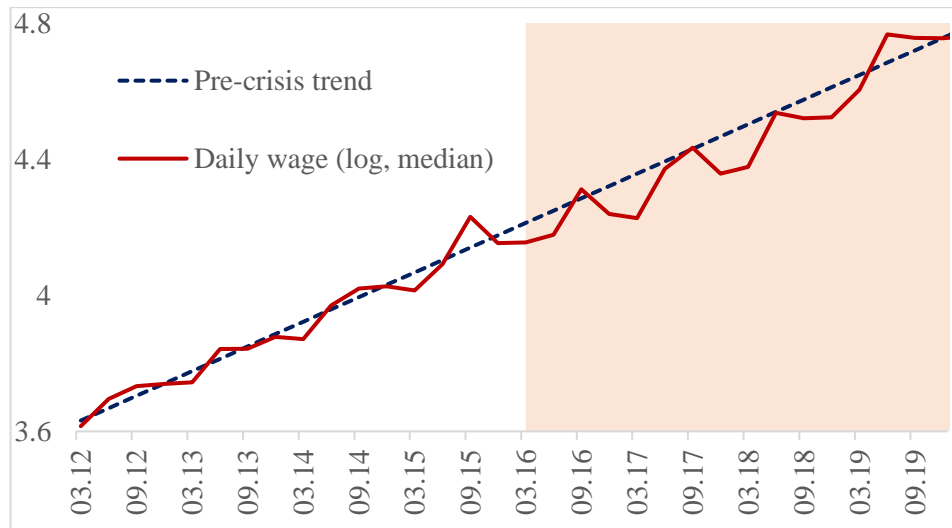


Figure 3.7 Nominal Daily Wages of Long-tenured Workers in Tourism Sector (Log-transformed, median)

LT workers earn higher than whole sample averages both before and after 2015. But, we observe that the rate of increase in nominal wages slows down after the shock, compared to the pre-crisis period. In the period 2016-2019, LT group’s wages hover below the levels implied by pre-2016 trend. Nominal wages could catch up the pre-crisis trend only in 2019, 4 years after the shock (Figure 3.7). This observation is consistent with the findings in the literature. The findings agree that displaced workers suffer large and persistent earnings losses apparent up to many years after their initial separations, ranging from 4 years (Moore et al., 2019) to six years (JLS 1993).

According to our data, there are 1,173,158 unique workers active in the tourism sector in the period 2013-2015. Out of these, only 8.6 percent of them are long-tenured such that there exist 70,103 unique LT workers (with 2,352,300 observations for 2012-2021). Hence, the majority of the workers are either seasonal, or change job frequently. Out of the 70,103 SF3 workers, 67,490; 61,081 and 51,930 of them are active in the labor market in 2016, 2017-2018 and 2019-2021, respectively<sup>9</sup>. The tables 3.7-3.8 compare the number of observations for LT workers for different time periods in terms of active employment durations.

<sup>9</sup> The increase in 2019-2021 could be related to the retired SF3 workers. In the data, we cannot differentiate the reason of leaving the market.

Table 3.7 Number of Observations in 2017-2018 (Thousand)

		Quarters of Active employment in 2017-2018								
		0	1	2	3	4	5	6	7	8
2016	0	15.4	2.2	1.8	2.6	3.3	3.1	3.8	4.7	7.4
	1	16.7	2.9	2.9	3.6	4.6	5.3	6.5	7.6	15.1
	2	22.3	3.6	4.2	5.4	8.9	11.2	14.9	19.2	25.5
	3	19.1	4.3	7.5	8.3	14.6	21.1	32.7	38.8	58.2
	4	17.1	16.2	20.9	32.2	46.6	67.6	81.6	135.0	1505.7

Notes: The numbers in the first column ranging from 0 to 4 indicate the number of quarters in which a worker is active in 2016 while the numbers [0-8] in the first row are the employment duration in 2017-2018. For example, 3579 of the observations worked for 2 quarters in 2016 and 1 quarter in 2017-18.

1,505,667 (64.1 percent) of the total LT worker observations (2,352,300) have worked full-time (i.e 12 quarters) in 2016-2018. Out of 44,419 observations who were fully inactive in 2016 (with emp16=0), only 17% (7,377) had full employment (emp1718=8) in the period 2017-2018, while this ratio is 28.9% (12842/44419) for 2019-2020 period (Table 3.7). On the other hand, 34.8 percent (15473) of observations with zero employment in 2016 (44419) were associated with non-employment in 2017-2018 as well. And out of 90,720 observations with zero employment in 2017-2018, 77.9 percent (70,683) of them were also non-employed in 2019-2020.

One trend stands out from these tables. If a worker loses job in 2016, the first year of the crisis, s/he is more likely to be non-employed in 2017-onwards. On the contrary, keeping the job in 2016 increases the probability of being employed in the following years. For example, among the 1,922,891 observations with full-employment (emp16=4) in 2016, 78.3 percent (1,505,667) and 66.2 percent (1,272,038) are also fully employed in 2017-2018 (emp1718=8) and in 2019-2020 (emp1920=8), respectively (Table 3.8). Hence if a worker manages keeping her job in the first year of the crisis, s/he is more likely to be employed thereafter. On the contrary, if a worker was fully non-employed in 2016, it is less likely that s/he returned to full employment in the following years.

Table 3.8. Number of Observations in 2019-2020 (Thousand)

		Quarters of Active employment in 2019-2020								
		0	1	2	3	4	5	6	7	8
2016	0	17.9	1.4	1.5	1.5	2.3	2.1	2.1	2.6	12.8
	1	20.3	2.0	2.8	2.3	4.4	3.3	3.4	4.8	21.9
	2	29.4	2.8	3.0	4.5	7.2	7.3	7.3	8.2	45.5
	3	36.4	4.0	5.3	7.0	12.4	11.9	16.7	20.0	91.0
	4	177.2	31.2	34.0	46.0	91.8	72.8	81.8	116.0	1272.0

Notes: The numbers in the first column ranging from 0 to 4 indicate the number of quarters in which a worker is active in 2016 while the numbers [0-8] in the first row are the employment duration in 2019-2020. For example, 4047 of the observations worked for 3 quarters in 2016 and 1 quarter in 2019-20.

The duration of nonemployment is proved to be important in explaining the wage losses of displaced workers. Fallick, et al. (2021) argue that the duration of time spent in nonemployment prior to finding a new job is strongly related to the magnitude and persistence of earnings losses such that the losses increase with the nonemployment duration. To explain the positive relation between earning losses and the non-employment Fallick, et al. (2021) propose that non-employment leads to the depreciation of human capital, constitutes a bad signal to potential employers and leads workers to move down the job ladder. Moreover, they argue that the differences in nonemployment duration may reflect some unobserved heterogeneity across workers that is correlated with earnings, such as degree of labor market attachment or other economic circumstances.

These factors also explain what we observe in the data: the longer the nonemployment duration is, the lower the chance of being re-employed in the following quarters. For instance, the number of workers with full employment in the period 2017-2018 ( $emp_{1718=8}$ ) decrease with the length of nonemployment in 2016 (Table 3.7) such that 57.2 percent of those who spent 4 quarters in nonemployment in 2016 remain non-employed for at least half of 2017-2018 ( $emp_{1718 \leq 4}$ ).

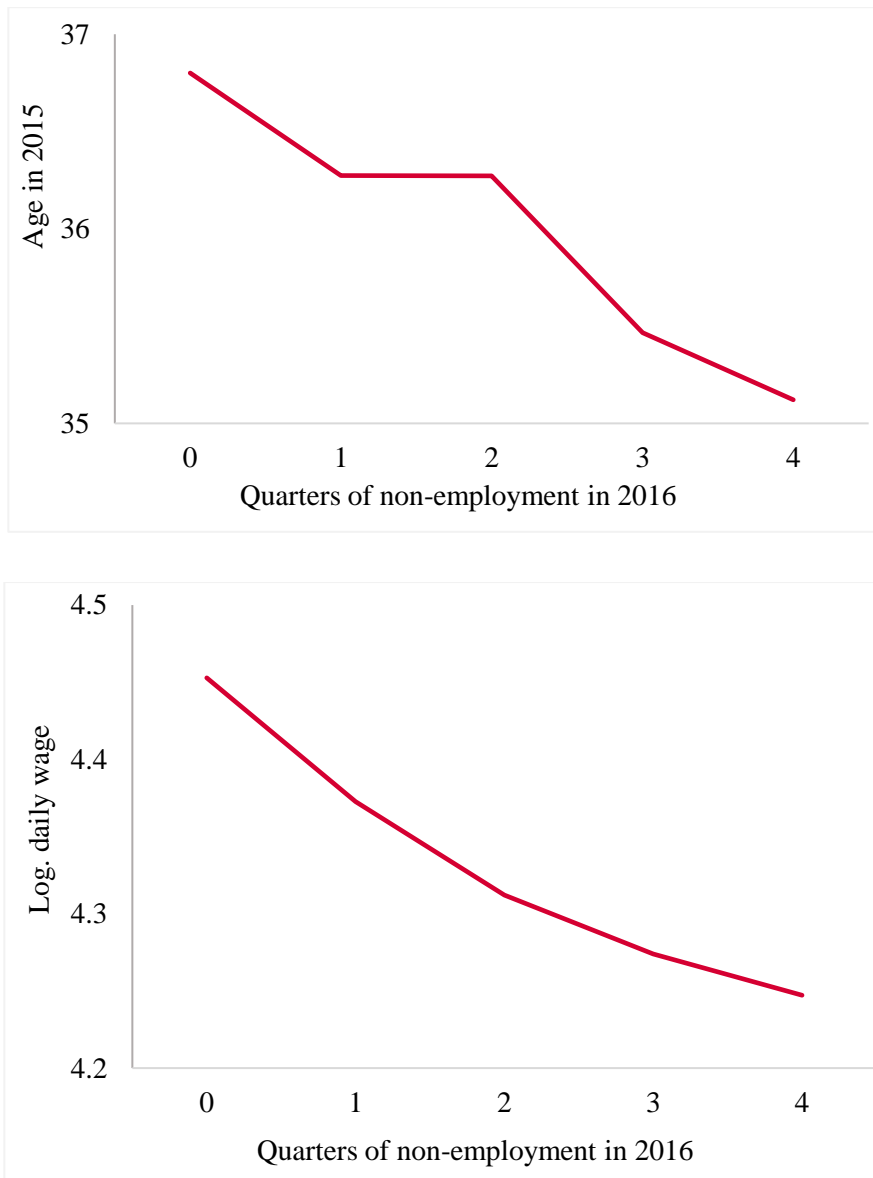


Figure 3.8 Age and Nominal Daily Wage by Nonemployment Duration in 2016

Figure 3.8 plots the age of workers in 2015 and their nonemployment duration in 2016. The negative slope hints that the younger a LT worker is, the more likely s/he is to become non-employed in 2016 such that the mean age of workers with 4 quarters of nonemployment in 2016 is lower than that of workers with full employment in 2016. Also consistent with the literature, there seems to be a negative relation between wages and nonemployment duration. 2017-2018 average wages of workers who are non-employed for 3 quarters in 2016 is 18 percent less than those who were fully employed in 2016.

Supporting the arguments of Fallick et al. (2021), workers in our sample who stay in nonemployment seem to have lower wages. Figure 3.9 shows the differences between average nominal wage of each group (in 2017-2018) with different non-employment duration (for each ue1718 ranging from 1 to 7) and that of workers who were continuously employed in 2017-2018 (ue1718=0). On average, a worker who was non-employed for 4 quarters in 2017-2018 earn 20 percent less than a worker who was employed for 8 quarters, this difference is 16 percent if the nonemployment duration is 3 quarters (Figure 3.9).

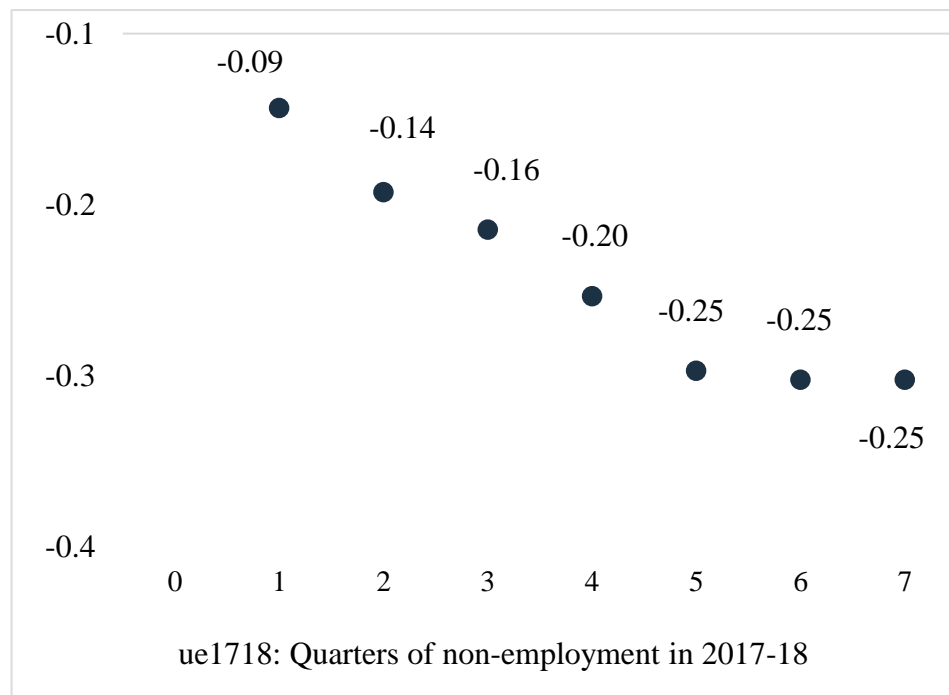


Figure 3.9 Nonemployment Duration and Relative Nominal Wages in 2017-2018

More than half of the LT workers are registered at workplaces in Antalya and İstanbul (Figure 3.10). Since Antalya is the city mostly visited by Russian tourists, our sample of long-tenured workers seem to be a good candidate to analyze the impact of the 2015 shock. In our DiD regressions, we use the province information for identification. Similar to the previous chapter, we use the Russian tourist intensity of each province in 2015 measured by the number of Russian tourists to the size of the tourism sector. This way we classify workers in tourism firms located in provinces Artvin, Kırklareli, Antalya, Muğla, İstanbul, Edirne and Ardahan as our treated group.

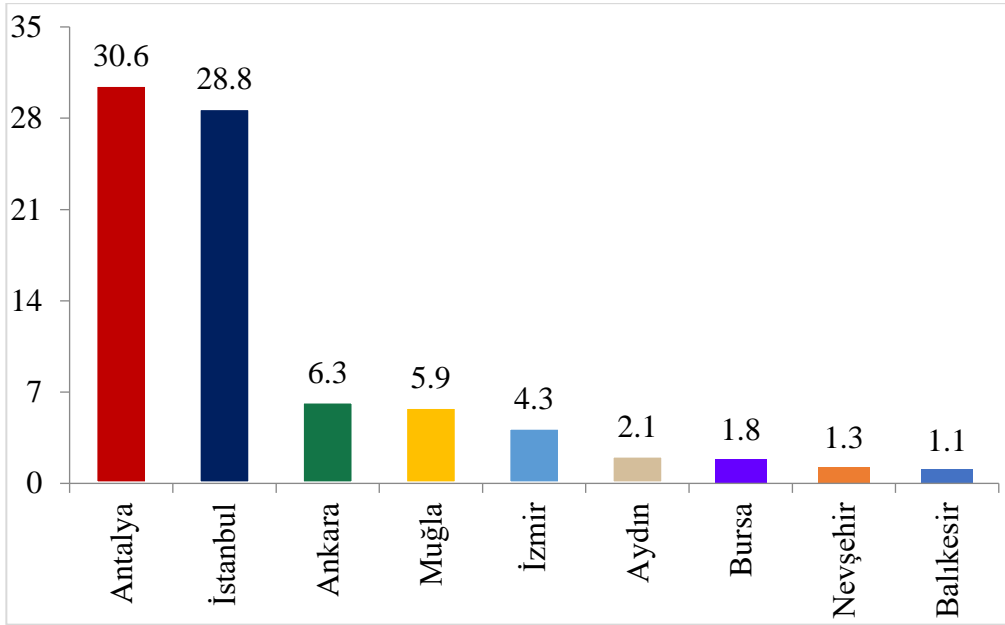
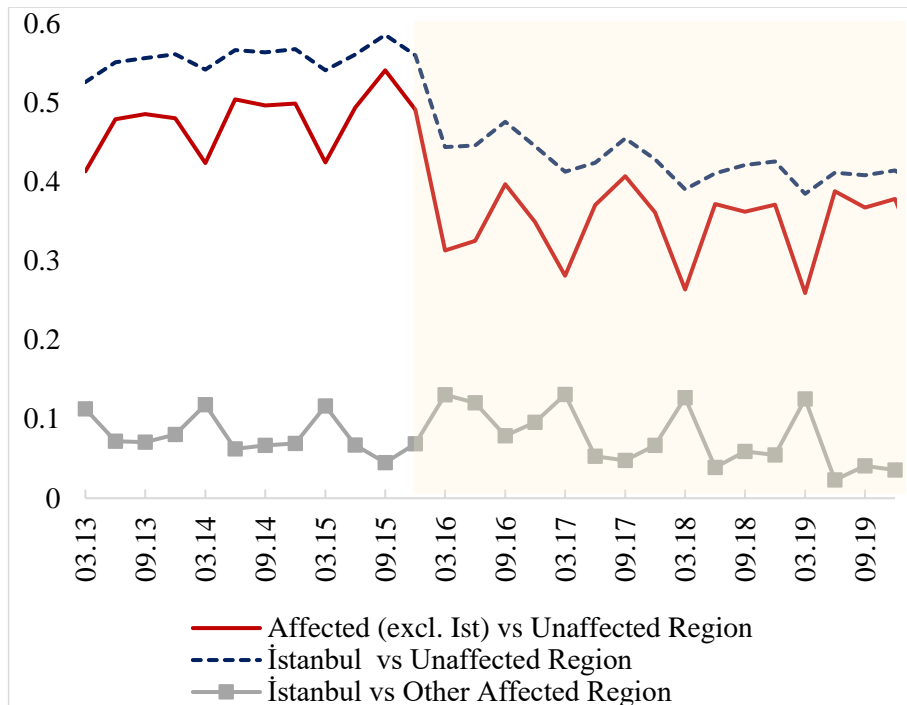


Figure 3.10 Regional Distribution of Long-tenured Workers (% Share)

İstanbul is an important tourist attraction center of Türkiye. In 2015, the number of foreign visitors in İstanbul was 12.4 million while it was 10.8 million for Antalya. The tourism dynamics in these two provinces may differ because the tourism in İstanbul is not restricted to summer activities as it is in Antalya and therefore seasonality might be lower in İstanbul. Also, İstanbul is a crowded province and continues to get immigration from other regions of Türkiye which may lead the turnover rate of workers to be higher. To address such issues, we compare full-tenure workers (who worked for 12 quarters in 2013-2015) in İstanbul and other treated regions.

We divide affected region into two, İstanbul and others (Artvin, Kırklareli, Antalya, Muğla, Edirne and Ardahan). Figure 3.11 presents a comparison of nominal daily wages (of long-tenured workers in the tourism sector who worked for 12 quarters in 2013-2015) by province of employment. LT workers in affected regions earn higher than the rest of the country as implied by positive wage differences. However, starting from 2016, we observe a worsening in wages of LT workers in affected region relative to those in unaffected region. The decrease in the differential wages in İstanbul is smaller than other affected region. In 2015, LT workers in İstanbul earned 7 percent higher than in other affected region. This difference increased to 11 percent in 2016.





Notes: “Other Affected region” is composed of Artvin, Kırklareli, Antalya, Muğla, Edirne and Ardahan. Unaffected region are the provinces except “other affected region” and İstanbul. X vs Y means log-transformed daily wage of Y subtracted from that of X..

Figure 3.11 Comparison of Nominal Daily Wages Among Provinces

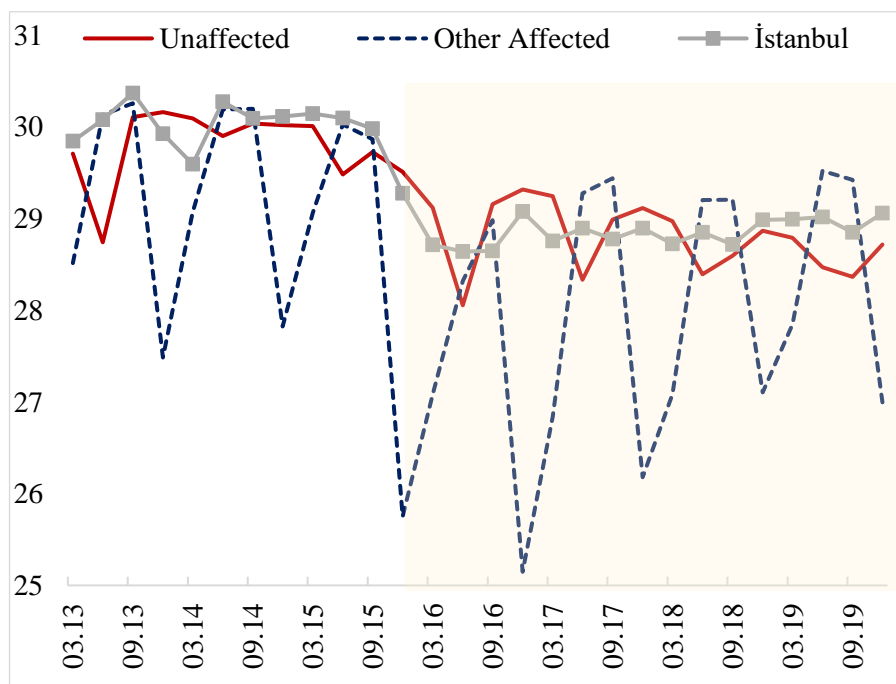
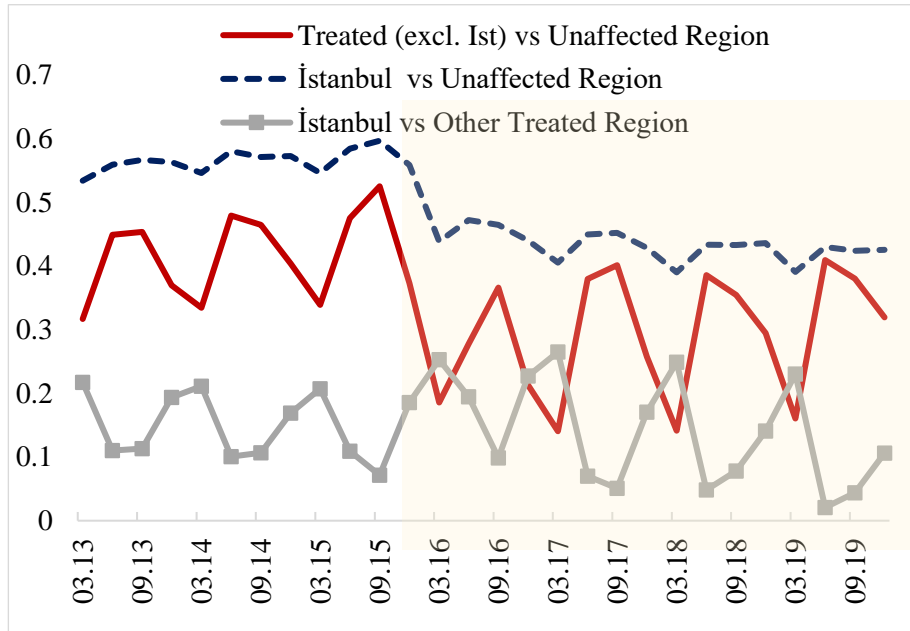


Figure 3.12 Days Worked Among Affected and Unaffected Provinces

When we compare the days worked among three regions, we see that seasonality is higher in other affected regions. This group includes Antalya and Muğla where the tourism activities are mostly restricted to summer and the days worked increase in second and third quarters in this region. On the contrary, days worked is more stable in İstanbul and unaffected region. The days worked shortened after 2015 for employees in the affected provinces. In other affected region, average days worked in 2016 was 1.6 days lower than 2013-2015 average. This difference was 1.2 days for İstanbul. Combining 3.11 and 3.12, it seems that after the political shock LT workers in other affected provinces suffered more than İstanbul in terms of worsening in wages. This is also apparent in Figure 3.13. In 2015, monthly wage in İstanbul was 14.3 percent higher than other affected provinces. This difference increased by 5 percent in 2016. Figures 3.11-3.13 show that relative earning loss in 2016 was higher in affected region except İstanbul. To understand whether this was related to hoarding motive, we compare the rates of becoming non-employed among three groups. We construct an indicator “state” variable that takes value 1 if the worker is employed and 0 for the non-employed.



Notes: “Other Affected region” is composed of Artvin, Kırklareli, Antalya, Muğla, Edirne and Ardahan. Unaffected region are the provinces except “other affected region” and İstanbul. X vs Y means log-transformed monthly wage of Y subtracted from that of X.

Figure 3.13 Difference in Nominal Monthly Wage between Provinces

Figure 3.14 compares the difference of state variable over three groups. We are comparing LT workers and thus the state variable was 1 for all three groups before 2016. If the difference (between group X and Y) is positive after 2015, it means the share of workers with state=1 is higher (than state=0 workers) and more workers kept their job (in group X). In both affected groups, the share of LT workers who continued to be actively employed after the political shock is higher compared to unaffected regions. The difference between İstanbul and other affected regions was negative implying that share of LT workers who became non-employed after the political shock was higher in İstanbul compared to other affected region. Together with the wage trajectories, these provide evidence for hoarding behavior among firms in other affected provinces. An employer in Antalya is more likely to keep its worker by offering lower wages or shorter working hours. On the contrary, an employer in İstanbul is more likely to decrease employment when faced with a negative shock.

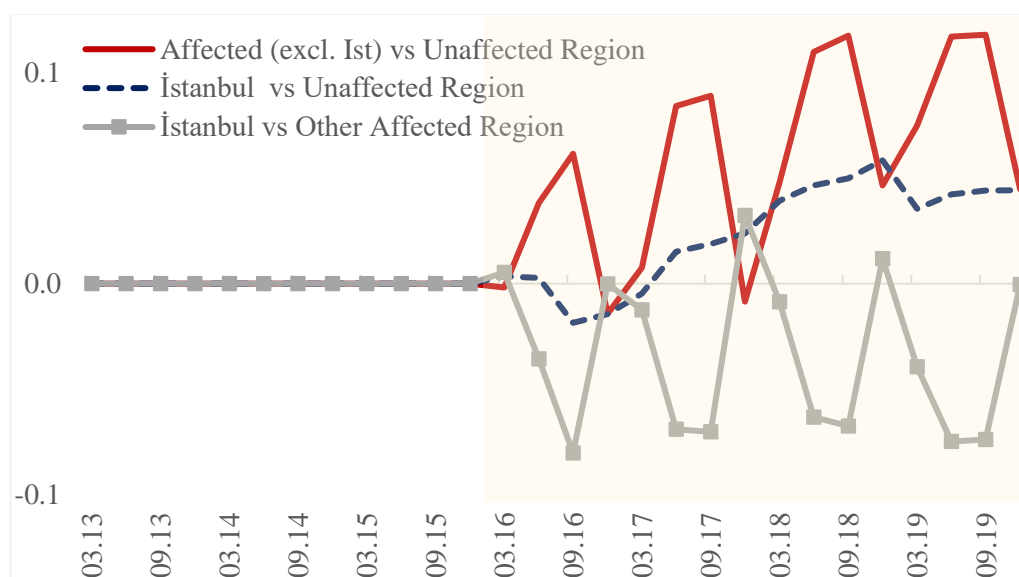


Figure 3.14 Difference in Rates of Being Employed Among Provinces

Figure 3.15 compares the frequency of firm and sector change among LT workers in different regions. If a LT worker moved to an establishment different from its pre-crisis (2013-2015) employer, then the changing firm dummy variable takes value 1. Same logic applies for changing sector dummy. We see that in İstanbul workers are more likely to change firm and sector.

The information in Figures 3.11-3.15 show that the LT workers in İstanbul and other affected region display different patterns. After 2015 shock, losing job, changing firm and sector were more common among LT workers in İstanbul compared to those in Antalya or Muğla. On the other hand, relative earnings of LT workers in other affected provinces worsened compared to İstanbul. Firms in other affected region seem to have followed a hoarding strategy and kept their workers by offering lower wage increases or shortening days worked.

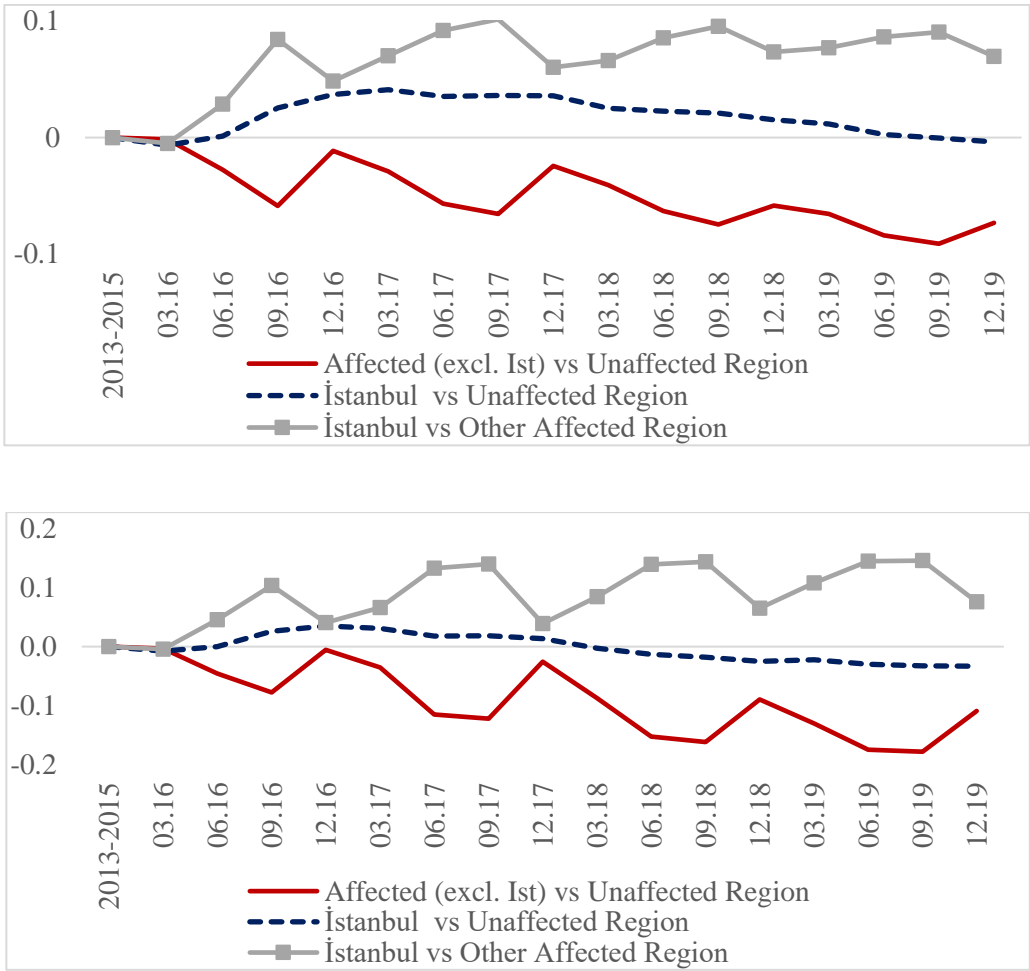
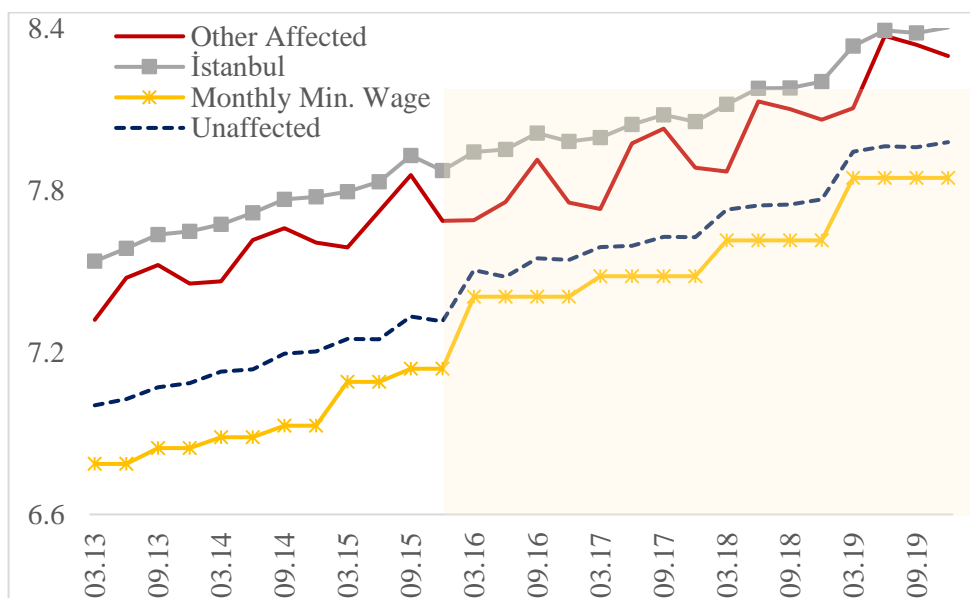


Figure 3.15 Difference in Rates of Changing Firm and Sector Among Provinces

Figure 3.16 shows the monthly nominal wages in comparison with minimum wages. In 2016 the minimum wage was increased by 30 percent. Despite this increase, we see that wages in affected regions did not increase as much as minimum wage. On the contrary, in unaffected region the wages followed minimum wage more closely.

Based on the Russian tourist intensity ratio, we initially form the treated group as workers in the tourism sector in affected regions. However, given the different patterns between İstanbul and other affected region in terms of employment and earning trajectories, we also repeat the DiD estimations by excluding İstanbul from the treated group.



Notes: “Other Affected region” is composed of Artvin, Kırklareli, Antalya, Muğla, Edirne and Ardahan. Levels of log-transformed monthly nominal wages are displayed.

Figure 3.16 Nominal Monthly Wage Levels

### 3.3.2. Classifying Long-tenured Workers

We classify long-tenured (LT) workers in the tourism sector according to their post-crisis employment status in 2016-2018 period. This would enable us to understand how these workers responded to the crisis and how they differed in terms of staying at pre-crisis job or changing job/sector. We would also observe how these movements affected the post-crisis earning trajectories of these LT workers who were at similar conditions before the crisis. We create an indicator dummy named “status” to group LT workers. The status variable takes 8 different values: 10, 11, 12, 13, 20, 21, 22, 23. The first digit changes with the duration of non-employment in 2016. If the non-employed period in 2016 is zero the first digit is 1 (status=1x) and 2 otherwise.

If a worker is assigned with a status value in range [10, 13] this indicates that this worker worked fully for 4 quarters in 2016; while values of [20, 23] are given to workers who had become non-employed for at least one quarter in 2016. The second digit of the status value differs according to employment status in the period 2017-2018. If the second digit is 0 (status=10 or 20) this means that worker worked less than 3 quarters in 2017-2018 and we treat her as non-employed in this period. Then we differentiate workers who worked for at least 3 quarters in 2017-2018 based on at which firm and sector they worked. If a worker did not change firm for more than half of her total employment in 2017-2018, the second digit is 1. The second digit is 2, if the worker moved to another firm in tourism sector and 3 if s/he changed sector. For example, if a worker had worked for  $x$  quarters in 2017-2018 (such that  $x \geq 3$ ) and she worked in her pre-crisis firm for less than  $x/2$  quarters but worked more than  $x/2$  quarters in the tourism sector then the assigned status value is either 12 or 22.

When, the status value ends with 3 meaning that worker worked for at least 3 quarters in 2017-2018 but for more than half of these quarters s/he worked in non-tourism firms. Table 3.9 documents this procedure in detail. After this classification, we see that the majority (77.4 percent) of 70,103 LT workers worked fully in 2016 and did not lose their job despite the end-2015 crisis. This is not surprising since our group is composed of workers working in the same establishment in the last three years before the crisis and firms have tendency to hoard the long-tenured workers during downturns.

Table 3.9 Grouping Long-tenured Workers

	2016	2017-2018			Number of workers	Share (%)
	Worked fully (4 quarters)	Non-employed (worked less than 3 quarters)	Same Est.	Same sector		
Status=10	Yes	Yes	-	-	2454	3.5
Status=11	Yes	No	Yes	Yes	41691	59.5
Status=12	Yes	No	No	Yes	6275	9.0
Status=13	Yes	No	No	No	3843	5.5
Status=20	No	Yes	-	-	5516	7.9
Status=21	No	No	Yes	Yes	2074	3.0
Status=22	No	No	No	Yes	4218	6.0
Status=23	No	No	No	No	4032	5.8
Total					70,103	100

76.8 percent of the 54,263 workers who remained employed in 2016 are “stayers” group with status=11 as they continued working at their pre-crisis establishment in 2017-2018. We see that establishment and sector shifts are not common among this subgroup (the LT workers with emp16=4) as well. After being fully active in 2016, 11.6 percent moved to another firm (status=12) and 7.1 percent changed sector (status=13). 3.5 percent of the LT workers lost job in 2017-2018 after having worked for 4 quarters in 2016.

Most of the long-tenured tourism workers who changed sector after the crisis (i.e those with status=13 and status=23) moved to service related activities. The top sectors these workers shifted to are as follows: “56. Food and beverage service activities”, “41. Construction of buildings”, “80. Security and investigation activities”, “81. Services to buildings and landscape activities”, “47. Retail trade, except of motor vehicles and motorcycles”, “49. Land transport and transport via pipelines”, “78. Employment activities”, “82. Office administrative, office support and other business support activities”.

On the other hand, 15,840 (22.6%) of the long-tenure workers became non-employed for at least one quarter in 2016 and their status value is in the range [20, 23]. 34.8 percent of these 15,840 workers remained non-employed (i.e. worked less than 3 quarters) in the following two years. 13.1 percent of these workers returned to their pre-crisis workplace (status=21); 26.6 percent became re-employed at a different tourism firm (status=22) and 25.5 percent shifted to non-tourism firms (status=23) in the period 2017-2018.

If a worker loses her job in 2016 (i.e. the workers who have status value 20-23), he/she is more likely to be non-employed (status=20) or move to non-tourism firms (status=23) in 2017-2018. As opposed to the high share of stayers (status=11) among the workers who were fully employed in 2016, returning back to pre-crisis employer in 2017-2018 after being non-employed in 2016 (status=21) is rare. The share of recalls is only 13.1 percent. In other words, if a firm fired a worker in the first year of the crisis then the tendency to reemploy that worker in the following two years is quite small.

Figure 3.17 shows the wage trajectories of the workers in each status groups relative to all LT workers. Workers in status\_12 group earn the highest wage both in pre- and post-shock period. This observation is consistent with job mobility literature which argues that job-to-job moves yield positive earnings for workers by leading them to sort into better matches (Topel and Ward 1992).

Status\_12 workers are long-tenured workers who remained employed in 2016 fully and at least for 3 quarters in 2017-2018. Hence most of the job changes in this group may be due to worker's individual decisions related to individual circumstances rather than the end-2015 shock. This may explain the smaller drop in the relative wage of this group in the post-crisis period. They used to earn 11 percent higher than SF3 averages in 2015. In 2016, the wage difference decreased by 2 percent and returned to pre-crisis levels in 2017.

The group whose wages worsened most was status\_22 group who changed firm in the period 2017-2018 after being non-employed in 2016. They had the second highest wage before 2015 but their wage worsened by 6 percentage points in 2016. Moreover, this decrease was not temporary such that this group's wage path shifted down permanently in 2016 and stabilized around a level below status\_11 group in the post-crisis period. Relative wages of those who kept their job in 2016 and worked in the same sector in the post-crisis period (i.e status\_11 and status\_12 groups) decreased by two percentage point in 2016. Relative position of status\_12 group turned back to pre-shock values immediately, while the decrease in stayers' relative wages persisted. The groups who became non-employed in 2017-2018 (status\_10 and status\_20) earned below the sample averages both in pre- and post-crisis periods. Relative wage of the sector changers (status\_13 and status\_23) did not change significantly.

Comparing the wage paths of workers who worked fully in 2016, the status groups [10, 13], within each other would give idea about the impact of changing firm/sector, staying at the pre-crisis job and becoming non-employed in the period 2017-2018. The difference between wage of status\_10 and that of other workers in status category [11, 13] increased and became more volatile in the post crisis period (Figure 3.13).



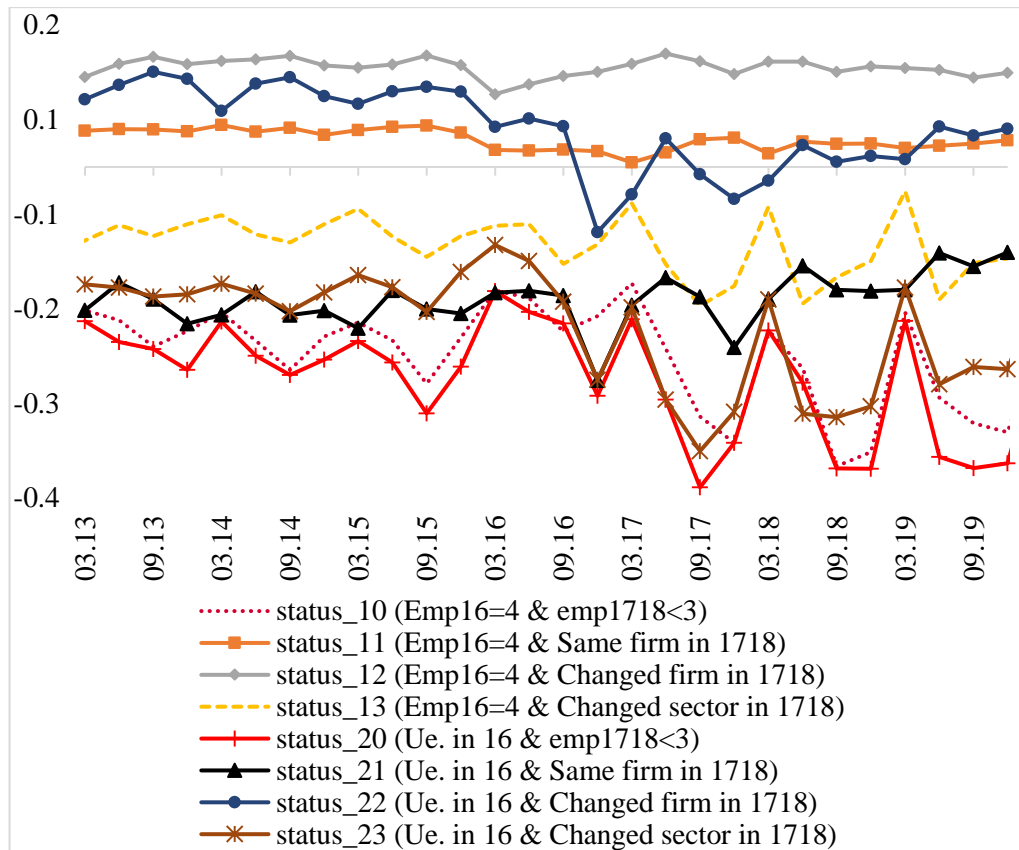


Figure 3.17 Wage of Subgroups of Long-tenured (LT) Workers relative to All LT

The increased volatility may be due to having a smaller number of workers in category status\_10 among those that work fully in 2016. The change in relative wage of status\_11 to status\_12 would proxy the impact of changing workplace. The status\_11 group's wage path is below that of status 12 group both in pre- and post-crisis period. The wage difference in 2017-18 increased by two percentage points (pp) compared to 2013-15 averages. This may reflect the fact that the long-tenured workers who change firm on average move to higher-paying jobs. The relative wage of status\_13 to status\_11 (status\_12) decreased slightly by 1 pp (2 pp) in 2017-18. These comparisons may imply that if worker did not initially lost job in 2016, changing sector did not worsen her wages sharply compared to peer-workers who remained at same industry. This is contrary to the findings in the literature that earnings losses are especially large for displaced workers who become re-employed in a different industry or sector (Schirle, 2009). Researchers have also found that those who switch industries following displacement have systematically larger earnings losses (Carrington 1993).

Our findings point to a smaller role of “industry specific human capital” which may be related to the fact that workers from tourism sector are more flexible and can adopt more easily in other service sectors after losing a high-tenure job. Of course, these are only observations from data which will be tested by the empirical analysis in Section 3.4. The adverse impact of changing sector is more prominent for the workers who became non-employed (for at least one quarter) in 2016. Especially wages of sector changers (status\_23) worsened significantly compared to those who returned to their pre-crisis employer (status\_21). Group of recalls’ (status\_21) wage relative to firm changers (status\_22) also improved in 2017-18 period (Figure 3.18).

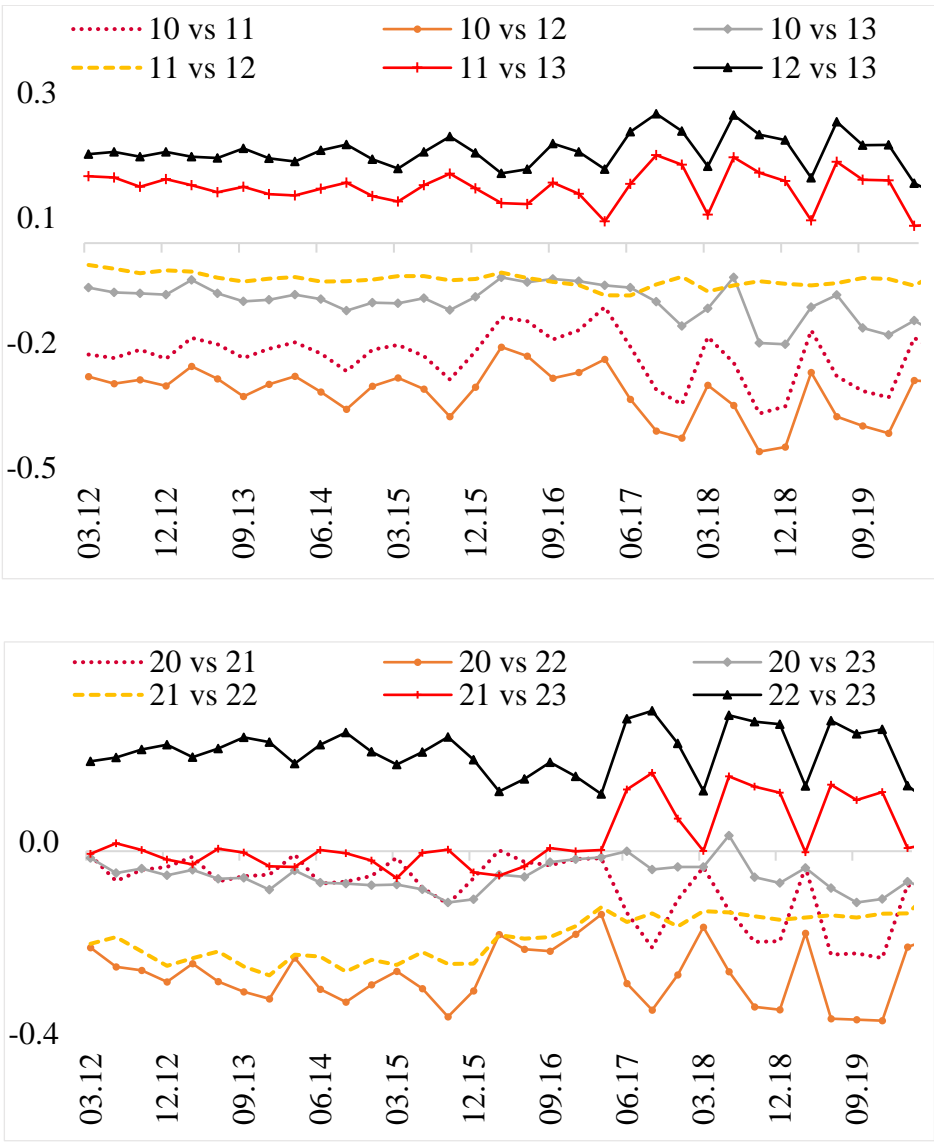


Figure 3.18 Wages by Status Group (Difference of log-transformed daily wages)

Figure 3.19 documents the impact of losing job in 2016 by comparing subgroups similar in terms of changing firm/sector. The status\_11 and status\_21 group of workers work in their pre-crisis establishment (where they have worked regularly more than 9 quarters in 2013-2015) after the crisis. The former are the “stayers” and the latter are “recalls”. Although still being lower than status\_11 group, the wage difference between stayers and recalls decreased after 2016 in favor of status\_21 group. Status\_12 (status\_13) and status\_22 (status\_23) are long tenure workers who changed firm (sector) in 2017-2018 but they differ in terms of their employment status in 2016. After the crisis, wages of status\_22 (status\_23) group worsened significantly relative to wages of status\_12 (status\_13) group (Figure 3.19). This movement implies that being unemployed in 2016 worsens the post-crisis wage path for workers changing firm or sector. These may imply that if a worker changes firm or sector in the post-crisis period after being non-employed (for at least one quarter) in 2016, they earn lower wages on average compared to their peer group who worked fully in 2016. As a caveat, we want to note that comparisons/comments made in this subsection are rough observations from the dataset and they will be tested empirically in the following section.

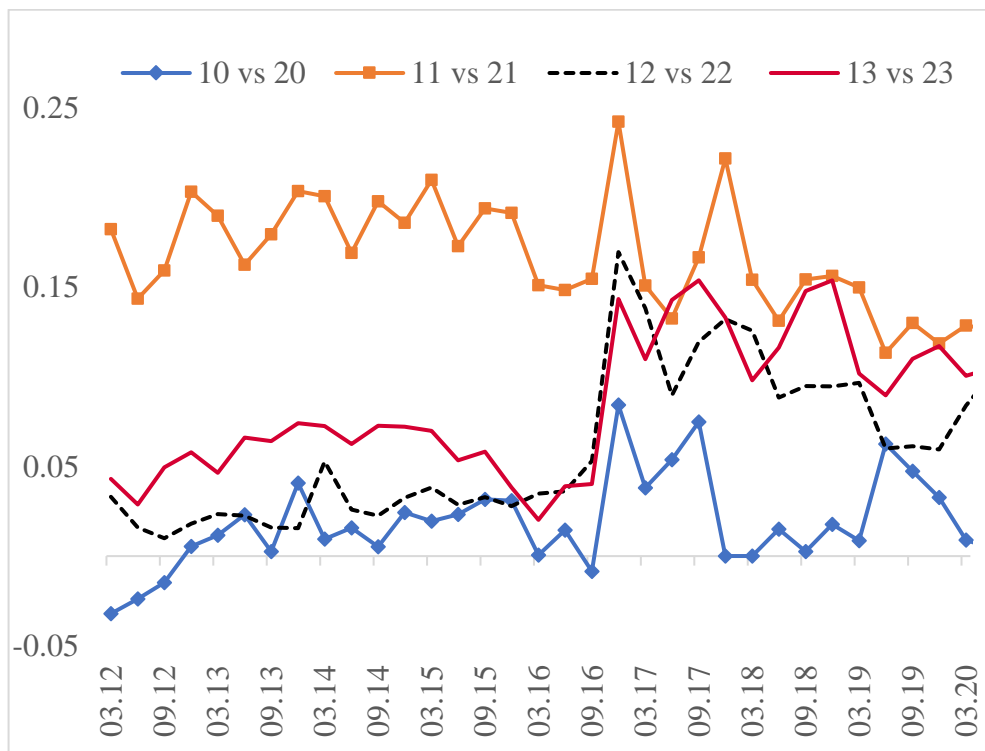


Figure 3.19 Wages across Similar Subgroups (Difference of log daily wages)

### 3.4. Empirical Framework

The empirical analysis in this chapter has two aims. First, we want to understand how the political conflict with Russia affected the long-tenured workers in the tourism sector compared to a control group of workers. For this purpose, we will use DiD estimations similar to Chapter 2. Our second purpose is to understand how the crisis affected the long-tenured workers in the tourism sector. We will analyze earning outcomes of these workers in the post-crisis period by individual level fixed effects regressions.

#### 3.4.1. Differential Impact on Tourism Workers

We have a difference-in-difference (DiD) specification formulated according to Wooldridge (2021). We estimate the differential casual impact of the shock on the treated group of workers' outcomes for each quarter in the period 2016-2019:

$$y_{ijrt} = \delta_i + \beta_t w_{i,t} * time_t + d_i * time + \theta X_{ij,2013} * time_t + \rho_t + \tau_{rt} + \epsilon_{ijrt} \quad (1)$$

$y_{ijrt}$  denotes the outcome of individual  $i$  working at firm  $j$  in province  $r$  at time  $t$ . As dependent variable we have daily and monthly wages and days worked.  $d_i$  is a dummy variable which is 1 for the treated group.  $w_{i,t}$  is the difference-in-differences term taking value 1 if the individual is in the treatment group ( $d_i=1$ ) and  $t \in [2016, 2019]$ . The term  $d_i*time$  is the linear trend difference included for controlling pre-shock trends.  $\delta_i$  stands for worker fixed effects,  $\tau_{rt}$  for time-province fixed effects and  $\rho_t$  controls for year-quarter time fixed effects.

$X_{ij,2013}$  is the time-invariant covariates for worker  $i$  which includes pre-shock employer's (establishment  $j$ ) age and size in addition to the total monthly wage payment of the establishment in 2013. The last one controls for the firm wage premiums. The key parameter of interest is  $\beta_t$ , which shows the differential effect of the political-shock on the labor outcome of the worker at time  $t$ . In this framework, 2013-2015 is the pre-shock period and 2016-2019 is the post-shock period.

The most important thing in formulating DiD set-up is the choice of treatment and control group. We base our identification strategy on the variation in Russian tourist intensity across 81-provinces of Türkiye. Russian tourist intensity (RTI) is the ratio of the number of Russian visitors in a province to the size (total number of employees) of tourism sector in that province in the period 2013-2015. The provinces with RTI value greater than 10 are classified as affected regions. These provinces are İstanbul, Antalya, Muğla, Artvin, Ardahan, Edirne and Kırklareli. Employees working in a tourism firm located in one of these provinces constitute our treatment group. Moreover, as a robustness check, we also define treatment group by excluding İstanbul from the affected region given the discussions in 3.3.1.

The control group of worker choice is more complicated. Using the information that the closest sector that resembles to tourism is “restaurants” and classification of the province based on RTI, we construct 4 control groups as follows: LT workers employed in (i) tourism firms in unaffected region (TO) (ii) restaurants in unaffected region (RO) (iii) tourism firms and restaurants in unaffected region (TORO) (iv) restaurants (R). Together with two different definitions for the treatment group, these give us 8 different set-ups to analyze.

One critical issue in the difference-in-differences analysis is the validation of the parallel-trend assumption. This assumption ensures that treatment and comparison groups’ untreated potential outcomes have similar trends. We want to have a set-up where the treated and control groups would be similar in the absence of treatment/shock so that the post-shock deviations can be attributed to the treatment/shock. For  $\beta$  in (1) to reflect the casual treatment effect, we need this assumption to be satisfied. There is an ongoing discussion in the literature over this assumption and the testing procedures, in particular. Traditionally, an interaction of time-trend with the treatment indicator is included in regressions and the significance of this variable’s coefficient is tested. If it is insignificant, this means there is no trend-difference between treated and control group and the parallel trend assumption holds. However, it is often difficult for researchers to be sure of the validity of this assumption in practice and there are problems with the testing procedures (Bilinski et al, 2019).

The test result depends on the functional form of the outcome variable and on the sample size (Roth et al, 2023). In studies with high number of observations, the coefficients of the trend term would eventually achieve statistical significance which would be interpreted as violation of the parallel trend assumption; even in case of too small violations that do not have practical importance (Bilinski and Hatfield, 2019). The literature agrees that one should keep in mind the drawbacks of parallel trend tests and always include a linear trend difference in DiD regressions.

We estimated equation (1) for log-transformed real daily and monthly wages and days worked by each individual worker. The test results fail to validate the parallel trend assumption even when some time-invariant covariates were included and different treatment and control groups were formed. Our sample size is big enough to suspect about Bilinski and Hartfeld (2019) argument on the power of tests for large sample sizes. When we compare LT workers in tourism firms in affected regions (TT in short) to all restaurants, the number of observations is 4,009,734. So the coefficients become significant with such large sample size. We constructed a matched sample of individuals to increase the pre-shock parallel trends. We use coarsened exact matching (CEM) method to construct the matched estimation sample.

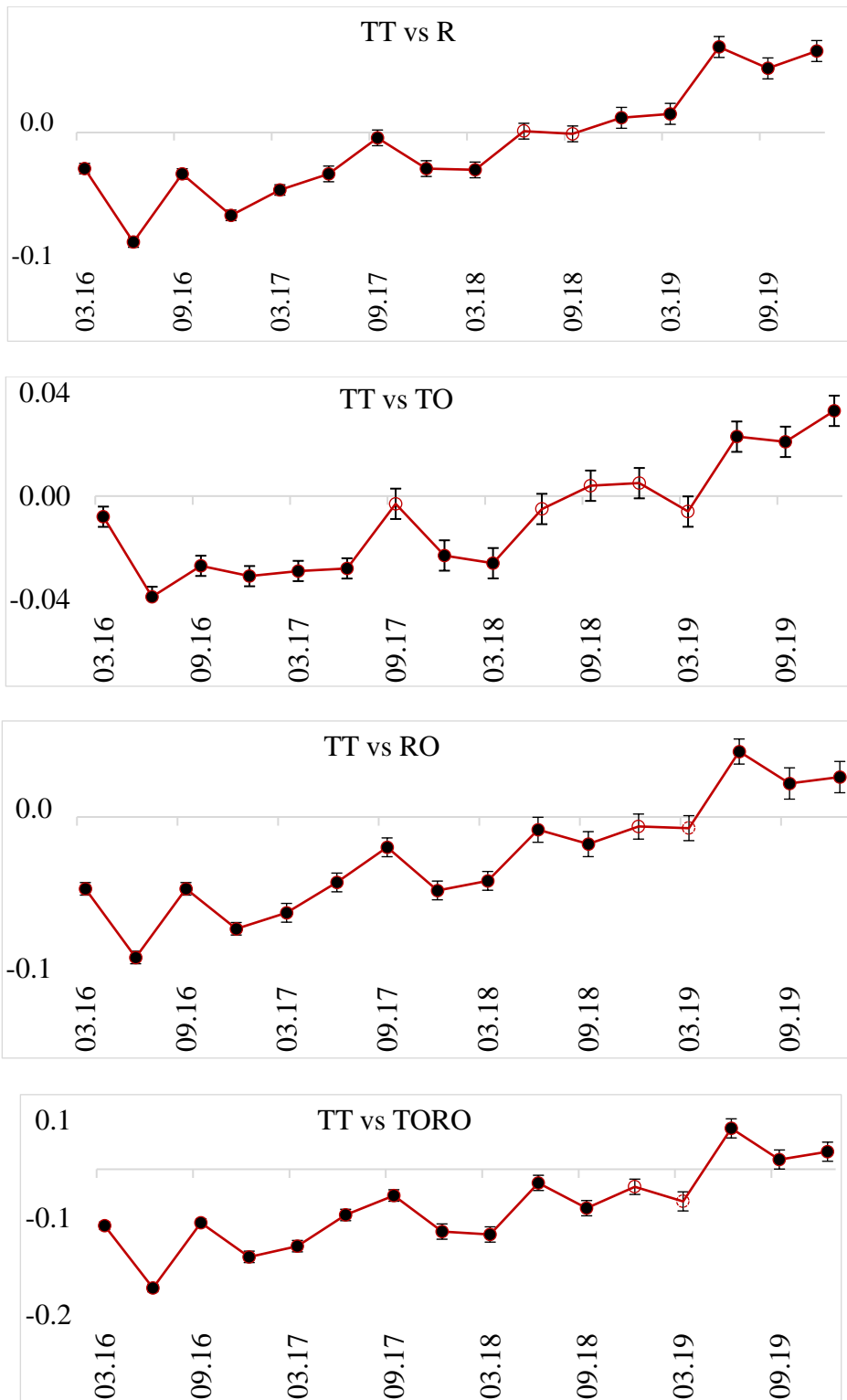
CEM is a method developed by Iacus et al. (2011) that minimizes imbalances in some user-determined observables between treated and control groups. We employed k-to-k CEM to match an individual in the treatment group with one in the control group whose gender, 2013 values of age, nominal daily wage in addition to the size and age of employing firm are similar to the treated individual. This sampling method led parallel trend tests to hold when the dependent variable is log-transformed days worked. But it still failed with some control group definitions when the dependent variable is log-transformed daily/monthly real wages. This violation is interpreted to be unimportant for the regression outcomes if the estimated coefficients for regressions with and without linear trend term are close (Bilinski and Hartfeld, 2019). Addition of the linear-trend term in the equations do not change the estimated coefficients significantly, the matching helped to overcome the failure of parallel-trend assumption.

We are interested in  $\beta_t$  coefficients in equation (1) which shows the differential impact of the political shock on the treated group of long-tenured workers. In all the regressions we have linear trend difference and pre-shock time-constant covariates. Our main treatment group is workers in tourism firms located in affected region (TT hereafter). We estimate four different equations with different control groups (Table 2.3). As a robustness, we also tried long-tenured workers in the tourism firms in “affected provinces other than İstanbul” as a second treatment group (TT2). The results are similar for each control group. Thus, we report the results for TT2 treatment group in the Appendix B and continue with the results for all treated tourism workers.

Figure 3.20 shows the estimated  $\beta$  coefficients for 2016q1-2019q4 period when the dependent variable is log-transformed real daily wage. The shock led to a worsening in the real daily wages of the treated group of long-tenure workers relative to those of all four control groups (TO, R, RO, TORO). The relative worsening was strongest in 2016 and decreased gradually but persisted up to the first half of 2018.

The differential adverse impact on wages was higher when the control group included food and beverage serving sectors compared to the case when the control group is long-tenure workers in tourism establishments in unaffected provinces. For instance, the wages of the treated group workers are 8 percent lower than the wages of workers in all restaurants in second quarter of 2016. The wages of long-tenure workers in tourism firms in affected provinces was lower by 4 percent than those of workers in other tourism firms (in unaffected region) in 2016q2.

When the comparison group is the long-tenure workers in tourism establishments and food and beverage serving establishments in the unaffected provinces (namely, TORO control group), the negative differential impact on the daily wages of the long-tenured workers in affected tourism establishments (TT) increase to 12 percent. Moreover, this negative impact persisted longer for this comparison group. The wages of the long-tenured workers in the treatment group (in affected provinces) were 6.7 percent lower than those of the long-tenured workers in the tourism establishments and in restaurants located in unaffected provinces (TORO).



Notes: The vertical bars illustrate the 95% confidence intervals. An empty marker show insignificance of the coefficient. TT is the treated group of workers in the tourism sector in affected region Control group of workers is chosen from tourism sector in unaffected region (TO), restaurants (R), restaurant in unaffected region (RO) and tourism firms and restaurants in unaffected region (TORO).

Figure 3.20 Real Daily Wage of LT Workers in Affected Tourism Firms

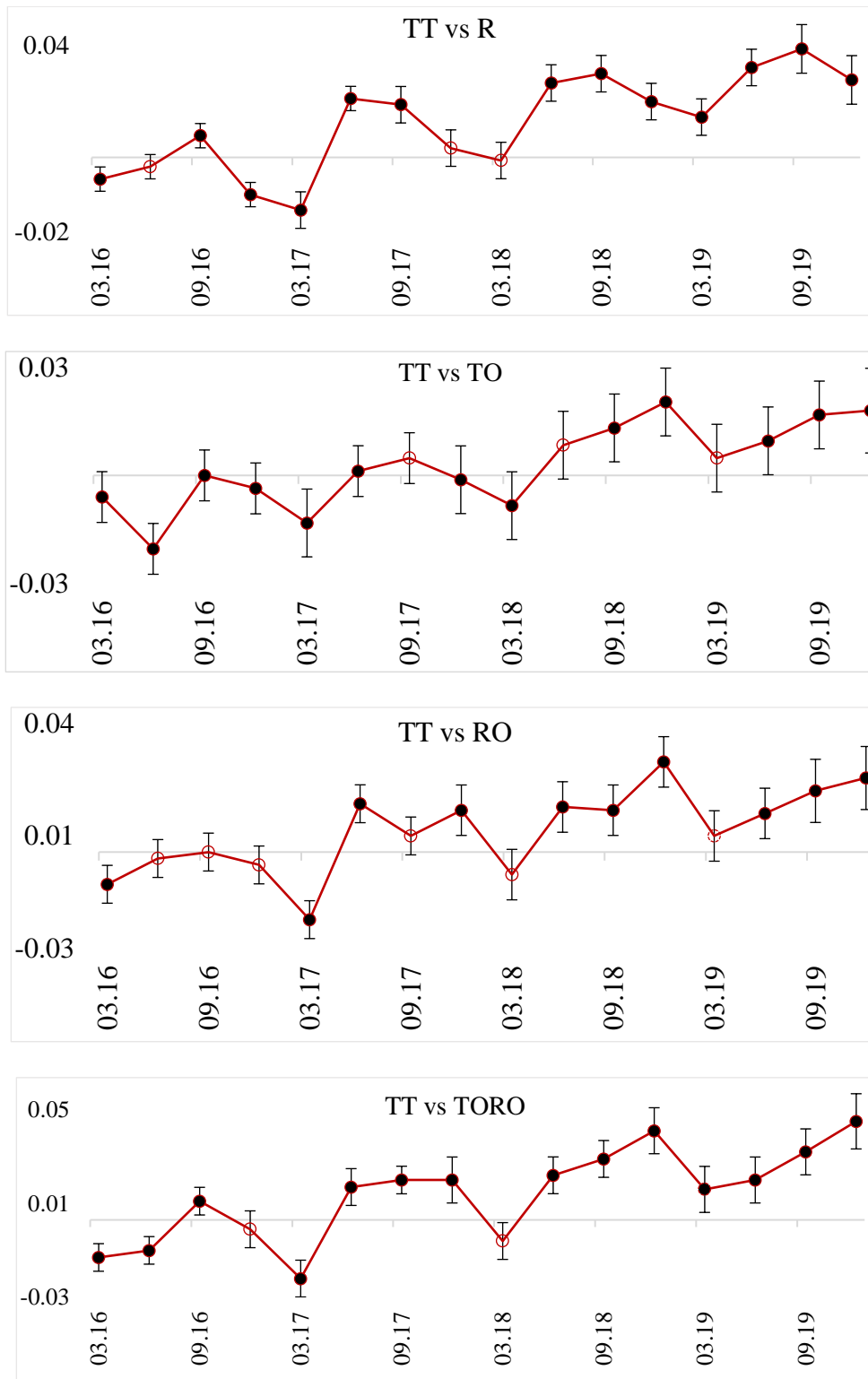


Compared to workers in all restaurants or restaurants in unaffected region, the results are similar. Compared to LT workers in restaurants (R and RO), daily wage of treated group of workers decreased by 8 percent initially. In 2017q2, the negative impact decreased to levels around -3 percent. The differential adverse impact (nearly 4 percent at most) was more limited relative to the LT workers in other tourism firms located in unaffected (TO) region. The worsening in real daily wage of the long-tenure workers in the treated tourism (TT) group was stronger relative to that of the long-tenure workers in restaurants (RO) and restaurants and tourism firms (TORO) in unaffected region. Initially the daily wage decreased by 12 percent and the impact was more persistent.

We observe a small (2 percent at most) and short-lived worsening in the days worked (Figure 3.21) of the treated group of workers. The detrimental impact on the treated (TT) group's length of days worked disappeared by 2017, compared to all of the control groups. We observe the differential impact becomes more negative in 1<sup>st</sup> and 4<sup>th</sup> quarters because of the seasonality in tourism sector.

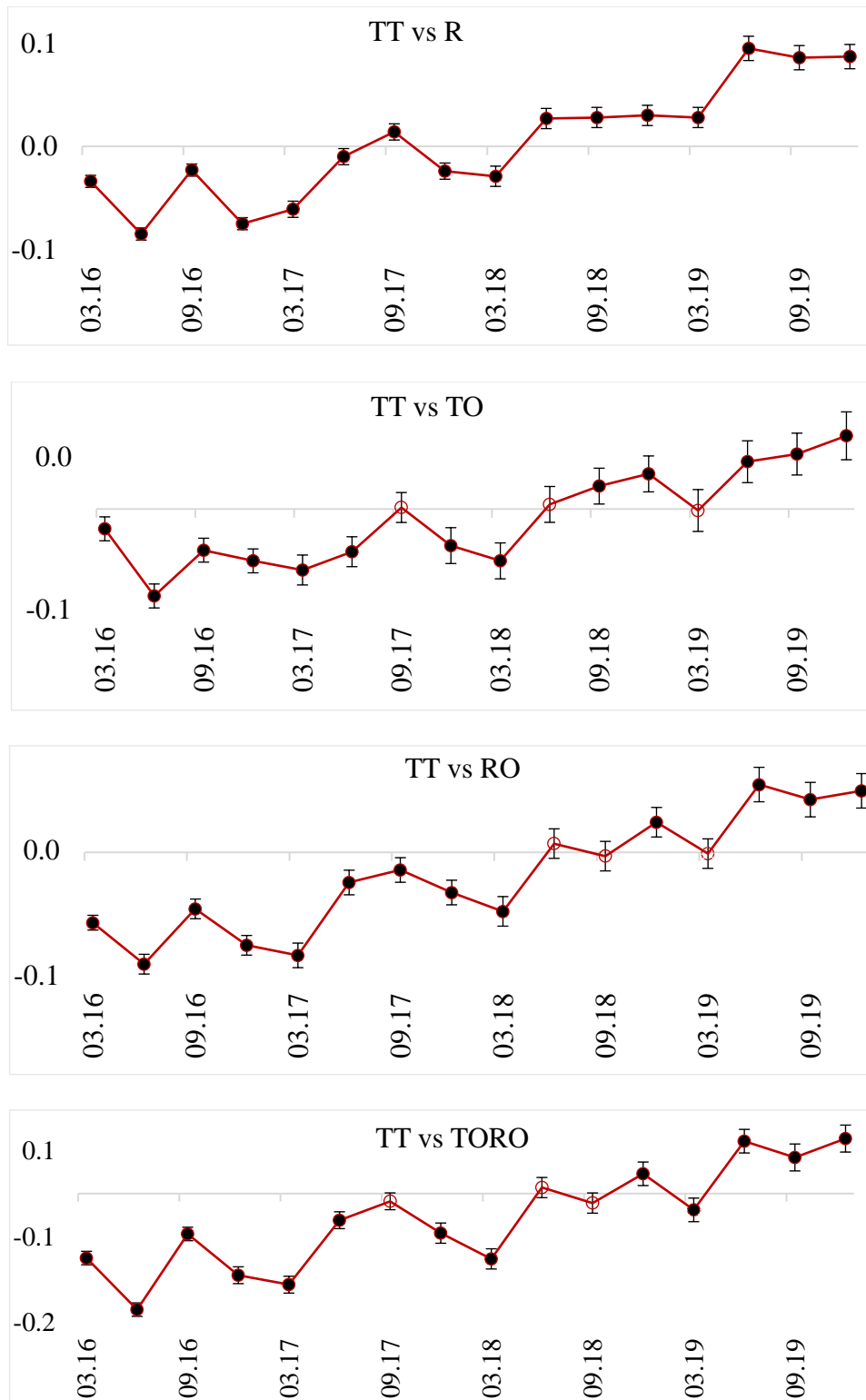
The movement in monthly wages reflect the changes in daily wages and the length of days worked. Since the impact on working length is small and short-lived, the dynamics of daily and monthly real wages resemble. The shock has a detrimental negative impact on real monthly earnings of the LT workers in affected tourism firms. The adverse impact was stronger in the first year after the shock and then decreased gradually (Figure 3.22). Compared to workers in other tourism firms, monthly wage of the treatment group decreased by 6 percent initially and became -2.6 percent in 2017q2. By the first half of 2018, the negative differential effect had faded away.

The political shock in late-2015 and the subsequent economic sanctions that aimed to restrict Russian citizens coming to Türkiye affected the tourism sector, especially in the regions where Russian tourist intensity ratio is higher. The impact on daily and monthly wages was higher than the effect on the days worked for the treated group of long-tenured workers. The LT workers in tourism establishments in the affected region monthly earned around 10 percent lower than those in the control group.



Notes: The vertical bars illustrate the 95% confidence intervals. An empty marker shows insignificance. TT is the treated group of workers in the tourism sector in affected region. Control group of workers is chosen from tourism sector in unaffected region (TO), restaurant in unaffected region (RO) and tourism firms and restaurants in unaffected region (TORO).

Figure 3.21 Days Worked by LT Workers in Affected Tourism Firms



Notes: The vertical bars illustrate the 95% confidence intervals. An empty marker shows insignificance. TT is the treated group of workers in the tourism sector in affected region. Control group of workers is chosen from tourism sector in unaffected region (TO), restaurants (R), restaurant in unaffected region (RO) and tourism firms and restaurants in unaffected region (TORO).

Figure 3.22 Real Monthly Wage of LT Workers in Affected Tourism Firms

We take the long-tenured workers in tourism firms located in affected provinces (Antalya, İstanbul, Muğla, Edirne, Kırklareli, Artvin and Ardahan) as our treatment group. In addition to the workers in tourism firms in other unaffected regions (TO), workers in “food and beverage service sector/Restaurants” (R, RO) are also used as control group given the results of the cluster analysis in Chapter 2.

We constructed the estimation sample using CEM method. Parallel trend assumptions could not be verified with standard tests even in the matched sample. Given the recommendations in the literature (Blinski et al, 2019), we compare the estimation results from the equation with and without the trend term. The estimation results are quite close in these two specifications which suggests that existence of non-parallel pre-shock trends does not have practical importance. In this set-up, we find that long-tenured workers in the affected tourism firms suffered persistent earning losses compared to comparison group of workers.

### 3.4.2. Displaced Long-tenured Workers

In the previous section we estimated the differential impact of the shock on long-tenured workers in the tourism firms located in affected region. Now in this part, we make within comparisons of the long-tenured workers in the tourism sector in terms of their earning trajectories. We are interested in how the post-2015 average earning of a displaced LT worker who became non-employed, changed firm or sector or location changes compared to other workers who did not. For this purpose, we estimate the following equation as a base model:

$$y_{irt} = \alpha_i + \theta_r + \rho_t + \beta X_{i,t} + \gamma D_{i,t} + \epsilon_{i,t} \quad (2)$$

Here,  $y_{irt}$  denotes the log-transformed outcome of individual  $i$  at region  $r$  in time  $t$ , while  $\alpha$ ,  $\rho$  and  $\theta$  capture individual, time and region fixed effects, respectively.  $D_{i,t}$  represents a vector of dummy variables (and their interactions) showing employment status of the worker  $i$  in time  $t$ . Through the constructed dummy variables, we try to understand the average impact of being non-employed, changing firm, changing sector or changing province on the worker’s wages.

$X_{i,t}$  includes age and age-squared of the individual worker. In addition, we can also control for pre-crisis characteristics of individuals (e.g. earnings) or of employers (e.g. firm-size) in  $X_{i,t}$  by interacting it with time. We use separate dummy variables showing the employment status in the post crisis period.  $D_{emp,i}$  takes value one if a worker became non-employed in 2016 and zero if s/he worked fully for four quarters.  $D_{firm,it}$ ,  $D_{sector,it}$ ,  $D_{region,it}$  take value 1 if the employer or sector or province of a worker at time  $t$  is different from the pre-shock employer or sector or province, respectively.

The potential endogeneity of these dummy variables may constitute a problem. This would be the case when the reason a worker is non-employed in 2016 (or changed firm/sector/city after 2015) is related to the impact of the shock interacted with worker's unobserved characteristics. This would endanger their use as explanatory variables. To overcome this issue, in our regressions we are controlling individual and time fixed effects. Also, we include interactions between time dummies and worker's average earnings in 2015 as well as employer size in 2015 to take account of unobserved individual characteristics which may affect earnings.

Controlling for pre-displacement average earnings is frequently employed in the related literature and aims to capture differential trends in earnings of different groups of workers (Davis and von Wachter, 2011, Lachowska et al., 2020 and Birinci, et al., 2023). This way, we aim to eliminate the potential endogeneity of the constructed dummy variables due to unobserved worker characteristics that may affect earnings.

Our sample is long-tenured workers in the tourism sector and the estimation sample is 2016-2019. In the base model of individual-based regressions, we regress log-transformed real daily wages on age, age-squared and dummy variables related to the employment status of the worker together with year-quarter time fixed effects. The estimated coefficients of changing firm and changing sector dummy variables are negative and significant both in the whole sample and in the restricted sample of workers in affected and unaffected regions. The coefficient of the pre-shock earnings variable was negative and significant. Inclusion of the average earning did not change the estimation results.

Table 3.10 Base Regressions for Log-transformed Real Daily Wages

	All		Affected Region		Unaffected Region	
	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.04 <sup>a</sup>	0.052 <sup>a</sup>	0.046 <sup>a</sup>	0.062 <sup>a</sup>	0.027 <sup>a</sup>	0.034 <sup>a</sup>
Age-square	-0.001 <sup>a</sup>	0.000 <sup>a</sup>	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	0.000 <sup>a</sup>	0.000 <sup>a</sup>
Changed province	0.020 <sup>a</sup>	0.026 <sup>a</sup>	0.028	0.042 <sup>a</sup>	0.012	0.019
Changed firm	-0.017 <sup>a</sup>	-0.016 <sup>a</sup>	-0.027 <sup>a</sup>	-0.027 <sup>a</sup>	-0.010 <sup>b</sup>	-0.012
Changed sector	-0.114 <sup>a</sup>	-0.122 <sup>a</sup>	-0.155 <sup>a</sup>	-0.160 <sup>a</sup>	-0.044 <sup>a</sup>	-0.047 <sup>a</sup>
Year*Pre-crisis Average Wage	-	-0.036 <sup>a</sup>	-	-0.041 <sup>a</sup>	-	-0.028 <sup>a</sup>
Fixed-effects	Individual, region and year-quarter time					
Sample	2016-2019					
Constant	2.596 <sup>a</sup>	3.091 <sup>a</sup>	2.509 <sup>a</sup>	3.651 <sup>a</sup>	2.793 <sup>a</sup>	2.347 <sup>a</sup>
Observations	889,999	889,840	573,678	573,570	315,501	315,450
R-squared	0.896	0.889	0.901	0.895	0.877	0.868

Notes: Estimated coefficients from equation (2). Affected region is composed of Antalya, Muğla, İstanbul, Edirne, Kırklareli, Ardahan and Artvin. <sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent level.

On average, workers who change pre-shock employer earns 1.7 percent lower, while this rises to 2.7 percent if the worker is in an affected province. Workers who moved to a non-tourism firm earn 10.8 ( $e^{-0.114}-1$ ) percent lower. If the worker changed sector in an affected province, her earnings are on average 14.2 ( $e^{-0.155}-1$ ) percent lower. When we control for the pre-crisis earnings (column 6 of Table 3.10), changing firm or province does not have a significant effect on wages, but changing sector is associated with 4.6 percent lower wages. Workers who change province earn nearly 2 percent higher, but the coefficient is insignificant in the restricted subsamples of affected and unaffected regions.

Table 3.11 presents the results for days worked and monthly real wage variables. For the workers who changed firm, the days worked shorten by 3 percent on average, while it decreases by 6-7 percent among sector changers. Both daily wages and days worked decreases for workers who changed firm or sector. As a result, the monthly earnings for the workers changing firm (sector) is 4.7 (16.5) percent lower which increases to 5.7 (20.5) percent in affected regions. Monthly earnings of workers who change sector seem to decrease more than firm changers.

Table 3.11 Regressions for Real Monthly Wages and Days Worked

(Log)	Real Monthly Wage			Days Worked		
	All	Aff. Region	Unaff. Region	All	Aff. Region	Unaff. Region
Age	0.094 <sup>a</sup>	0.104 <sup>a</sup>	0.061 <sup>a</sup>	0.054 <sup>a</sup>	0.058 <sup>a</sup>	0.034 <sup>a</sup>
Age-square	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.000 <sup>a</sup>	-0.000 <sup>a</sup>	-0.000 <sup>a</sup>
Change region	-0.010	0.012	-0.033	-0.029 <sup>a</sup>	-0.016	-0.045 <sup>a</sup>
Change firm	-0.048 <sup>a</sup>	-0.059 <sup>a</sup>	-0.043 <sup>a</sup>	-0.031 <sup>a</sup>	-0.032 <sup>a</sup>	-0.033 <sup>a</sup>
Change sector	-0.181 <sup>a</sup>	-0.230 <sup>a</sup>	-0.098 <sup>a</sup>	-0.067 <sup>a</sup>	-0.075 <sup>a</sup>	-0.054 <sup>a</sup>
Fixed-effects	Individual, region and year-quarter time					
Sample	2016-2019					
Constant	5.286 <sup>a</sup>	5.038 <sup>a</sup>	6.132 <sup>a</sup>	1.681 <sup>a</sup>	1.520	2.330 <sup>a</sup>
Observations	889,999	573,678	315,501	889,999	573,678	315,501
R-squared	0.732	0.747	0.687	0.732	0.732	0.733

.<sup>a</sup>, <sup>b</sup> indicate significance at 1 and 5 percent level.

The duration of unemployment after being displaced is found to be important in earning losses (Fallick et al. 2021). We add an interaction of the dummy variable to the base model, which takes value 1 if the worker became non-employed in 2016. The results are displayed in Table 3.12. Earning of a worker who changed firm or sector and became non-employed in 2016 is lower by 3.6 and 4.7 percent, respectively.

Table 3.12 Regressions with Interactions: Log-transformed Real Daily Wages

	With Interaction	Base
Age	0.041 <sup>a</sup>	0.04 <sup>a</sup>
Age-square	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>
Changed province	0.018 <sup>b</sup>	0.020 <sup>a</sup>
Changed firm	-0.012 <sup>a</sup>	-0.017 <sup>a</sup>
Changed sector	-0.097 <sup>a</sup>	-0.114 <sup>a</sup>
Non-employed in 2016 & changed province	0.003	-
& changed firm	-0.037 <sup>a</sup>	-
& changed sector	-0.048 <sup>a</sup>	-
Constant	3.556 <sup>a</sup>	2.596 <sup>a</sup>
Sample	2016-2019	2016-2019
Number of Observations	889,999	889,999
Adj. R-squared	0.901	0.896

<sup>a</sup>, <sup>b</sup> indicate significance at 1 and 5 percent level.

We differentiate the LT workers based on their employment status in 2016-2018 and formed a status variable, as detailed in Section 3.3.1. We want to test the observations in the data empirically. We estimate a regression where we include these status variable, gender and age-group of the worker as explanatory variable.

Table 3.13 Regressions with Status Indicator Variable

2015 Average Wage	0.795 <sup>a</sup>
Employment status (base: Employed in the pre-crisis firm for whole 2016-2018 period)	
(i) Employed in 2016	
Non-employed after 2016 (Group 10)	-0.126 <sup>a</sup>
Same firm after 2016 (Group 11)	base
Same sector after 2016 (Group 12)	0.024 <sup>a</sup>
Non-tourism sector after 2016 (Group 13)	-0.07 <sup>a</sup>
(i) Non-employed in 2016	
Non-employed after 2016 (Group 20)	-0.104 <sup>a</sup>
Same firm after 2016 (Group 21)	0.008
Same sector after 2016 (Group 22)	-0.009
Non-tourism sector after 2016 (Group 23)	-0.106 <sup>a</sup>

. <sup>a</sup>, <sup>b</sup> indicate significance at 1 and 5 percent level.

We include sector-province (4-digit sector code times the-province) fixed-effects. The estimation results for the period 2017-2018 are reported in Table 3.13. We take the stayers group (status\_11=1), who were fully employed in 2016 and worked in her pre-shock employer in 2017-2018 period, as base group. Therefore, the estimated coefficients show the impact relative to the base category of workers.

We find that workers who became non-employed and changed sector after working fully in 2016 earn around 12 and 7 percent less than the stayer group of workers, respectively. The workers who did not become non-employed in 2016 but changed firm in 2017-2018 earn 2 percent higher than the stayer group. Among the group of workers who became non-employed in 2016, we see around 10 percent worsening in wages for sector changers and for those working less than 3 quarters in 2017-2018.



### **3.5. Conclusion**

This chapter aims to understand the impact of the political shock on the long-tenured (LT) workers in the tourism sector, defined as those who have worked for more than nine quarters in the same establishment during the period 2013-2015. In the descriptive part we provide a comprehensive overview of the labor market in the tourism sector. Then, we empirically test the observations from the data.

First, we compare the labor market outcomes of the employees in the affected tourism firms with a control group of workers. We base our identification strategy on the variation in Russian tourist intensity across provinces and identify treated and control regions. We compare workers in the tourism sector in the affected provinces with workers in the tourism and/or restaurant sector in the unaffected region in terms of daily and monthly wages and days worked. Due to the invalidity of the parallel trend assumption in the full sample, we use the CEM method and conduct the estimations in the matched sample of individuals. The difference-in-differences analysis shows that the daily wages and days worked of workers in the treated group decreased after the political shock and, as a result, the differential impact on monthly wages was also negative. The estimated effects are average effects in a region and does not account for the heterogeneity across districts of a province. Moreover, we are only evaluating the impact on formal LT workers while our analysis does not cover formal but seasonal and irregular workers or informal workers.

Second, we wanted to know the determinants of individual wages in the post-shock period. We ran individual fixed effects regressions for the period 2016-2019. After controlling for time fixed effects, we estimated that LT workers who changed firms or sectors earned less, on average, than LT workers who stayed with their pre-shock employer or sector, while the impact of changing province on wages is less clear. It is found to have a positive impact on wages, although the associated coefficient loses significance in some specifications.

## CHAPTER 4

### THE PROPAGATION OF THE SHOCK THROUGH TRADE LINKAGES

#### 4.1. Introduction

The idea of the role of microeconomic shocks in explaining aggregate fluctuations was not popular until the 2000s. Based on the arguments of Lucas (1977), it was believed that microeconomic shocks would eventually average out and thus could have only minor effects on the aggregate economy (Acemoğlu, et al., 2012). However, the global financial crisis of 2008 brought to the surface the complexity of the modern economic structure, which consists of strong linkages between firms and sectors. After the global financial crisis, several firms from different industries were affected. This experience led researchers and policy makers to pay more attention on the role of microeconomic shocks on business cycles and the role of firm linkages on the transmission of shocks.

The production of a particular good or service involves different firms from different industries, so a shock in one part of the supply chain can affect the entire production process through these trade links. The adjustment of production linkages takes time and incurs costs for firms (Huneus, 2018). Therefore, a shock to a firm's supplier or its customer will also affect that firm (unless it can immediately establish new production links with new suppliers or customers), even if it was not directly affected by the shock.

If a supplying firm receives a shock, this may affect the firms that buy inputs from the shock-hit firm. This is the downstream (from supplier to customer) transmission mechanism. Similarly, a shock to a firm's customer will affect the demand for that firm's output, and it will therefore have to adjust its production plans. This is called the upstream propagation (from the customer to the supplier) of the shock. Through these channels the shock spill overs to not-directly hit sectors.

Building on Long and Plosser (1983), many studies have attempted to provide a theoretical framework to show how microeconomic shocks can be amplified and transmitted into aggregate fluctuations due to the interconnections between different firms and sectors. (Acemoglu et al., 2012 and Baqaee, 2019). Despite the accumulation of various studies formulating the issue in general equilibrium model frameworks, the empirical literature has lagged behind. As Carvalho et al. (2021) point out, this is due to the difficulty of identifying “*plausible exogenous micro shocks*” and tracing their propagation throughout the economy. However, as examples of such microeconomic shocks have accumulated and as data sets involving firm-to-firm transactions (even at the global level) have become available, the number of studies providing empirical evidence on the importance of input-output linkages in the propagation of shocks has begun to increase.

The main identification strategy for firm-level idiosyncratic shocks is to use natural disasters (Barrot and Sauvagnat, 2016; Boehm et al., 2019 and Carvalho et al., 2021) because natural disasters are exogenous large negative shocks that affect a small number of firms. Barrot and Sauvagnat (2016) use major natural disasters in the United States since 1978 to instrument for firm-level idiosyncratic shocks. Carvalho et al. (2021) and Boehm et al. (2019) study the supply chain effects of the 2011 Japanese earthquake and how it was transmitted through trade linkages. This chapter contributes to this strand of the production network literature by analyzing the propagation of a sector-specific shock (to tourism) to other sectors through input-output linkages between firms.

The political conflict with Russia, which began with the downing of a Russian warplane by Türkiye in 2015, led Russia to impose economic sanctions on Türkiye. These sanctions included restrictions on Russian tourists coming to Türkiye. Since Russia was the second country in terms of the total number of foreign visitors coming to Türkiye in 2015, these measures had a significant impact on the Turkish tourism sector. In the previous two chapters, the impact on firms and employees in the sector was presented. This chapter aims to understand how this shock was transmitted to non-tourism sectors through firm linkages.

We use firm-to-firm transaction data combined with firms' balance sheets and income statements to estimate the transmission of the shock to firms in non-tourism sectors that were customers or suppliers of tourism firms in the pre-shock period. We proxy a non-tourism firm's exposure to the shock by the cost share of purchases from tourism firms (downstream exposure ratio) and the share of sales to tourism firms in its total sales (upstream exposure ratio) in 2015. We find significant evidence of both downstream and upstream propagation of the shock.

Our results show that sales growth of firms that were suppliers to the tourism sector before the crisis (positive upstream exposure ratio) declined by 8 percent in 2015, compared to firms that had no sales to the tourism sector. Similarly, firms which were customers of the tourism sector experienced a 7 percent decrease in their sales compared to firms which did not purchase goods/services from the tourism sector. Section 2 reviews the related literature to which this paper contributes. Section 3 presents the empirical framework and the estimation results. Section 4 concludes.

## **4.2. Literature Review**

Modern production structure requires simultaneous involvement of various firms and sectors. Due to this structure of the production process, a disruption in the routine flow of goods and services at one part of the supply chain would inevitably affect other related firms. This is the case especially when forming new production links is costly (Huneus, 2018) or immediate substitution of the disrupted input (due to specificity of the input) is not possible. Therefore, both policy makers and economists pay growing attention to the subject of transmission of microeconomic shocks through input-output linkages into aggregate fluctuations.

Especially the global financial crisis of 2008 revealed the importance of interdependencies among firms and sectors such that this issue became subject of many policy institutions (World Economic Forum, 2012; European Commission 2013). The literature first evolved on the studies that aim to theoretically show the role of firm-to-firm linkages as a shock propagation mechanism using multi-sector models.

Multisector model of Long and Plosser (1983) provided the basic insights and became example for the subsequent studies including Acemoğlu et al. (2012), Acemoğlu et al. (2017) or Baqaee and Farhi (2019). However, studies such as Barrot and Sauvagnat (2016), Carvalho et al. (2021), Dhyne et al. (2021) that provide supporting empirical evidence to these theoretical findings increased later. As mentioned by Carvalho et al (2021) this is because of the difficulties in conducting empirical studies which identify exogenous microeconomic shocks and track down their transmission economy.

To overcome identification challenges, natural disasters with their unexpected and regional nature are used heavily in the empirical strand of the literature on production networks. Barrot and Sauvagnat (2016) use the natural disasters in the U.S. and find that a shock to suppliers lead to output loses in their customers. When supplier of a firm is hit by a natural disaster, such firms experience an average 2-3 percent drop in their sales and around 1 percent decrease in equity values. Moreover, they conclude that if the disaster-hit supplier produces a specific input then the negative impact on its customer is larger. Boehm et al. (2019) examine the 2011 earthquake in Japan on U.S. affiliates of Japanese multinationals which used to rely heavily on imported inputs from Japan. They find that their output did also fall significantly in the months following the earthquake.

Carvalho et al (2021) also use the Japanese earthquake and show that the disaster's adverse impact propagated both upstream and downstream. Their specification is closest to ours in the sense that they construct some upstream and downstream indicator variables for firms and analyze the impact of both of these measures on firm's sale one-year after the earthquake. They show that the growth rate of firms which were not located in the directly hit disaster area but had "*disaster-hit suppliers*" (downstream propagation) and/or "*disaster-hit customers*" (upstream propagation) declined by 3.8 percent and 3.1 percent, respectively, following the earthquake. Although different from natural disasters as its direct impact was not concentrated in a small set of directly affected regions or sectors, the COVID-19 pandemic also contributed to the enrichment of the literature by renewing the interest in the role of supply chain linkages on the economic impact of shocks.

Lafrogne-Joussier et al. (2023) investigate the impact of lockdowns in China on French firms through their imports from China. They find that relative to French firms who did not import from China, firms that were exposed to the Chinese lockdown experienced a 5.5 percent fall in domestic sales and a 5 percent decrease in their exports between February-June 2020.

The shock we are considering is a sector-specific shock rather than being a case of natural disaster. We contribute to the production network literature by analyzing how a political shock, whose direct impact was concentrated on the tourism sector, propagated to non-tourism firms through firm-level trade linkages. Together with the previous two chapters (on tourism firms and workers), this analysis will complete the channels through which the shock's impact is observed in the economy. Our findings will provide a comprehensive assessment of the economic consequences of the political shock and of the following Russian sanctions that restricted tourism activities in Türkiye in late 2015.

### **4.3. Data and Empirical Framework**

#### **4.3.1 Data**

Our aim is to understand the effect of the political shock on non-tourism firms through their purchases from and/or their sales to tourism firms. We use an administrative micro data of firm-to-firm transactions. This data is based on the invoices reported to the Ministry of Treasury and Finance. Each firm reports the full list of its buyers, suppliers and the value of each transaction above a threshold (5,000 TL). This information is compiled for value added tax (VAT) purposes. We combine this data with balance sheets and income statements of all Turkish firms through the common firm identifiers. The final merged data includes firm identifier, all balance sheet variables (such as sales, profits, bank loans), 4-digit industry code, number of employees, foundation date and location of a firm. Using an exposure variable to proxy the indirect effects of a shock is frequently employed in the literature. Carvalho et al. (2021) construct a distance measure based on firms' locations to capture the firm-level exposures to the earthquake.

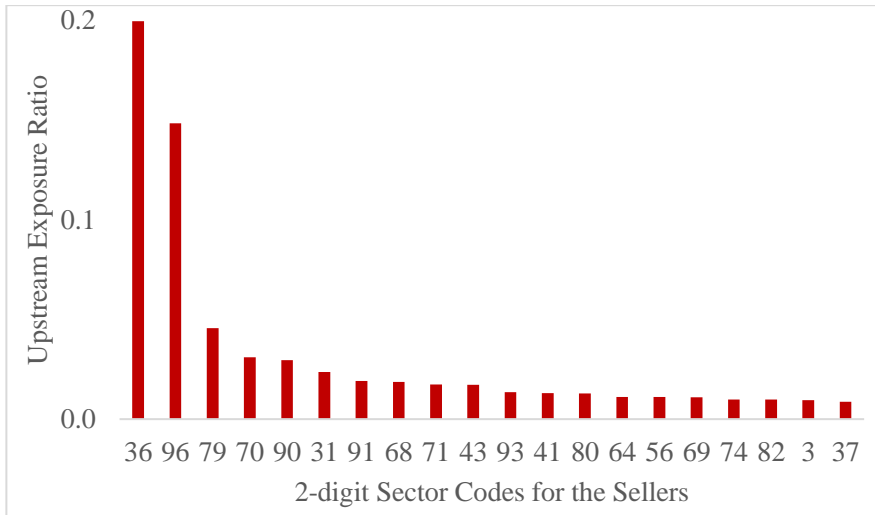
Boehm et al. (2019) measure a firm's exposure to the earthquake in Japan by the cost share of Japanese imported inputs prior to the earthquake. Given the high cost share is concentrated among Japanese firms, they use Japanese ownership as an alternative identification strategy. Akgündüz and Fendoğlu (2019) use the ratio of imported inputs to total cost of sales to show the higher import intensity is associated with higher vulnerability to exchange rate shocks. Lafrogne-Joussier et al. (2023) use the share of imports from China to determine French firms' exposure to lockdown in China.

Similar to the identification strategies in these studies, we construct a firm-level exposure variable using firm-to-firm transactions data in 2015. The exposure variables are calculated for each firm in non-tourism sector and are based on the pre-crisis (i.e. year 2015) value of their transactions with tourism firms. For a selling firm in non-tourism sector, the share of total sales to tourism sector (in its total sales in 2015) is used as a proxy for that firm's upstream exposure to the political shock ( $up_i$ ). On the other hand, the pre-crisis share of purchases from tourism firms in total purchases of a buying firm shows the downstream exposure ( $down_i$ ):

$$up_{i,t} = \text{Total sales of firm } i \text{ to tourism firms in } t / \text{Total sales of firm } i \text{ in } t \quad (1)$$

$$down_{i,t} = \text{Total purchases of firm } i \text{ from tourism in } t / \text{Total purchases of firm } i \text{ in } t \quad (2)$$

The monthly firm-to-firm transactions data of 2015 includes 43,967,089 observations for 852,214 buying firm and 2,628,295 selling firms. Number of transactions to which a tourism firm is involved as buyer or seller is 830,672. A tourism firm is recorded as a seller for 333,547 observations while for 514,570 observations a tourism firm is the buyer. The  $down_{i,2015}$  is positive for 65,044 observations (2.4% of 2,752,412 total observations) and  $up_{i,2015}$  is positive for 62,560 observations (1.3% of 4,978,587). At a first glance these numbers imply that tourism sector is not a hub sector with many firm/sector linkages. The sector having the highest ratios of  $up_i$  and  $down_i$  in 2015 was 96-“Other personal service activities” that included washing, dry-cleaning, hairdressing, physical well-being activities. In terms of sales to tourism sector ( $up_i$ ), 36-“Water collection, treatment and supply” and 79-“Travel agency, tour operator reservation service and related activities” were also important (Figure 4.1).



Notes: Upstream ratio is calculated as the share of sales to tourism sector in total sales of a firm.

Figure 4.1 Upstream Exposure in 2015 by Sector

On the other hand, the prominent sectors that get service from tourism sector (*downi*) were, 79-“Travel agency, tour operator reservation service and related activities” and 93-“Sports activities and amusement and recreation activities” (Figure 4.2). The tour operator service sector (79) seems to dominate the downstream propagation. The downstream exposure ratio of other sectors is much smaller than this sector’s average value (0.5).



Notes: Downstream ratio is the share of purchases from tourism sector in total purchases of a firm.

Figure 4.2 Downstream Exposure in 2015 by Sector



Table 4.1 presents the summary statistics for the exposure ratios calculated for the period 2013-2015. The mean values of the calculated ratios are similar across years. The mean of upstream exposure ratio is higher than that of downstream exposure ratio in all years. Based on firm-to-firm transactions data in 2014, the mean of the upstream and downstream exposure ratios is 0.013 and 0.007. There are 39543 (28517) firms where upstream (downstream) exposure ratio is positive.

Table 4.1 Summary Statistics for Upstream and Downstream Exposure Ratios

	Upstream exposure ratio			Downstream exposure ratio		
	Mean	Std. Dev.	Observations	Mean	Std. Dev.	Observations
2013	0.012	0.083	36031	0.007	0.065	24967
2014	0.013	0.084	39543	0.007	0.066	28517
2015	0.012	0.083	41994	0.008	0.068	32731

Notes: The ratios are calculated as given in Equations (1) and (2). Number of observations with positive upstream and downstream exposure ratios are displayed in columns (3) and (6), respectively.

### 4.3.2 Empirical Framework

We use firm-level administrative data to empirically examine whether having trade relations with tourism firms, who were affected by the political shock in 2015, had an effect on firms' performance in post-2015 period. First, we analyze the immediate response of firms in 2016. Particularly we analyze how having trade relations with tourism sector in the pre-shock period (i.e positive values of  $up_i$  and  $down_i$  ratios) affected sales growth and employment growth of non-tourism firms in 2016, one-year after the shock.

We keep the post-crisis period as short as one-year because firms may not be able to shift to new suppliers or customers in the short run and the propagation, if exists, is expected to be stronger just after the shock. As time passes, firms will find new suppliers (instead of shock-hit firms from which they were buying inputs) and new customers (replacing shock-hit customer firms to which they were selling goods) which would weaken the propagation.

Our aim is to understand the role of input-output linkages in propagating the shock from tourism sector to the rest of the sectors. If the constructed  $up_i$  ( $down_i$ ) exposure ratio as defined in (1) and (2) is positive, the dummy variable  $up$  ( $down$ ) takes value one. The  $\beta$  coefficients measure how being exposed to the shock via having tourism firms as customers and/or suppliers in the pre-shock period affected a non-tourism firm's growth of sales, growth of employment and change in profit indicators in 2016 compared to firms with no trade with tourism firms. We estimate equation (3):

$$\Delta y_{irs} = \beta^{up} * up + \beta^{down} * down + \gamma * X_{i,2014} + \rho_{rs} + \varepsilon_{irs} \quad (3)$$

$\Delta y_{irs}$  is the annual change in the outcome variable of firm  $i$  in sector  $s$  and province  $r$  in 2016. We used growth rate of sales (domestic sales, total sales and net sales) and employment as firms' outcome variable in our base models. We also tried profit-to-sales, profit-to-assets and profit-to-equity ratios for different profit measures (operating profit and net profit) in the balance sheet. We also include an interaction term between province and 4-digit sector to control for the possibility of sectors from different regions having different trends in performance.

$X_{i,2014}$  is a vector of firm-level indicators to control for the pre-crisis heterogeneity between firms. It includes firm size (different definitions as total assets, total number of employees or total equity), firm age, total bank loans, net debt-to-assets as of 2014. Moreover, we include the number of trading partners as it may be important for a firm's post-crisis performance. A firm with many sellers or buyers may be able to substitute more easily to protect itself from the adverse impact from its shock-hit supplier or customer. Hence, we control this potential impact by adding this variable in some of the regression specifications.

Table 4.2 shows the estimated values of upstream and downstream propagation coefficients under different specifications for explaining the annual change in total sales. The dependent variable is the difference between (log-transformed) sales in 2016 and 2015. The coefficients of upstream ( $\beta^{up}$ ) and downstream exposure ( $\beta^{down}$ ) ratios are negative and significant in each specification (1)-(5).

In Column (1), we find that growth rate of sales of suppliers of tourism firms are 12.8 percentage point lower compared to those who had zero sales to tourism sector. The growth of customers of tourism firms are 11.8 percentage point lower than other firms who purchased no service from tourism sector. This specification did not include any firm controls. In the columns (2)-(5) we add firm-level pre-crisis indicators one-by-one to understand their individual explanatory power. Using total assets, total equity or total employment as firm size measure gives similar results. Thus, we stick with total number of employees (i.e. logarithm of 1+number of employees) in a firm as firm size measure.

We included bank loans and net det-to-assets ratio to control for the impact of debtiness but it is found to be insignificant. Variables of buyer and seller number are significant but close to zero. In the last column we include the control variables which were found to be significant individually. Column (5) includes firm age, firm size and number of trading partners (suppliers and customers) as firm-level controls and upstream and downstream exposure variables are negative and significant. According to (5), the sales growth of supplier (customer) of tourism firms is lower by 8.0 (7.2) percentage points. The results are similar for domestic sales and net sales, hence we only report estimates for total sales.

Table 4.2 Coefficient Estimates for Sales Growth

	(1)	(2)	(3)	(4)	(5)
Upstream exp.	-0.128 <sup>a</sup>	-0.060 <sup>a</sup>	-0.188 <sup>a</sup>	-0.068 <sup>a</sup>	-0.080 <sup>a</sup>
Downstream exp.	-0.118 <sup>a</sup>	-0.056 <sup>a</sup>	-0.213 <sup>a</sup>	-0.061 <sup>a</sup>	-0.072 <sup>a</sup>
Control Variables	-	Number of Trading Partners	Firm Size	Firm age	All
Fixed Effect		4-digit industry-Province			
Constant	0.159 <sup>a</sup>	0.074 <sup>a</sup>	-0.013	0.715 <sup>a</sup>	0.435 <sup>a</sup>
Observations	367,616	303,603	367,616	364,849	311,781
R-squared	0.039	0.041	0.044	0.075	0.086
Adj. R-sq	0.003	0.001	0.008	0.039	0.047

<sup>b</sup> p<0.05, <sup>a</sup> p<0.01

We include interaction terms of upstream and downstream exposure variables with the firm-level pre-shock indicators. The estimated coefficients (of up and down) are still significant and negative when we interact upstream exposure variable with number of customer firms (number of buyers) and downstream exposure variable with number of supplier firms (number of sellers). This is also valid for other specifications with interactions of firm size and firm age.

Table 4.3 Coefficient Estimates for Employment Growth

	(1)	(2)	(3)	(4)	(5)
Upstream exp.	-0.036 <sup>a</sup>	-0.013 <sup>a</sup>	-0.026 <sup>a</sup>	-0.014 <sup>a</sup>	-0.022 <sup>a</sup>
Downstream exp.	-0.027 <sup>a</sup>	-0.004	-0.006	-0.006	-0.011 <sup>a</sup>
Constant	0.016 <sup>a</sup>	-0.015 <sup>a</sup>	0.116 <sup>a</sup>	0.177 <sup>a</sup>	-0.067 <sup>a</sup>
Control Variables	-	# Trading Partners	Firm Size (Total equity)	Firm age	All
Fixed Effect	4-digit industry-Province				
Observations	440,808	312,460	440,808	436,771	436,771
R-squared	0.040	0.048	0.041	0.066	0.070
Adj. R-sq	0.007	0.009	0.008	0.034	0.038

<sup>b</sup>  $p < 0.05044$ , <sup>a</sup>  $p < 0.01044$

Table 4.3 represents the estimation results for employment growth. When we include all the firm control variables (firm size, firm age, number of trade partners) as displayed in Column (5) of Table 4.3, we find that supplier of a tourism firm's employment growth is 2.2 percentage lower than other firms who had zero sales to tourism sector. Employment growth of firms who buys service from tourism sector is 1.1 percent lower than those who bought no service from tourism sector.

As a third outcome variable, we used the change in profit ratios of the exposed firms. Table 4.4 shows the estimation results for change in profit-to-sales and profit-to-equity variables between 2015 and 2016. We find no significant effect on operating and net profit to sales ratios while there seems to be a negative impact on the net and operating profit-to-equity ratios.

Firms selling goods to tourism sector (positive upstream exposure ratio) in the pre-crisis period experienced a 4-5 percentage point decrease in profit-to-equity ratios compared to other comparable firms who had zero sales to tourism. On the other hand, for firms buying goods/services from tourism sector (positive downstream exposure ratio) the negative impact on profit-to-equity ratio is 5-6 percentage point

Table 4.4 Coefficient Estimates for Profit Variables

	Operating Profit/Sales	Operating Profit/Equity	Net Profit/Sales	Net Profit/Equity
Upstream Exposure	0.008	-0.042 <sup>a</sup>	0.003	-0.053 <sup>a</sup>
Downstream exp.	0.026	-0.065 <sup>a</sup>	0.021	-0.072 <sup>a</sup>
Constant	-0.033 <sup>a</sup>	-0.340 <sup>a</sup>	-0.071 <sup>a</sup>	-0.348 <sup>a</sup>
Control Variables	Firm size (Total employment), Firm Age			
Fixed Effect	4-digit industry-Province			
Observations	225,374	262,054	218,850	264,053
R-squared	0.050	0.052	0.053	0.050
Adj. R-sq	0.000	0.008	0.003	0.005

<sup>b</sup> p<0.05044, <sup>a</sup> p<0.01044

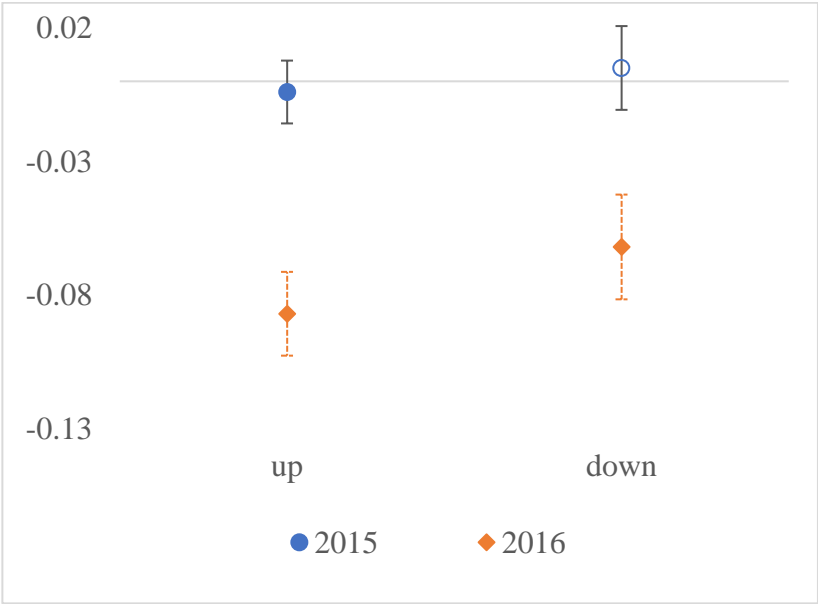
Our second empirical strategy is to use a difference-in-difference set up similar to Carvalho et al. (2021) to understand the role of being exposed to the political shock on levels of firm sales in the non-tourism sector.

$$ly_{irst} = \alpha_i + \alpha_{st} + \alpha_{rt} + \sum_t (\beta^{down} * down_{i,2014} * year_t) + \sum_t (\beta^{up} * up_{i,2014} * year_t) + \varepsilon_{irst} \quad (4)$$

$ly_{irst}$  is the log-transformed sales of firm  $i$  in sector  $s$ , province  $r$  at time  $t$ .  $\alpha_i$  is firm-level fixed effect while  $\alpha_{st}$  and  $\alpha_{rt}$  stand for year-sector and year-province level fixed effects to control for the possibility of different industries and regions having different trends in performance. We use 2014 values of firm size, firm age, net debt-to-assets ratio, total financial debt variables to control the impact of firm characteristic on the examined outcome. We calculate the exposure ratios based on 2014 sales data.

The main coefficients of interests are  $\beta^{\text{down}}$  and  $\beta^{\text{up}}$ , which respectively measure the differential growth rates in sales of firms with positive downstream and upstream exposure to the shock (via their trade with tourism firms) relative to firms in the control group having zero trade with tourism. Our estimation sample is 2015-2016.

The shock occurred in end-November which is an off-season period for tourism in Türkiye. Moreover, most of the sanctions were in effect after January 1, 2016. Therefore, we do not expect to observe any impact on firm outcomes in 2015. That’s why we compare firm outcomes between 2015 and 2016. This is different from Carvalho et al. (2021) where they compare one-year before and one-year after the earthquake based on exposures observed in 2010. They use such a strategy since the earthquake happened in the middle of the year and the impact are also observed in 2011 preventing them to use 2011 as pre-shock period. But in our case, 2015 is the year which we can take as pre-crisis comparison year since the shock happened in November 30, 2015. For robustness we also do the same regression by excluding 2015 and compare 2014 and 2016 sales.



Notes: Down and up represent the estimated values of  $\beta^{\text{down}}$  and  $\beta^{\text{up}}$  in equation (4). The dependent variable is the log-transformed sales. Estimation sample is the period 2015-2016. The bars show the 95 percent confidence interval for each coefficient. The marker with no filling color shows insignificance of the coefficient at 5 percent.

Figure 4.3 Upstream and Downstream Impact on Sales

Figure 4.3 reports the estimated coefficients for  $\beta^{\text{down}}$  and  $\beta^{\text{up}}$  for sales. Results for net sales and domestic sales are similar, hence we did not report them. Having estimated values around zero and/or insignificant in 2015 supports our identification strategy such that trading with tourism firms were not important for partners' sales before the political shock. However, in 2016 we find that both upstream and downstream exposure coefficients are negative and significant. The dependent variable is in log-transformed form and we can interpret the coefficients as percentage changes. The actual formulation for growth would be  $(e^{\beta}-1)$  which is very close to  $\beta$  itself. Firms having positive upstream exposure ratios ( $\text{up}=1$ ) face with an average drop of 8.7 percent in their sales in 2016. The negative impact of being customer of a tourism firm (positive downstream exposure ratios and  $\text{down}=1$ ) on the firm's sales is 6.2 percent.

#### **4.4. Conclusion**

The previous two chapters analyzed the impact of the political shock on the firms and employees in the tourism sector. This chapter aims to understand the impact on non-tourism sector. These three chapters would put forth the overall impact of the political shock in late-2015 on Turkish economy. There is a growing literature on the amplification and propagation of micro-level shocks. The empirical strand of the literature relies heavily on natural disasters such as earthquakes (Carvalho et al., 2021), floods, wildfires or hurricanes (Barrot and Sauvagnat, 2016) for identification. In addition, the global pandemic and the associated lockdowns were also used to identify the source of the shock (Lafrogne-Joussier et al., 2023).

The main findings provide evidence for upstream and downstream spillovers of the micro-level shocks. The empirical results agree that firms, that were supplier and/or customer of a disaster-hit firm (before the disaster) and who were not directly exposed to the disaster, also face with drops in their sales after the disaster. Sales and exports are the most common firm outcome variables in these studies. Another finding in the literature is that the adverse impact of a shock to the supplier of intermediate inputs is stronger especially when the provided input is not easily substitutable and the supplier is producing a specific input (Barrot and Sauvagnat, 2016).

In our empirical framework we treat the political shock in 2015 as a sector-specific shock. Russia and Türkiye used to be allies and had strong bilateral trade relations before this event. A conflict with such an important trading partner and the resulting economic sanctions on tourism sector were not expected. Moreover, the direct impact of the sanctions was concentrated on the tourism sector. These two factors (the shock being unanticipated and having a destructive effect on a small number of firms) provide an environment for analyzing the transmission of sector-specific shocks throughout the economy. We find that growth rate of sales of suppliers (customers) of tourism firms is 8.0 percent (7.2 percent) lower than that of other firms that have no trade relations with tourism firms. Using the sales of the firms with positive upstream and downstream exposure ratios in 2015, we make a rough calculation about the numeric value of the spillover effect. We find that the shock's spillover impact resulted in 76.4 billion TL drop in sales which is equivalent to 0.5 points drop in GDP. This is consistent with the calculations of CBRT (2016) which finds indirect impact of the shock on GDP as -0.4 point. Therefore, policies to support the connected sectors is as important as supporting directly-hit sectors.



## CHAPTER 5

### CONCLUSIONS

#### 5.1. Main Findings

The research question of this dissertation is based on a political shock that affected Turkish economy significantly. We are interested in the economic consequences of subsequent sanctions that Russia imposed on Türkiye over the downing of a Russian warplane in late 2015. Russia has been an important trading partner for Türkiye due to its high share in Türkiye's exports and tourism revenues. The potential economic consequences of this political shock have been discussed at the macro level, focusing only on the net effect on Türkiye's exports or GDP, but the effects at the firm or worker level have not been analyzed. This paper aims to fill this gap by providing a comprehensive analysis of the economic consequences of the shock separately for the economic units that have the potential to be affected. We focus only on the economic measures aimed at restricting bilateral tourism activities between the two countries.

The political shock of 2015 was a sector-specific regional shock, as its direct impact was concentrated in a small number of directly affected regions and companies. This was partly related to the concentration of tourism activities in the coastal region of the country and to the strong interest of Russian visitors in some regions. In addition, the shock was unexpected because the two countries had been good allies until the plane crisis. These two characteristics of the shock make it possible to analyze its effects econometrically. We focus on the accommodation sector as representative of the tourism sector. The thesis examines the potential consequences of the shock in three separate chapters focusing on the three economic units involved: (1) establishments in tourism sector, (2) employees in tourism firms, and (3) trading partners (suppliers and customers) of tourism firms. Each of the analyses uses micro-level data sets acquired from EIS of Ministry of Science and Technology.

There were additional developments in the sample period which has potential to affect the tourism sector. First of all, several terror attacks, and a military coup took place in 2016. The terror attacks that began in the second half of 2015 led to death of more than 500 people. These events raised concerns about security of Türkiye and affected the tourism sector. As a result, we observed a fall in number of visitors from all countries and total number of visitors fell by 25 percent in 2016. However, the decline in number of Russian visitors made the highest contribution to the total decline of 25 percent. Second, the minimum wage hike in January 2016 was an important policy shock for the tourism sector as the share of minimum wage earners are quite high in this sector. To solve the impact of this shock on our results, we make comparisons with food and beverage sector in which share of minimum wage earners is also high.

The main interest of the second chapter is the post-shock position of the treated tourism establishments relative to a comparison group of establishments not directly exposed to the shock. We conduct a two-digit sector-level cluster analysis to select a comparison sector with characteristics similar to tourism. This analysis suggests that the food and beverage services sector (restaurants, in short) is a good candidate. We construct an establishment-level dataset that includes establishments in the tourism and food and beverage service sectors that were continuously active during the period 2013-2015. These quarterly data include the four-digit sector code and province of activity, the total number of employees, the average daily and monthly wage levels, the total monthly wage payments, and the total number of days worked of an establishment. Data are available for the period 2012-2021, but the estimation sample is truncated in 2019 to avoid the impact of the COVID-19 pandemic.

We conduct a difference-in-differences analysis and estimate the differential impact of the shock on average daily and monthly real wages, total monthly wage payments, and total number of days worked of tourism establishments operating in the affected provinces. The affected provinces are determined based on the ratio of the total number of Russian tourists in a province to the size of the tourism sector in that province. To ensure the validity of the parallel trend assumption, we use a matched sample of establishments in our regressions.

The estimation results show the deterioration in the treated tourism establishments compared to the control groups of (i) other tourism establishments in the unaffected region (ii) all restaurants (iii) restaurants in the unaffected provinces (iv) restaurants and firms in the unaffected region. The tourism establishments in affected provinces have 10 percent lower total days worked and 12 percent lower total monthly wage payments than other tourism establishments in 2016. Compared to the establishments in food/beverage service sector in unaffected provinces, (i) the total number of days worked /the labor demand) is lower by 13-15 percent (ii) average daily and monthly wages is nearly three percent lower (iii) total monthly wage payment is 16 percent lower in 2016 for the tourism establishments in affected provinces. When İstanbul is excluded from the treatment group, the worsening in the monthly wage bill (compared to other restaurants in unaffected provinces) is more than 20 percent in 2016. These results imply that most of the adjustment on the production side was through decreasing labor demand while the differential impact on average daily and monthly wages was limited.

The third chapter aims to document the impact on the long-tenured workers in the tourism sector. In particular, we are interested in the impact of the shock on the sector's human capital. Therefore, we construct a sample of long-tenured workers whose expertise and know-how constitute the sector's human capital. The employer-employee matched dataset includes long-tenured workers in the tourism and food and beverage services sectors. It includes all workers who have worked in the same establishment for at least nine quarters in the period 2013-2015. This worker-level data include age, gender, occupation, daily and monthly wages, and total number of days worked. It also includes firm and establishment identifiers, through which we obtained information on sector and province of activity. Using this rich dataset, we provide a comprehensive description of long-term workers in the sector. Then, we again use a difference-in-differences setup to measure how the labor market outcomes (wages and days worked) of long-tenured workers in the affected tourism establishments compare to those of other long-tenured workers in the control group. For robustness, we include several time-constant covariates and time-fixed effects in the regressions and run the analysis for different choices of treatment and control groups.

The results indicate a short-lived and limited negative impact on the days worked. On the contrary, the differential negative impact on wages is found to be stronger and more persistent. Compared to the long-tenure workers in tourism and food/beverage service sector in unaffected provinces, long-tenured workers in affected provinces earn on average 9 percent lower monthly, in 2016. The long-tenured workers in tourism sector in affected provinces other than İstanbul face with 12 percent lower daily wages, 1 percent shorter days worked and 11 percent lower monthly wages compared to the long-tenured workers in food/beverage service sector in unaffected provinces.

As a second extension, we try to identify the determinants of individual wages in the post-crisis period. In particular, we want to understand how becoming unemployed, changing firms, sectors, or provinces affected the post-shock earnings trajectories of long-tenured workers in the tourism sector. The individuals who changed their pre-shock employer or moved to non-tourism firms are found to earn less than those who stayed with their pre-shock employer or sector. On average, changing sector affects monthly earnings of workers more than changing firm. We find that in the tourism sector, the long-tenure workers who changed firm (changed sector) earn on average 4.8 percent (18.1 percent) less than those who stayed with their pre-shock firm (sector).

The fourth chapter completes the analysis by documenting the transmission of the shock to non-tourism firms through their trade linkages with tourism firms using firm-to-firm transaction data and firm balance sheets. We construct upstream and downstream exposure ratios for non-tourism firms to proxy their exposure to the political shock. The upstream exposure ratio is the pre-shock share of sales to the tourism sector in the firm's total sales. It will show the degree of upstream transmission of the shock from tourism firms to their suppliers. On the other hand, the downstream exposure ratio is defined as the ratio of total purchases from the tourism sector to total purchases of a non-tourism firm in the pre-shock period. This ratio is used to measure the magnitude of downstream spillovers from tourism firms to their customers. The results show that in 2016, the sales growth of non-tourism firms that were suppliers to the tourism sector (in the pre-shock period) is 8 percent lower than other firms that did not sell any good/service to the tourism sector.

Similarly, downstream spillovers are also found, such that customers of tourism firms in 2015 have 7.2 percent lower sales growth in 2016. Using 2015 sales data for the firms who have customers and/or suppliers in tourism sector, we conclude that the spillover effect had around -0.5 points effect on growth in 2016. Together with the impact on the accommodation sector, the total effect of the tourism-related measures on GDP growth would reach -1 to -1.5 points.

## **5.2. Main Policy Implications**

The establishments in the tourism sector suffered output losses as the number of visitors decreased dramatically in 2016. The estimation results in Chapter 2 show that the establishments in the tourism sector in the affected provinces responded by reducing especially the number of employees. The establishments in İstanbul seem to have used the firing strategy more, such that the annual change in the number of jobs in 2017 was still -16 percent in İstanbul while it was +7.9 percent in other affected regions (Antalya Muğla, Edirne, Kırklareli, Artvin and Ardahan). Moreover, mobility of the workers was also higher in İstanbul.

The data also indicate that becoming non-employed was more common among long-tenured workers in İstanbul (than in other affected provinces), which supports this firm-level observation. On the other hand, the average daily and monthly wages in other affected provinces deteriorated compared to İstanbul. These observations suggest that tourism firms in Antalya or Muğla have adopted a strategy that prioritizes retaining/hoarding their workers (by offering lower wages) while firms in İstanbul were more likely to lay off workers.

The recovery in the total number of employees in the other affected provinces was also faster than in İstanbul. This was probably because the output of firms in these provinces recovered faster than those in İstanbul. Among other factors, the hoarding behavior of the firms may have supported this faster recovery in the affected provinces except İstanbul. Therefore, policies that encourage firms to retain their workers (eg. short-term working allowance) during crisis periods would support a faster recovery.

The estimation results of worker-based analyzes in Chapter 3 show that long-tenured workers who moved to a different employer or a different sector in the post-shock period earn on average less than other LT workers who stay with their pre-shock employer and sector. Policies to encourage firms to hoard their labor would also be beneficial for the workers. Policies that aim to make keeping pre-crisis employment contracts attractive for both workers and firms would be in the interest of both parties. If short-term work allowances had been introduced for the tourism sector in 2016 (as they were in 2020 during the pandemic), the negative impact of the shock could have been mitigated.

The empirical analysis in Chapter 4 provides evidence of negative spillovers to other related sectors. This highlights the importance of timely policy action to mitigate the adverse effects of a sector-specific shock before it is transmitted to other sectors and cause amplified economy-wide effects. Policymakers should therefore consider the importance of trade linkages in the transmission of shocks when designing policies. Policies that support the sectors connected to the shock-hit sector are as important as those that support the directly-hit sector.

The impact of the shock was heterogenous across provinces. The tourism is concentrated in the coastal region of Türkiye and also Russian tourists preferred certain provinces. As a result, the impact of the shock was heterogenous across regions. Moreover, the production and labor market dynamics differ between regions. Therefore, region-specific policies are important to mitigate the impact of such regional shocks.

### **5.3. Main Limitations and Future Research**

The empirical analyses in Chapters 2 and 3 provided an average measure of the impact on affected tourism firms and workers. Our identification strategy relies on the variation across provinces. However, there is also heterogeneity within districts of the same province which we do not capture. For example, according to anecdotal evidence, Russian tourists prefer Alanya, Kemer and Belek more than other districts.

If this is the case, the impact of the shock would be stronger in these districts. However, we can only estimate the average impact in Antalya, which is likely to be higher in districts such as Alanya or Kemer. Due to data limitations, we are not able to take these differences between districts into account in our analysis.

The official data include the number of foreign visitors by nationality at the provincial level and we do not know the number of visitors in the different districts of the province. If detailed hotel and district level data can be obtained in the future, the regional analysis would be more accurate. The firm-level analysis and the descriptive statistics imply a sort of hoarding behavior among affected regions excluding İstanbul. This needs to be tested by using data on firms' balance sheets. First, tourism firms should be identified as hoarding or firing type based on their employment and output trajectories after the shock. Then comparing the post-shock recovery among these two types of firms (one group hoarded labor, while the other laid off more workers) would be informative for policy design.

In January 2016, the minimum wage was raised by 30 percent, much higher than the level implied by inflation realizations. Our estimation sample also includes this major policy shock. The minimum wage is important in determining the wages of all workers and also affects the behavior of firms, so we need to pay due attention to this policy. Therefore, distinguishing the effects of the political shock from the minimum wage shock was a major challenge for our study. To address this issue, we make comparisons with "food and beverage service sector activities" whose structure is similar to that of the tourism sector based on cluster analysis. We assume that the impact of the minimum wage hike on these two sectors was similar and thus the differences in firm outcomes between the treated tourism establishments and the control group of restaurants would be free of the potential impact of the minimum wage increase. Comparisons with other service subsectors would be useful for the robustness of our results. The insurance services sector was another sector similar to the accommodation sector according to the cluster analysis. Therefore, comparing tourism establishments and insurance services sectors after the pandemic could be a good exercise as this would be free of the minimum wage increase and insurance activities were not directly affected by the pandemic measures.

## REFERENCES

- Abbott, M. (2008). Worker Displacement: A Literature Review and Potential Policy Responses. *A Festschrift in Honour of David Dodge* (Bank of Canada), 237-263.
- Acemođlu, D., Carvalho, V. M., Ozdaglar, A., & Tahbaz-Salehi, A. (2012). The Network Origins of Aggregate Fluctuations. *Econometrica*, 80(5), 1977-2016.
- Acemođlu D., Ozdaglar A., & Tahbaz-Salehi, A. (2017). Microeconomic Origins of Macroeconomic Tail Risks. *American Economic Review*, 107(1), 54-108.
- Agha, N. I. (2021). Reimagining Turkey-Russia Relations: An Analysis of the Plane Crisis. *TESAM Akademi Dergisi*, 8(2), 429-457.
- Akgündüz, Y. E., & Fendođlu, S. (2019). Exports, Imported Inputs, and Domestic Supply Networks. *CBRT Working paper*, 19/08.
- Aldan, A., Gürcihan Yüncüler, B., & Yavuz, A. (2016). Tourism Employment in Turkey. *Unpublished Manuscript*.
- Aytun, U., & Özgüzel, C. (2021). Shooting Down Trade. *Topics in Middle Eastern & North African Economies: Proceedings of the Middle East Economic Association*, 23.
- Baqae, D. R., & Farhi, E. (2019). The Macroeconomic Impact of Microeconomic Shocks: Beyond Hulten's Theorem. *Econometrica*, 87(4), 1155-1203.
- Bali, V. M. (2022). Dış Politika Krizlerinin Türk-Rus İlişkilerine Etkileri: Uçak Krizi Örneđi. *Graduate thesis, Uludağ University*.
- Barrot, J. N., & Sauvagnat, J. (2016). Input Specificity and the Propagation of Idiosyncratic Shocks in Production Networks. *The Quarterly Journal of Economics*, 131(3), 1543-1592.
- Başıhoş, S., Taşöz, A., & İtez, C. (2015). Rusya ile Yaşanan Krizin Ekonomiye Olası Etkilerine Nasıl Bakılabilir?. *Türkiye Ekonomi Politikaları Araştırma Vakfı Deđerlendirme Notu*, 201538.
- Bilgiç-Alpaslan, I., Markovic, B., Tabak, P., & Zildzovic, E. (2015). Economic Implications of Russia's Sanctions Against Turkey. *European Bank for Reconstruction and Development*, 7.



- Bilinski, A., & Hatfield, L. A. (2018). Nothing to See Here? Non-Inferiority Approaches to Parallel Trends and Other Model Assumptions. *arXiv preprint arXiv:1805.03273*.
- Birinci, S., Park, Y., Pugh, T., & See, K. (2023). Uncovering the Differences Among Displaced Workers: Evidence from Canadian Job Separation Records. *Federal Reserve Bank of St. Louis*, 2023-022.
- Boehm, C. E., Flaaen, A., & Pandalai-Nayar, N. (2019). Input Linkages and the Transmission of Shocks: Firm-Level Evidence from the 2011 Tōhoku Earthquake. *Review of Economics and Statistics*, 101(1), 60-75.
- Carrington, W. J. (1993). Wage Losses for Displaced Workers: Is It Really the Firm That Matters?. *Journal of Human Resources*, 435-462.
- Carvalho, V. M., Nirei, M., Saito, Y. U., & Tahbaz-Salehi, A. (2021). Supply Chain Disruptions: Evidence from the Great East Japan Earthquake. *The Quarterly Journal of Economics*, 136(2), 1255-1321.
- Central Bank of the Republic of Türkiye. (2016). Effects of Tourism on Main Macroeconomic Aggregates. Inflation Report, 2016-IV, Box 4.1.
- Central Bank of the Republic of Türkiye. (2021). Wage Distribution and the Effects of Wages on Inflation in Turkey. Inflation Report, 2021-I, Box 2.5.
- Couch, K. A., & Placzek, D. W. (2010). Earnings Losses of Displaced Workers Revisited. *American Economic Review*, 100(1), 572-589.
- Davis, S. J., & Von Wachter, T. M. (2011). Recessions and the Cost of Job Loss. *National Bureau of Economic Research*, w17638.
- Dhyne, E., Kikkawa, A. K., Mogstad, M., & Tintelnot, F. (2021). Trade and Domestic Production Networks. *The Review of Economic Studies*, 88(2), 643-668.
- European Commission (2013). Customs Risk Management and Security of the Supply Chain. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0793>
- Fackler, D., Mueller, S., & Stegmaier, J. (2021). Explaining Wage Losses After Job Displacement: Employer Size and Lost Firm Wage Premiums. *Journal of the European Economic Association*, 19(5), 2695-2736.
- Fallick, B., Haltiwanger, J. C., McEntarfer, E., & Staiger, M. (2021). Job Displacement and Job Mobility: The Role of Joblessness. *National Bureau of Economic Research*, w29187.
- Farber, H. S. (2017). Employment, Hours, and Earnings Consequences of Job Loss: US Evidence from the Displaced Workers Survey. *Journal of Labor Economics*, 35(S1), S235-S272.

- Hall, C. M., & Seyfi, S. (2021). Tourism and Sanctions. *Research Handbook on Economic Sanctions*, 351.
- Huneus, F. (2018). Production Network Dynamics and the Propagation of Shocks. *Graduate thesis, Princeton University, Princeton, NJ*, 52.
- Iacus, S. M., King, G., & Porro, G. (2012). Causal Inference without Balance Checking: Coarsened Exact Matching. *Political Analysis*, 20(1), 1-24.
- Jacobson, L. S., LaLonde, R. J., & Sullivan, D. G. (1993). Earnings Losses of Displaced Workers. *The American Economic Review*, 685-709.
- Kletzer, L. G. (1989). Returns to Seniority after Permanent Job Loss. *The American Economic Review*, 79(3), 536-543.
- Lachowska, M., Mas, A., & Woodbury, S. A. (2020). Sources of Displaced Workers' Long-Term Earnings Losses. *American Economic Review*, 110(10), 3231-3266.
- Lafrogne-Joussier, R., Martin, J., & Mejean, I. (2023). Supply Shocks in Supply Chains: Evidence from The Early Lockdown in China. *IMF Economic Review*, 71(1), 170-215.
- Long, J. B., & Plosser, C. I. (1983). Real Business Cycles. *Journal of Political Economy*, 91(1), 39-69.
- Lucas, R. E. (1977). Understanding Business Cycles. *Stabilization of the Domestic and International Economy, Carnegie-Rochester Series in Public Policy*, 7-29.
- Moore, B., & Scott-Clayton, J. (2019). The Firm's Role in Displaced Workers' Earnings Losses. *National Bureau of Economic Research*, w26525.
- OECD (2022). *Tourism Trends and Policies*.
- Rambachan, A., & Roth, J. (2023). A More Credible Approach to Parallel Trends. *Review of Economic Studies*, rdad018.
- Rege, M., Telle, K., & Votruba, M. (2011). Parental Job Loss and Children's School Performance. *The Review of Economic Studies*, 78(4), 1462-1489.
- Rege, M., Skardhamar, T., Telle, K., & Votruba, M. (2019). Job Displacement and Crime: Evidence from Norwegian Register Data. *Labour Economics*, 61, 101761.
- Roth, J., Sant'Anna, P. H., Bilinski, A., & Poe, J. (2023). What's Trending in Difference-in-Differences? A Synthesis of the Recent Econometrics Literature. *Journal of Econometrics*.

- Schaller, J., & Stevens, A. H. (2015). Short-Run Effects of Job Loss on Health Conditions, Health Insurance, and Health Care Utilization. *Journal of Health Economics*, 43, 190-203.
- Schirle, T. (2009). Earnings Losses of Displaced Older Workers: Accounting for the Retirement Option. *Vancouver School of Economics*, 2009-17.
- Schmieder, J. F., Von Wachter, T., & Bender, S. (2010). The Long-Term Impact of Job Displacement in Germany During the 1982 Recession on Earnings, Income, and Employment. *IAB-Discussion Paper*, 2010-1.
- Schmieder, J. F., Von Wachter, T., & Heining, J. (2023). The Costs of Job Displacement over the Business Cycle and Its Sources: Evidence from Germany. *American Economic Review*, 113(5), 1208-1254.
- Smeets, M. (2019). The Theory and Practice of Economic Sanctions. *Russian Trade Policy*, 66-78.
- Stephens Jr, M. (2001). The Long-Run Consumption Effects of Earnings Shocks. *Review of Economics and Statistics*, 83(1), 28-36.
- Sullivan, D., & von Wachter, T. (2009). Average Earnings and Long-Term Mortality: Evidence from Administrative Data. *American Economic Review*, 99(2), 133-138.
- Topel, R. H., & Ward, M. P. (1992). Job Mobility and the Careers of Young Men. *The Quarterly Journal of Economics*, 107(2), 439-479.
- Wooldridge, J. M. (2021). Two-Way Fixed Effects, The Two-Way Mundlak Regression, and Difference-in-Differences Estimators. *SSRN*, 3906345.
- World Economic Forum (2012). New Models for Addressing Supply Chain and Transport Risk.
- Yang, J., Askari, H., Forrer, J., & Zhu, L. (2009). How Do US Economic Sanctions Affect EU's Trade with Target Countries?. *World Economy*, 32(8), 1223-1244.

## APPENDIX A

### ESTIMATION OUTPUTS FOR CHAPTER 2

Table A.1 TTvsRO: Comparison of Tourism Establishments in Affected Regions to Restaurants in Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.048 <sup>a</sup>	-0.011	-0.026 <sup>a</sup>	-0.074
06.16	-0.132 <sup>a</sup>	-0.003	-0.030 <sup>a</sup>	-0.162
09.16	-0.147 <sup>a</sup>	-0.005	-0.011 <sup>a</sup>	-0.158
12.16	-0.135 <sup>a</sup>	-0.035 <sup>a</sup>	-0.030 <sup>a</sup>	-0.165
03.17	-0.184 <sup>a</sup>	-0.044 <sup>a</sup>	-0.034 <sup>a</sup>	-0.219
06.17	-0.117 <sup>a</sup>	-0.015	-0.021 <sup>a</sup>	-0.139
09.17	-0.108 <sup>a</sup>	-0.014	-0.009	-0.118
12.17	-0.104 <sup>a</sup>	-0.020 <sup>b</sup>	-0.031 <sup>a</sup>	-0.134
03.18	-0.105 <sup>a</sup>	-0.046 <sup>a</sup>	-0.042 <sup>a</sup>	-0.146
06.18	-0.039	-0.018	-0.019 <sup>a</sup>	-0.058
09.18	-0.016	-0.014	-0.024 <sup>a</sup>	-0.041
12.18	-0.020	-0.010	-0.018 <sup>a</sup>	-0.038
03.19	0.012	-0.062 <sup>a</sup>	-0.047 <sup>a</sup>	-0.035
06.19	0.060	0.003	-0.014	0.046
09.19	0.058	-0.007	-0.024 <sup>a</sup>	0.034
12.19	0.031	0.000	-0.015	0.016
Observations	179706	179706	179706	179706
Establishments	7356	7356	7356	7356
Adj. R-sq.	0.878	0.633	0.869	0.899
Trend	-0.071	0.152	0.140	0.069
p-value	0.076	0.000	0.000	0.066

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent.

Table A.2 TT2vsRO: Comparison of Tourism Establishments in Affected Regions Excluding İstanbul to Restaurants in Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.102 <sup>a</sup>	0.008	-0.027 <sup>a</sup>	-0.128 <sup>a</sup>
06.16	-0.229 <sup>a</sup>	-0.003	-0.033 <sup>a</sup>	-0.262 <sup>a</sup>
09.16	-0.191 <sup>a</sup>	-0.011	-0.005	-0.196 <sup>a</sup>
12.16	-0.145 <sup>a</sup>	-0.035 <sup>a</sup>	-0.041 <sup>a</sup>	-0.186 <sup>a</sup>
03.17	-0.216	-0.043 <sup>a</sup>	-0.040 <sup>a</sup>	-0.257 <sup>a</sup>
06.17	-0.148 <sup>a</sup>	-0.028 <sup>a</sup>	-0.018 <sup>a</sup>	-0.165 <sup>a</sup>
09.17	-0.119 <sup>a</sup>	-0.021	-0.005	-0.124 <sup>a</sup>
12.17	-0.104 <sup>a</sup>	-0.025	-0.040 <sup>a</sup>	-0.144 <sup>a</sup>
03.18	-0.142 <sup>a</sup>	-0.069 <sup>a</sup>	-0.051 <sup>a</sup>	-0.194 <sup>a</sup>
06.18	-0.067 <sup>a</sup>	-0.017	-0.017 <sup>a</sup>	-0.084 <sup>a</sup>
09.18	-0.033	-0.031 <sup>a</sup>	-0.039 <sup>a</sup>	-0.071 <sup>a</sup>
12.18	-0.027	-0.020	-0.031 <sup>a</sup>	-0.058
03.19	0.029	-0.089 <sup>a</sup>	-0.070 <sup>a</sup>	-0.041
06.19	0.091 <sup>a</sup>	0.000	-0.016	0.075
09.19	0.096 <sup>a</sup>	-0.021	-0.037 <sup>a</sup>	0.059
12.19	0.021	-0.015	-0.021 <sup>a</sup>	0.000
Observations	114504	114504	114504	114504
Establishments	4648	4648	4648	4648
Adj. R-sq.	0.886634	0.578883	0.847609	0.907248
Trend	-0.178	0.182 <sup>a</sup>	0.156 <sup>a</sup>	-0.022
p-value	0.055	0.000	0.000	0.299

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent.

Table A.3 TTvsTO: Comparison of Tourism Establishments in Affected and Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.017	0.022 <sup>a</sup>	-0.008 <sup>b</sup>	-0.025
06.16	-0.107 <sup>a</sup>	0.006	-0.013 <sup>a</sup>	-0.120 <sup>a</sup>
09.16	-0.104 <sup>a</sup>	0.000	-0.011 <sup>a</sup>	-0.115 <sup>a</sup>
12.16	-0.108 <sup>a</sup>	-0.001	-0.016 <sup>a</sup>	-0.124 <sup>a</sup>
03.17	-0.137 <sup>a</sup>	-0.018 <sup>b</sup>	-0.016 <sup>a</sup>	-0.153 <sup>a</sup>
06.17	-0.115 <sup>a</sup>	-0.018	-0.019 <sup>a</sup>	-0.134 <sup>a</sup>
09.17	-0.091 <sup>a</sup>	0.004	-0.008	-0.098 <sup>a</sup>
12.17	-0.101 <sup>a</sup>	-0.007	-0.013 <sup>b</sup>	-0.114 <sup>a</sup>
03.18	-0.082 <sup>a</sup>	-0.008	-0.017 <sup>a</sup>	-0.099 <sup>a</sup>
06.18	-0.053	-0.012	-0.017 <sup>a</sup>	-0.070 <sup>b</sup>
09.18	-0.026	0.004	-0.012	-0.038
12.18	-0.036	0.004	-0.011	-0.046
03.19	0.049	0.001	-0.021 <sup>b</sup>	0.028
06.19	0.073 <sup>b</sup>	0.017	-0.010	0.064
09.19	0.081 <sup>b</sup>	0.019	-0.010	0.071 <sup>b</sup>
12.19	0.030	0.018	-0.002	0.028
Observations	151184	151184	151184	151184
Establishments	6290	6290	6290	6290
Adj. R-sq.	0.868	0.606	0.872	0.889
Trend	0.006	0.037	0.115 <sup>a</sup>	0.121
p-value	0.537	0.001	0.000	0.265

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent.

Table A.4 TT2vsTO: Comparison of Tourism Establishments in Affected Provinces Excluding İstanbul and Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.052 <sup>a</sup>	0.042 <sup>a</sup>	-0.008	-0.060 <sup>a</sup>
06.16	-0.177 <sup>a</sup>	0.012	-0.013 <sup>a</sup>	-0.190 <sup>a</sup>
09.16	-0.124 <sup>a</sup>	0.012	-0.003	-0.127 <sup>a</sup>
12.16	-0.126 <sup>a</sup>	-0.006	-0.019 <sup>a</sup>	-0.146 <sup>a</sup>
03.17	-0.153 <sup>a</sup>	0.005	-0.015 <sup>b</sup>	-0.168 <sup>a</sup>
06.17	-0.082 <sup>a</sup>	0.000	-0.015 <sup>b</sup>	-0.098 <sup>a</sup>
09.17	-0.044	0.013	-0.001	-0.045
12.17	-0.056	0.001	-0.020 <sup>a</sup>	-0.075 <sup>a</sup>
03.18	-0.077 <sup>b</sup>	-0.007	-0.020 <sup>b</sup>	-0.097 <sup>a</sup>
06.18	-0.027	0.010	-0.014	-0.041
09.18	0.001	0.014	-0.020	-0.019
12.18	-0.038	0.011	-0.014	-0.052
03.19	0.076	0.002	-0.033 <sup>a</sup>	0.043
06.19	0.125 <sup>a</sup>	0.038 <sup>b</sup>	-0.008	0.117 <sup>a</sup>
09.19	0.135 <sup>a</sup>	0.025	-0.021	0.114 <sup>a</sup>
12.19	0.046	0.026	-0.004	0.042
Observations	98421	98421	98421	98421
Establishments.	4044	4044	4044	4044
Adj. R-sq.	0.879	0.582	0.856	0.900
Trend	-0.084	0.003	0.134 <sup>a</sup>	0.050
p-value	0.192	0.018	0.000	0.254

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a, b</sup> indicates significance at 1 and 5 percent.

Table A.5 TTvsTORO: Comparison of Tourism Establishments in Affected Provinces and Tourism and Restaurants in Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.042 <sup>a</sup>	-0.011	-0.025 <sup>a</sup>	-0.068 <sup>a</sup>
06.16	-0.136 <sup>a</sup>	-0.009	-0.030 <sup>a</sup>	-0.166 <sup>a</sup>
09.16	-0.137 <sup>a</sup>	-0.019 <sup>a</sup>	-0.015 <sup>a</sup>	-0.152 <sup>a</sup>
12.16	-0.139 <sup>a</sup>	-0.040 <sup>a</sup>	-0.034 <sup>a</sup>	-0.173 <sup>a</sup>
03.17	-0.173 <sup>a</sup>	-0.043 <sup>a</sup>	-0.037 <sup>a</sup>	-0.210 <sup>a</sup>
06.17	-0.103 <sup>a</sup>	-0.023 <sup>b</sup>	-0.027 <sup>a</sup>	-0.130 <sup>a</sup>
09.17	-0.097 <sup>a</sup>	-0.022 <sup>b</sup>	-0.012 <sup>a</sup>	-0.109 <sup>a</sup>
12.17	-0.075 <sup>a</sup>	-0.029 <sup>b</sup>	-0.034 <sup>a</sup>	-0.109 <sup>a</sup>
03.18	-0.066 <sup>a</sup>	-0.052 <sup>b</sup>	-0.044 <sup>a</sup>	-0.110 <sup>a</sup>
06.18	-0.029	-0.029 <sup>b</sup>	-0.026 <sup>a</sup>	-0.055 <sup>b</sup>
09.18	0.003	-0.029 <sup>b</sup>	-0.027 <sup>a</sup>	-0.024
12.18	0.009	-0.024 <sup>b</sup>	-0.025 <sup>a</sup>	-0.017
03.19	0.069 <sup>b</sup>	-0.059 <sup>b</sup>	-0.053 <sup>a</sup>	0.016
06.19	0.104	-0.009	-0.022 <sup>a</sup>	0.082 <sup>a</sup>
09.19	0.113	-0.017	-0.028 <sup>a</sup>	0.085 <sup>a</sup>
12.19	0.075 <sup>b</sup>	-0.015	-0.023 <sup>a</sup>	0.053
Observations	191163	191163	191163	191163
Establishments.	7782	7782	7782	7782
Adj. R-sq.	0.883	0.653	0.872	0.904
Trend	-0.166	0.187 <sup>a</sup>	0.126 <sup>a</sup>	-0.041
p-value	0.053	0.000	0.000	0.086

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent.



Table A.6 TT2vsTORO: Comparison of Tourism Establishments in Affected Provinces excluding İstanbul and Tourism and Restaurants in Unaffected Provinces

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.082 <sup>a</sup>	0.012	-0.015 <sup>a</sup>	-0.097 <sup>a</sup>
06.16	-0.212 <sup>a</sup>	0.014	-0.023 <sup>a</sup>	-0.235 <sup>a</sup>
09.16	-0.188 <sup>a</sup>	0.001	0.000	-0.189 <sup>a</sup>
12.16	-0.126 <sup>a</sup>	-0.020 <sup>b</sup>	-0.032 <sup>a</sup>	-0.159 <sup>a</sup>
03.17	-0.202 <sup>a</sup>	-0.026 <sup>b</sup>	-0.028 <sup>a</sup>	-0.230 <sup>a</sup>
06.17	-0.108 <sup>a</sup>	-0.004	-0.016 <sup>a</sup>	-0.124 <sup>a</sup>
09.17	-0.073 <sup>a</sup>	-0.002	-0.001	-0.074 <sup>a</sup>
12.17	-0.057 <sup>b</sup>	-0.003	-0.031 <sup>a</sup>	-0.089 <sup>a</sup>
03.18	-0.084 <sup>a</sup>	-0.032 <sup>b</sup>	-0.036 <sup>a</sup>	-0.120 <sup>a</sup>
06.18	-0.035	-0.005	-0.016 <sup>b</sup>	-0.051
09.18	0.009	-0.002	-0.024 <sup>a</sup>	-0.015
12.18	0.003	-0.006	-0.020 <sup>b</sup>	-0.017
03.19	0.068	-0.059 <sup>a</sup>	-0.053 <sup>a</sup>	0.015
06.19	0.121 <sup>a</sup>	0.018	-0.007	0.114 <sup>a</sup>
09.19	0.130 <sup>a</sup>	0.002	-0.025 <sup>b</sup>	0.105 <sup>a</sup>
12.19	0.054	-0.005	-0.015	0.039
Observations	114956	114956	114956	114956
Establishments.	4648	4648	4648	4648
Adj. R-sq.	0.889	0.595	0.852	0.909
Trend	-0.273	0.157 <sup>a</sup>	0.175 <sup>a</sup>	-0.097
p-value	0.114	0.000	0.000	0.618

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a, b</sup> indicates significance at 1 and 5 percent.

Table A.7 TTvsR: Comparison of Tourism Establishments in Affected Provinces and Restaurants

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.059 <sup>a</sup>	-0.010	-0.030 <sup>a</sup>	-0.089 <sup>a</sup>
06.16	-0.155 <sup>a</sup>	-0.009	-0.031 <sup>a</sup>	-0.187 <sup>a</sup>
09.16	-0.150 <sup>a</sup>	-0.012	-0.014 <sup>a</sup>	-0.163 <sup>a</sup>
12.16	-0.124 <sup>a</sup>	-0.031 <sup>a</sup>	-0.034 <sup>a</sup>	-0.158 <sup>a</sup>
03.17	-0.171 <sup>a</sup>	-0.045 <sup>a</sup>	-0.040 <sup>a</sup>	-0.211 <sup>a</sup>
06.17	-0.113 <sup>a</sup>	-0.010	-0.024 <sup>a</sup>	-0.137 <sup>a</sup>
09.17	-0.104 <sup>a</sup>	-0.013	-0.014 <sup>a</sup>	-0.118 <sup>a</sup>
12.17	-0.078 <sup>a</sup>	-0.022 <sup>b</sup>	-0.038 <sup>a</sup>	-0.116 <sup>a</sup>
03.18	-0.088 <sup>a</sup>	-0.045 <sup>a</sup>	-0.050 <sup>a</sup>	-0.138 <sup>a</sup>
06.18	-0.038	-0.015	-0.031 <sup>a</sup>	-0.068 <sup>a</sup>
09.18	-0.019	-0.023 <sup>b</sup>	-0.038 <sup>a</sup>	-0.057 <sup>b</sup>
12.18	0.006	-0.013	-0.031 <sup>a</sup>	-0.025
03.19	0.042	-0.061 <sup>a</sup>	-0.063 <sup>a</sup>	-0.021
06.19	0.072 <sup>b</sup>	0.000	-0.027 <sup>a</sup>	0.044
09.19	0.081 <sup>a</sup>	-0.008	-0.041 <sup>a</sup>	0.040
12.19	0.048	-0.001	-0.028 <sup>a</sup>	0.020
Observations	191288	191288	191288	191288
Establishments	7782	7782	7782	7782
Adj. R-sq.	0.883	0.658	0.877	0.904
Trend	-0.048	0.184 <sup>a</sup>	0.135 <sup>a</sup>	0.087
p-value	0.014	0.000	0.000	0.030

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a, b</sup> indicates significance at 1 and 5 percent.

Table A.8 TT2vsR: Comparison of Tourism Establishments in Affected Provinces Excluding İstanbul and Restaurants

	Days Worked	Monthly Wage	Daily Wage	Monthly Wage Bill
03.16	-0.088 <sup>a</sup>	-0.003	-0.027 <sup>a</sup>	-0.116 <sup>a</sup>
06.16	-0.228 <sup>a</sup>	-0.013	-0.032 <sup>a</sup>	-0.260 <sup>a</sup>
09.16	-0.181 <sup>a</sup>	-0.010	-0.006	-0.186 <sup>a</sup>
12.16	-0.125 <sup>a</sup>	-0.056 <sup>a</sup>	-0.044 <sup>a</sup>	-0.169 <sup>a</sup>
03.17	-0.184 <sup>a</sup>	-0.043 <sup>a</sup>	-0.042 <sup>a</sup>	-0.226 <sup>a</sup>
06.17	-0.113 <sup>a</sup>	-0.012	-0.016 <sup>a</sup>	-0.130 <sup>a</sup>
09.17	-0.081 <sup>a</sup>	-0.029 <sup>a</sup>	-0.008	-0.090 <sup>a</sup>
12.17	-0.061 <sup>b</sup>	-0.043 <sup>a</sup>	-0.043 <sup>a</sup>	-0.104 <sup>a</sup>
03.18	-0.082 <sup>a</sup>	-0.069 <sup>a</sup>	-0.055 <sup>a</sup>	-0.137 <sup>a</sup>
06.18	-0.034	-0.026	-0.025 <sup>a</sup>	-0.059
09.18	-0.011	-0.053 <sup>a</sup>	-0.043 <sup>a</sup>	-0.055
12.18	0.007	-0.036 <sup>b</sup>	-0.036 <sup>a</sup>	-0.028
03.19	0.070	-0.085 <sup>a</sup>	-0.072 <sup>a</sup>	-0.002
06.19	0.109 <sup>a</sup>	-0.010	-0.019 <sup>b</sup>	0.090 <sup>b</sup>
09.19	0.118 <sup>a</sup>	-0.023	-0.042 <sup>a</sup>	0.076
12.19	0.041	-0.035	-0.027 <sup>a</sup>	0.015
Observations	114523	114523	114523	114523
Establishments	4648	4648	4648	4648
Adj. R-sq.	0.888	0.604	0.860	0.909
Trend	-0.228	0.206 <sup>a</sup>	0.170 <sup>a</sup>	-0.059
p-value	0.050	0.000	0.000	0.760

Notes: Estimated coefficients for equation (2) with establishment-level covariates in Chapter 2. Number of observations, unique number of establishments are also displayed. Trend is the coefficient of the linear-trend term in the regressions and p-value is the p-value of the Wald test for parallel trend assumption. Insignificance of the trend term indicates that parallel trend assumption is validated.

<sup>a</sup>, <sup>b</sup> indicates significance at 1 and 5 percent.

## APPENDIX B

### ESTIMATION OUTPUTS FOR CHAPTER 3

Table B1 TTvsRO: Comparison of Workers in Tourism Sector in Affected Provinces  
and Workers in Restaurants in Unaffected Provinces

	Monthly wage	Daily wage	Days Worked
03.16	-0.056 <sup>a</sup>	-0.045 <sup>a</sup>	-0.010 <sup>a</sup>
06.16	-0.089 <sup>a</sup>	-0.088 <sup>a</sup>	-0.002
09.16	-0.045 <sup>a</sup>	-0.045 <sup>a</sup>	-0.000
12.16	-0.074 <sup>a</sup>	-0.070 <sup>a</sup>	-0.004
03.17	-0.082 <sup>a</sup>	-0.060 <sup>a</sup>	-0.021 <sup>a</sup>
06.17	-0.024 <sup>a</sup>	-0.041 <sup>a</sup>	0.015 <sup>a</sup>
09.17	-0.014 <sup>a</sup>	-0.019 <sup>a</sup>	0.005
12.17	-0.032 <sup>a</sup>	-0.046 <sup>a</sup>	0.013 <sup>a</sup>
03.18	-0.047 <sup>a</sup>	-0.040 <sup>a</sup>	-0.007
06.18	0.007	-0.008 <sup>b</sup>	0.014 <sup>a</sup>
09.18	-0.003	-0.017 <sup>a</sup>	0.013 <sup>a</sup>
12.18	0.024 <sup>a</sup>	-0.006	0.028 <sup>a</sup>
03.19	-0.001	-0.007	0.005
06.19	0.054 <sup>a</sup>	0.041 <sup>a</sup>	0.012 <sup>a</sup>
09.19	0.042 <sup>a</sup>	0.021 <sup>a</sup>	0.019 <sup>a</sup>
12.19	0.049 <sup>a</sup>	0.025 <sup>a</sup>	0.023 <sup>a</sup>
Trend	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.000
Constant	4.469 <sup>a</sup>	1.540 <sup>a</sup>	2.998 <sup>a</sup>
Observations	1,139,415	1,139,415	1,139,415
Individuals	47,373	47,373	47,373
Adj. R-squared	0.139	0.372	0.020

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

Table B2 TT2vsRO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Workers in Restaurants in Unaffected Provinces

	Monthly wage	Daily wage	Days Worked
03.16	-0.053 <sup>a</sup>	-0.067 <sup>a</sup>	-0.013 <sup>a</sup>
06.16	-0.113 <sup>a</sup>	-0.127 <sup>a</sup>	-0.014 <sup>a</sup>
09.16	-0.050 <sup>a</sup>	-0.045 <sup>a</sup>	0.004
12.16	-0.084 <sup>a</sup>	-0.086 <sup>a</sup>	-0.002
03.17	-0.069 <sup>a</sup>	-0.100 <sup>a</sup>	-0.028 <sup>a</sup>
06.17	-0.036 <sup>a</sup>	-0.019 <sup>a</sup>	0.015 <sup>a</sup>
09.17	-0.014 <sup>a</sup>	-0.001	0.012 <sup>a</sup>
12.17	-0.054 <sup>a</sup>	-0.037 <sup>a</sup>	0.016 <sup>a</sup>
03.18	-0.055 <sup>a</sup>	-0.067 <sup>a</sup>	-0.012 <sup>b</sup>
06.18	-0.003	0.018 <sup>a</sup>	0.019 <sup>a</sup>
09.18	-0.025 <sup>a</sup>	0.003	0.025 <sup>a</sup>
12.18	-0.006	0.033 <sup>a</sup>	0.036 <sup>a</sup>
03.19	-0.019 <sup>a</sup>	-0.008	0.010
06.19	0.054 <sup>a</sup>	0.073 <sup>a</sup>	0.017 <sup>a</sup>
09.19	0.024 <sup>a</sup>	0.053 <sup>a</sup>	0.027 <sup>a</sup>
12.19	0.028 <sup>a</sup>	0.071 <sup>a</sup>	0.040 <sup>a</sup>
Trend	-0.002 <sup>a</sup>	-0.002 <sup>a</sup>	-0.000
Constant	1.588 <sup>a</sup>	4.530 <sup>a</sup>	3.011 <sup>a</sup>
Observations	829,372	829,372	829,372
Individuals	34,267	34,267	34,267
Adj. R-squared	0.363	0.146	0.024

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

Table B3 TTvsTO: Comparison of Workers in Tourism Sector in Affected and Unaffected Provinces

	Monthly wage	Daily wage	Days Worked
03.16	-0.013 <sup>a</sup>	-0.008 <sup>a</sup>	-0.005
06.16	-0.057 <sup>a</sup>	-0.039 <sup>a</sup>	-0.017
09.16	-0.027 <sup>a</sup>	-0.027 <sup>a</sup>	0.000
12.16	-0.034 <sup>a</sup>	-0.031 <sup>a</sup>	-0.003
03.17	-0.040 <sup>a</sup>	-0.029 <sup>a</sup>	-0.011
06.17	-0.028 <sup>a</sup>	-0.028 <sup>a</sup>	0.001
09.17	0.001	-0.003	0.004
12.17	-0.024 <sup>a</sup>	-0.023 <sup>a</sup>	-0.001
03.18	-0.034 <sup>a</sup>	-0.026 <sup>a</sup>	-0.007
06.18	0.003	-0.005	0.007
09.18	0.015 <sup>a</sup>	0.004	0.011
12.18	0.023 <sup>a</sup>	0.005	0.017
03.19	-0.001	-0.006	0.004
06.19	0.031 <sup>a</sup>	0.023 <sup>a</sup>	0.008
09.19	0.036 <sup>a</sup>	0.021 <sup>a</sup>	0.014
12.19	0.048 <sup>a</sup>	0.033 <sup>a</sup>	0.015
Trend	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.000
Constant	4.661 <sup>a</sup>	1.419 <sup>a</sup>	3.290
Observations	989,205	989,205	989,205
Individuals	40,829	40,829	40,829
Adj. R-squared	0.129	0.323	0.018

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

Table B4 TT2vsTO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Unaffected Provinces

	Monthly wage	Daily wage	Days Worked
03.16	-0.023 <sup>a</sup>	-0.014 <sup>a</sup>	-0.008 <sup>b</sup>
06.16	-0.084 <sup>a</sup>	-0.063 <sup>a</sup>	-0.020 <sup>a</sup>
09.16	-0.027 <sup>a</sup>	-0.033 <sup>a</sup>	0.006
12.16	-0.041 <sup>a</sup>	-0.041 <sup>a</sup>	0.000
03.17	-0.062 <sup>a</sup>	-0.042 <sup>a</sup>	-0.019 <sup>a</sup>
06.17	-0.026 <sup>a</sup>	-0.029 <sup>a</sup>	0.003
09.17	0.006	-0.009 <sup>b</sup>	0.013 <sup>a</sup>
12.17	-0.031 <sup>a</sup>	-0.033 <sup>a</sup>	0.002
03.18	-0.060 <sup>a</sup>	-0.050 <sup>a</sup>	-0.009
06.18	0.004	-0.010 <sup>b</sup>	0.012 <sup>a</sup>
09.18	0.010	-0.012 <sup>a</sup>	0.020 <sup>a</sup>
12.18	0.031 <sup>a</sup>	-0.000	0.029 <sup>a</sup>
03.19	-0.020 <sup>b</sup>	-0.031 <sup>a</sup>	0.010
06.19	0.038 <sup>a</sup>	0.023 <sup>a</sup>	0.013 <sup>b</sup>
09.19	0.037 <sup>a</sup>	0.013 <sup>b</sup>	0.022 <sup>a</sup>
12.19	0.060 <sup>a</sup>	0.034 <sup>a</sup>	0.024 <sup>a</sup>
Trend	-0.000	0.000	-0.000
Constant	4.707 <sup>a</sup>	1.507 <sup>a</sup>	3.250 <sup>a</sup>
Observations	708,429	708,429	708,429
Individuals	29,075	29,075	29,075
Adj. R-squared	0.130	0.301	0.023

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup> p<0.0104, <sup>b</sup> p<0.05044

Table B5 TTvsTORO: Comparison of Workers in Tourism Sector in Affected Provinces to Workers in Tourism and Restaurant Sectors in Unaffected Provinces

	Monthly Wage	Daily Wage	Days Worked
03.16	-0.075 <sup>a</sup>	-0.058 <sup>a</sup>	-0.016 <sup>a</sup>
06.16	-0.135 <sup>a</sup>	-0.122 <sup>a</sup>	-0.013 <sup>a</sup>
09.16	-0.047 <sup>a</sup>	-0.055 <sup>a</sup>	0.008 <sup>a</sup>
12.16	-0.095 <sup>a</sup>	-0.090 <sup>a</sup>	-0.004
03.17	-0.106 <sup>a</sup>	-0.079 <sup>a</sup>	-0.025 <sup>a</sup>
06.17	-0.031 <sup>a</sup>	-0.047 <sup>a</sup>	0.014 <sup>a</sup>
09.17	-0.009	-0.027 <sup>a</sup>	0.017 <sup>a</sup>
12.17	-0.046 <sup>a</sup>	-0.064 <sup>a</sup>	0.017 <sup>a</sup>
03.18	-0.076 <sup>a</sup>	-0.067 <sup>a</sup>	-0.009
06.18	0.007	-0.014 <sup>a</sup>	0.019 <sup>a</sup>
09.18	-0.011	-0.040 <sup>a</sup>	0.026 <sup>a</sup>
12.18	0.023 <sup>a</sup>	-0.018 <sup>a</sup>	0.038 <sup>a</sup>
03.19	-0.019 <sup>a</sup>	-0.033 <sup>a</sup>	0.013 <sup>b</sup>
06.19	0.061 <sup>a</sup>	0.042 <sup>a</sup>	0.017 <sup>a</sup>
09.19	0.042 <sup>a</sup>	0.010 <sup>b</sup>	0.029 <sup>a</sup>
12.19	0.064 <sup>a</sup>	0.018 <sup>a</sup>	0.042 <sup>a</sup>
Trend	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.000
Constant	4.454 <sup>a</sup>	1.479 <sup>a</sup>	3.042 <sup>a</sup>
Observations	938,564	938,564	938,564
Number of Individuals	39,188	39,188	39,188
Adj. R-squared	0.142	0.363	0.024

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$



Table B6 TT2vsTORO: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul to Workers in Tourism and Restaurant Sectors in Unaffected Provinces

	Monthly wage	Daily wage	Days Worked
03.16	-0.073 <sup>a</sup>	-0.054 <sup>a</sup>	-0.017 <sup>a</sup>
06.16	-0.131 <sup>a</sup>	-0.118 <sup>a</sup>	-0.013 <sup>a</sup>
09.16	-0.046 <sup>a</sup>	-0.053 <sup>a</sup>	0.006 <sup>b</sup>
12.16	-0.091 <sup>a</sup>	-0.087 <sup>a</sup>	-0.004
03.17	-0.106 <sup>a</sup>	-0.076 <sup>a</sup>	-0.027 <sup>a</sup>
06.17	-0.030 <sup>a</sup>	-0.047 <sup>a</sup>	0.015 <sup>a</sup>
09.17	-0.003	-0.025 <sup>a</sup>	0.019 <sup>a</sup>
12.17	-0.043 <sup>a</sup>	-0.061 <sup>a</sup>	0.018 <sup>a</sup>
03.18	-0.071 <sup>a</sup>	-0.063 <sup>a</sup>	-0.008
06.18	0.012	-0.013 <sup>a</sup>	0.023 <sup>a</sup>
09.18	-0.004	-0.033 <sup>a</sup>	0.026 <sup>a</sup>
12.18	0.031 <sup>a</sup>	-0.013 <sup>a</sup>	0.041 <sup>a</sup>
03.19	-0.012	-0.027 <sup>a</sup>	0.013 <sup>a</sup>
06.19	0.070 <sup>a</sup>	0.049 <sup>a</sup>	0.019 <sup>a</sup>
09.19	0.050 <sup>a</sup>	0.018 <sup>a</sup>	0.030 <sup>a</sup>
12.19	0.074 <sup>a</sup>	0.028 <sup>a</sup>	0.043 <sup>a</sup>
Trend	-0.001 <sup>a</sup>	-0.001 <sup>a</sup>	-0.000
Constant	4.574 <sup>a</sup>	1.564 <sup>a</sup>	3.074 <sup>a</sup>
Observations	891,521	891,521	891,521
Number of Individuals	36,914	36,914	36,914
Adj. R-squared	0.144	0.336	0.027

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

Table B7 TTvsR: Comparison of Workers in Tourism Sector in Affected Provinces and Workers in Restaurants

	Monthly wage	Daily wage	Days Worked
03.16	-0.034 <sup>a</sup>	-0.027 <sup>a</sup>	-0.007 <sup>a</sup>
06.16	-0.085 <sup>a</sup>	-0.082 <sup>a</sup>	-0.003
09.16	-0.023 <sup>a</sup>	-0.031 <sup>a</sup>	0.007 <sup>a</sup>
12.16	-0.075 <sup>a</sup>	-0.062 <sup>a</sup>	-0.012 <sup>a</sup>
03.17	-0.061 <sup>a</sup>	-0.043 <sup>a</sup>	-0.017 <sup>a</sup>
06.17	-0.010 <sup>a</sup>	-0.031 <sup>a</sup>	0.019 <sup>a</sup>
09.17	0.014 <sup>a</sup>	-0.004	0.017 <sup>a</sup>
12.17	-0.024 <sup>a</sup>	-0.027 <sup>a</sup>	0.003
03.18	-0.029 <sup>a</sup>	-0.028 <sup>a</sup>	-0.001
06.18	0.027 <sup>a</sup>	0.001	0.024 <sup>a</sup>
09.18	0.028 <sup>a</sup>	-0.001	0.027 <sup>a</sup>
12.18	0.030 <sup>a</sup>	0.011 <sup>a</sup>	0.018 <sup>a</sup>
03.19	0.028 <sup>a</sup>	0.014 <sup>a</sup>	0.013 <sup>a</sup>
06.19	0.095 <sup>a</sup>	0.064 <sup>a</sup>	0.029 <sup>a</sup>
09.19	0.086 <sup>a</sup>	0.048 <sup>a</sup>	0.035 <sup>a</sup>
12.19	0.087 <sup>a</sup>	0.061 <sup>a</sup>	0.025 <sup>a</sup>
Trend	-0.003 <sup>a</sup>	-0.002 <sup>a</sup>	-0.001 <sup>a</sup>
Constant	5.000 <sup>a</sup>	1.775 <sup>a</sup>	3.270 <sup>a</sup>
Observations	1,674,848	1,674,848	1,674,848
Number of Individuals	68,527	68,527	68,527
Adj. R-squared	0.122	0.279	0.018

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

Table B8 TTvsR: Comparison of Workers in Tourism Sector in Affected Provinces Excluding İstanbul and Workers in Restaurants

	Monthly wage	Daily wage	Days Worked
03.16	-0.011 <sup>a</sup>	-0.046 <sup>a</sup>	-0.058 <sup>a</sup>
06.16	-0.012 <sup>a</sup>	-0.106 <sup>a</sup>	-0.119 <sup>a</sup>
09.16	0.013 <sup>a</sup>	-0.044 <sup>a</sup>	-0.030 <sup>a</sup>
12.16	-0.014 <sup>a</sup>	-0.073 <sup>a</sup>	-0.088 <sup>a</sup>
03.17	-0.026 <sup>a</sup>	-0.067 <sup>a</sup>	-0.094 <sup>a</sup>
06.17	0.018 <sup>a</sup>	-0.027 <sup>a</sup>	-0.007
09.17	0.025 <sup>a</sup>	-0.011 <sup>a</sup>	0.016 <sup>a</sup>
12.17	0.008 <sup>b</sup>	-0.034 <sup>a</sup>	-0.026 <sup>a</sup>
03.18	-0.004	-0.061 <sup>a</sup>	-0.065 <sup>a</sup>
06.18	0.028 <sup>a</sup>	0.006	0.037 <sup>a</sup>
09.18	0.032 <sup>a</sup>	-0.017 <sup>a</sup>	0.017 <sup>a</sup>
12.18	0.027 <sup>a</sup>	0.008 <sup>b</sup>	0.037 <sup>a</sup>
03.19	0.019 <sup>a</sup>	-0.017 <sup>a</sup>	0.004
06.19	0.030 <sup>a</sup>	0.076 <sup>a</sup>	0.108 <sup>a</sup>
09.19	0.041 <sup>a</sup>	0.042 <sup>a</sup>	0.086 <sup>a</sup>
12.19	0.034 <sup>a</sup>	0.066 <sup>a</sup>	0.103 <sup>a</sup>
Trend	-0.001 <sup>a</sup>	-0.002 <sup>a</sup>	-0.002 <sup>a</sup>
Constant	3.327 <sup>a</sup>	1.800 <sup>a</sup>	5.087 <sup>a</sup>
Observations	1,291,520	1,291,520	1,291,520
Number of Individuals	52,514	52,514	52,514
Adj. R-squared	0.023	0.281	0.131

Notes: Estimation results for Equation (1) in Chapter 3. All dependent variables are log-transformed and wages are CPI-adjusted. Number of individuals shows the number of employees in the matched sample.

<sup>a</sup>  $p < 0.0104$ , <sup>b</sup>  $p < 0.05044$

## APPENDIX C

### CURRICULUM VITAE

**Canan Yüksel Yücel**

#### EDUCATION

Master of Science in Economics, 2012

*Middle East Technical University*

***Thesis Title:*** *Role of Investment Shocks in Explaining Business Cycles in Turkey*

*GPA: 3.90/4.00*

Bachelor of Science in Economics, 2008

*Middle East Technical University*

*Valedictorian, GPA:3.90/4.00*

Minor in Mathematics, 2008

*Middle East Technical University*

*GPA: 2.86/4.00*

#### WORK EXPERIENCE

Economist, CBRT, Research and Monetary Policy Department, 2015- Present

Researcher, CBRT, Research and Monetary Policy Department, 2008- 2014

#### COMPUTER SKILLS

Stata, MATLAB, EViews, LaTeX.

#### LANGUAGE

Turkish (Native), English (Fluent), French (Intermediate)

## APPENDIX D

### TURKISH SUMMARY / TÜRKÇE ÖZET

Ekonomik yaptırımlar, uluslararası arenada sıklıkla kullanılan bir politika aracıdır. Askeri müdahalelere kıyasla daha barışçıl alternatifler olarak görülmeleri sebebiyle de tercih edilmektedir. En sık kullanılan ekonomik yaptırım türleri ticaret kısıtlamaları, ambargolar, finansal işlem veya seyahat kısıtlamalarıdır. Özellikle ABD, ekonomik yaptırım uygulamalarına oldukça sık başvurmaktadır. Ekonomik yaptırımların etkinliği ile uygulayan ülke ve hedef ülke için yarattığı kayıplar yazında sıklıkla incelenmiştir. Bu tezin temel araştırma sorusunu da Rusya'nın Türkiye'ye karşı 2015 yılı sonunda uygulamaya karar verdiği ekonomik yaptırımlar belirlemiştir.

Rusya ve Türkiye, 2015 öncesi dönemde sıkı ticari ilişkileri olan iki müttefik ülke olarak dikkat çekmiştir. Birçok Türk firması Rusya'da faaliyet göstermiş, karşılıklı insan hareketi her zaman yoğun olmuştur. Ancak 2015 yılındaki Suriye sivil savaşı, iki ülkeyi karşı karşıya getirmiştir. Rusya, Suriye hükümetini desteklemiş ve 30 Eylül 2015'te savaşa askeri olarak dahil olmuştur. Buna karşın Türkiye, Suriye hükümeti karşıtı isyancı gruplara desteğini ilan etmiştir. Suriye iç savaşında karşıt grupları desteklemeleri Rusya ve Türkiye arasında bir politik ayrılık yaratmıştır. Bu gerilimin üzerine yaşanan uçak krizi, iki ülke arasındaki ilişkileri kırılma noktasına getirmiştir. Türkiye, Suriye sınırında bir Rus savaş uçağını, hava sahasını ihlal ettiği ve yapılan çağrılara uymadığı gerekçeleriyle 24 Kasım 2015'te düşürmüştür. Bu olay, Rusya'da büyük tepki çekmiş, olay gününden itibaren yapılan resmi açıklamalarla Rusya'nın uçak düşürme olayı nedeniyle Türkiye'ye karşı bazı yaptırımlar uygulamaya gideceğine dair sinyaller verilmiştir. Nitekim, 30 Kasım 2015'te Türkiye'ye karşı bir dizi ekonomik yaptırım kararı açıklanmıştır. Bu kararların bir çoğu 1 Ocak 2016'dan itibaren uygulanmaya başlanmıştır. Bu yaptırımlar Türkiye ekonomisinin farklı sektörlerine yönelik kararlar içermektedir. Yaptırımlarla, bir çoğu tarımsal ürün olan bazı malların Türkiye'den ithalatının kısıtlanması kararlaştırılmıştır.

Ayrıca Türk firmaların Rusya'daki inşaat, mimari gibi bazı faaliyet alanlarındaki aktivitelerinin sınırlandırılması, Türk vatandaşlarının Rusya'ya vizesiz girmesine izin veren uygulamanın askıya alınması, Rus tur operatörlerinin Rus vatandaşlarına Türkiye tatili satışının yasaklanması, Rusya'dan Türkiye'ye charter uçuşların durdurulması diğer maddeleri olarak sıralanabilir.

Rusya, Türkiye'nin toplam ihracatında ve özellikle turizm gelirlerinde önemli bir paya sahiptir. Kriz öncesi 2013-2015 döneminde, Rusya'ya yapılan ihracatın toplam ihracat içindeki payı yüzde 4'e yakındır. Türkiye'ye gelen yabancı ziyaretçiler içinde en yüksek ikinci paya sahip olan ülke Rusya'dır. TÜİK verilerine göre 2014 ve 2015 yıllarında sırasıyla 4,5 ve 3,7 milyon Rus vatandaşı Türkiye'yi ziyaret etmiştir. Bu dönemde Rus turistlerin toplam yabancı ziyaretçi sayıları içindeki payı yaklaşık yüzde 12 düzeyindedir. Rusya'nın önemli bir ticaret ortağı olması nedeniyle, kasım ayı sonunda ilan edilen bu yaptırımların Türkiye ekonomisi üzerinde çok yönlü ve derin etkileri olmuştur. Bu tezde doğrudan turizm sektörünü hedefleyen (Rus tur operatörlerinin Türkiye tatili satmayı bırakması, vizesiz seyahat uygulamasının askıya alınması ve charter uçuşların durdurulması) yaptırımların sektörde yarattığı etki incelenmektedir. Bu analizlerde turizm sektörünü temsilen konaklama sektörü kullanılmaktadır. Tezin tamamında turizm sektörü ifadesi, konaklama sektörünü belirtmektedir

Kriz öncesi dönemde (2013-2015) Türkiye'ye gelen yabancı ziyaretçiler içinde en yüksek ikinci paya sahip olan ülke Rusya iken 2016 yılında Rus turist sayısı yüzde 80'e yakın azalmıştır. 2016 yılında seyahat gelirleri yüzde 30 civarında daralmış, konaklama sektörü istihdamı gerilemiştir. Makro büyüklüklerdeki gelişmeler şokun olumsuz etkilerini yansıtmaktadır. Bu tez ise şokun etkilerini firma ve çalışan düzeyinde detaylı mikro-veriler kullanarak değerlendirmeyi amaçlamaktadır. Öncesinde oldukça güçlü ilişkileri olan Rusya ve Türkiye arasında yaşanan bu gerilimin iktisadi birimlerce öngörülmesi mümkün olmamıştır. Bu tezde sadece turizm sektörünü etkileyen (tatil satışlarının yasaklanması ve uçuşların durdurulması) yaptırımlara odaklanıldığı için bu olaya “sektöre özgü beklenmedik bir politik şok” olarak yaklaşmaktadır.

Şokun bu özellikleri (beklenmedik oluşu ve sınırlı bir grup iktisadi birimi etkilemesi), ekonometrik yöntemlerle ampirik olarak incelenmesini mümkün kılmaktadır. Tezde yer alan analizlerde Sanayi ve Teknoloji Bakanlığınca sunulan Girişimci Bilgi Sistemi (GBS) verileri kullanılmaktadır. Bu veriler, SGK, Maliye Bakanlığı ve TÜİK gibi birçok kurumdan derlenen idari kayıtlara dayanmaktadır. Tezde, üç ayrı bölümde üç ayrı etkilenme kanalı incelenmektedir. Tezin ikinci bölümü iş yeri detayında etkileri ölçmeyi amaçlarken üçüncü bölüm sektör çalışanları üzerindeki etkiyi analiz etmektedir. Dördüncü bölümde ise bu politik şokun ticaret ağları kanalıyla turizm dışı sektörlerle yayılma boyutu ele alınmaktadır.

### **Şokun Turizm Sektörüne Etkisi: İşyeri Bazlı Analiz**

İkinci bölümde farkların-farkı (FF) yöntemi kullanılarak şoktan etkilenen grupta iş yerleri düzeyinde ödenen günlük ve aylık reel ücret, toplam çalışılan gün sayısı ve ödenen toplam aylık reel ücret üzerinde krizin yarattığı göreceli/farklılaştırıcı etki tahmin edilmeye çalışılmaktadır. FF yönteminin kullanılabilmesi için etkilenen ve kontrol gruplarının bazı önkoşulları sağlayacak şekilde belirlenmesi gerekmektedir. Öncelikle şok öncesi dönemde, incelenen değişkenlerin bu iki grupta paralel bir eğilim izliyor olması gerekmektedir. İki grup arasında kriz sonrası için hesaplanan etkilerin şoka atfedilebilmesi için bu koşul sağlanmalıdır. Etkilenen grup ve kontrol grubunu belirlerken izlediğimiz temel tanımlama yöntemi, şoka maruz kalma derecesinin iller bazında farklılaşmasını kullanmaktadır. Öncelikle, şok turizm sektörünü ilgilendirdiği için, turizmin önemli olduğu iller daha fazla etkilenme potansiyeline sahiptir. Turizmin önemli olduğu illerdeki etkinin de o ile gelen Rus ziyaretçi sayısı ile orantılı bir şekilde değişmesi beklenir. Bu iki etkiyi içerebilmek için, bölgeleri etkilenme düzeyine göre ayırırken Rus Turist Yoğunluğu (RTY) olarak adlandırdığımız, belirli bir yılda bir ile gelen toplam Rus turist sayısının o sene o ildeki turizm sektörü büyüklüğüne (yani turizm sektöründeki toplam çalışan sayısına) oranı kullanılmaktadır. Bu oranın şok öncesi 2013-2015 dönemindeki ortalamalarına göre iller gruplanmıştır. Buna göre Antalya, Muğla, İstanbul, Edirne, Kırklareli, Artvin ve Ardahan'ın yer aldığı yedi il etkilenen bölge grubu olarak belirlenmiştir. Geri kalan 74 il de etkilenmeyen bölge olarak sınıflanmıştır.

Analizlerdeki temel etkilenme grubu da “etkilenen illerde faaliyet gösteren iş yerleri (TT)” olarak seçilmiştir. Sonuçların dayanıklılığının sınanması için İstanbul’u dışlayan ikinci bir etkilenme grubu ile de analizler tekrarlanmıştır. GBS verisinde il bilgisi hem firma hem de iş yeri bazında görülebilmektedir. Firmaya bağlı tanımlanan il, o firmanın genel merkezinin yer aldığı il olarak kaydedilmektedir. Buna karşın iş yerine tanımlı il, o iş yerinin faaliyet gösterdiği konumu göstermektedir. Örneğin genel merkezi A şehrinde olan bir firmaya bağlı olan ve A ve B şehrinde faaliyet gösteren iki ayrı iş yeri olduğu durumda firma-bazlı il verisi kullanıldığında bu iki iş yerinde çalışan kişilerin tamamı A iliyle eşleştirilecektir. Bu da veride genel merkezlerin yer aldığı İstanbul, Ankara gibi büyükşehirlere yanlılığı arttıracaktır. Bu iki iş yeri çalışanlarını A ve B şehri olarak doğru sınıflandırabilmek için iş yeri düzeyinde il bilgisini kullanmak gerekmektedir. İncelenen şokun bölgesel yapısı ve tanımlama stratejimizin tanımı gereği iş yerlerinin faaliyet illerinin doğruluğu analizlerde kritik öneme sahiptir. Bu nedenle analizlerin, firma yerine iş yeri düzeyinde yapılması tercih edilmiştir.

Kontrol grubu iş yerlerini belirlemeden önce iki-basamaklı sektör karşılaştırmaları yapılmıştır. Buna göre bölgesel dağılımı, ortalama firma ve iş yeri büyüklüğü gibi değişkenler bazında konaklama sektörüne en benzer olan sektör tespit edilmeye çalışılmıştır. Öne çıkan iki sektör “yiyecek/içecek hizmetleri, kısaca lokantalar” ile “sigorta hizmetleri” olmuştur. Ancak sektör büyüklüğü ve şok sonrasında gözlenen büyüme patikaları dikkate alınarak kontrol sektör olarak lokanta grubu seçilmiştir. Dört ayrı kontrol grubu şu şekilde tanımlanmıştır: (i) Etkilenmeyen illerdeki turizm iş yerleri (TO) (ii) Etkilenmeyen illerdeki lokantalar (RO) (iii) Etkilenmeyen illerdeki turizm iş yerleri ve lokantalar (iv) Tüm illerdeki lokantalar (R).

Tahmin örneğinde 2013-2015 yıllarında sürekli olarak faaliyet göstermiş iş yerleri tutulmuştur. Paralel eğilim varsayımı test edildiğinde çalışılan gün dışındaki bağımlı değişkenlerde bu varsayım doğrulanamamıştır. Bu sorunun çözümü için etkilenen ve kontrol grubundaki iş yerlerini daha benzer olacak şekilde seçebilmek için kabalaştırılmış tam eşleştirme (CEM) yöntemi kullanılmıştır. Etkilenen gruptaki her iş yeri, kontrol grubundaki bir işyeri ile eşleştirilmiştir.



Eşleştirilmiş örneklem kullanıldığında paralel eğilim varsayımı pek çok durumda doğrulanmıştır. Örneklemin bu analizde olduğu gibi büyük olduğu durumlarda paralel eğilim test katsayıları test gücü nedeniyle anlamlı çıksa da regresyon sonuçları açısından anlamlı bir etki yaratmayabilmektedir (Bilinski ve Hartfeld, 2019). Bu nedenle test sonuçlarıyla paralel eğilimin doğrulanmadığı durumlarda denkleme doğrusal eğilim terimi eklendiği ve eklenmediği zaman elde edilen katsayılar karşılaştırılmaktadır. Bu iki denklemden elde edilen regresyon sonuçları farklılaşmıyorsa FF yönetiminin kullanımı açısından sorun olmadığı yazında gösterilmektedir. Paralel eğilim varsayımının testle doğrulanmadığı durumlarda, bu karşılaştırma yapılarak grup seçimlerinin anlamlılığı kontrol edilmiştir.

2013-2019 dönemi için çeyreklik veriler kullanılarak Wooldridge (2021) yaklaşımına göre tasarlanan FF denklemleri tahmin edilmiştir. Bu denklemler iş yeri düzeyinde tahmin edilirken zaman ve bölge-zaman etkileri de kontrol edilmektedir. Ayrıca, örneklem dönemi boyunca sabit olan ortak değişkenler (covariates) de denklemlere dahil edilmiştir. Ortak değişkenler olarak firma yaşı, firma ve iş yeri büyüklüğü, iş yerinde çalışan kadın oranı, iş yerindeki çalışanların ortalama yaşının 2013 yılındaki değerleri kullanılmıştır. FF yöntemiyle, etkilenen illerdeki turizm iş yerlerinin (TT) kontrol grubu (R, RO, TORO, R) iş yerlerine göre nasıl farklılaştığı 2016-2019 döneminde her çeyrek için tahmin edilmiştir. Bağımlı değişken olarak logaritmik formda iş yerinde ödenen ortalama reel günlük ve aylık ücretler, iş yerindeki toplam çalışılan gün sayısı ve iş yerince aylık toplam reel ücret ödemesi kullanılmıştır.

Tahmin sonuçlarına göre 2015 politik şokuna bağlı olarak etkilenen illerde faaliyet gösteren turizm sektörü iş yerlerinde, toplam çalışılan gün sayısı kontrol grubu iş yerlerine kıyasla azalmıştır. Sonuçlar, 2016Ç2-2017Ç1 döneminde etkilenen grup turizm iş yerlerinde toplam çalışılan gün sayısının her çeyrekte yüzde 10-15 oranında daha düşük olduğunu, bu negatif fark etkisinin 2017'den sonra kademeli olarak azaldığını ve 2018 sonu itibarıyla ortadan kalktığını göstermektedir. Etkilenen grup örnekleminden İstanbul'daki turizm iş yerleri dışlandığında, negatif fark etkisi kısa vadede (İstanbul'un dahil edildiği etkilenme grubuna kıyasla) daha keskindir. Örneğin 2016 yılı ikinci çeyreğindeki negatif farklılaştırıcı etki yüzde 25'e yakındır.

Restoranların (R, RO, TORO) dahil olduğu kontrol gruplarına kıyasla iki etkilenme grubunda (tüm ve İstanbul firmaları hariç) çalışılan günlerin seyri 2016 sonrasında benzerdir. Ancak karşılaştırma etkilenmeyen turizm iş yerlerine kıyasla yapıldığında, etkilenen grup İstanbul'u dışarıda bıraktığında (İstanbul iş yerlerinin etkilenen gruba dahil edildiği duruma kıyasla) çalışılan günler daha hızlı toparlanmaktadır. Toplam çalışılan gün değişkeni, iş yerlerindeki toplam çalışan sayısı ile çalışılan günün çarpımı olarak hesaplanmıştır. Dolayısıyla bu değişkende gözlenen görece olumsuz etki, etkilenen grup iş yerlerinde çalışan sayısının veya çalışanların çalıştığı gün sayısının azalmasından kaynaklanıyor olabilir.

Ortalama reel günlük ücret, etkilenen grupta, diğer illerdeki turizm iş yerlerine kıyasla yüzde 2 civarında azalmıştır. İstanbul'da faaliyet gösteren iş yerlerinin etkilenen gruptan çıkarılması sonuçları çok fazla değiştirmemektedir. Etkilenen grup turizm iş yerleri restoranlarla karşılaştırıldığında kötüleşmenin daha keskin ve daha kalıcı olduğu görülmektedir. Etkilenen bölgedeki bir turizm işletmesi tarafından ödenen ortalama reel günlük ücret, düşük sezon dönemlerinde (1. ve 4. çeyrekler) yüzde 3-4 oranında daha düşüktür. Ayrıca, restoranların da dahil olduğu kontrol gruplarına (R, RO, TORO) kıyasla hesaplanan negatif ayrıştırıcı etkinin 2018'den sonra artması dikkat çekicidir.

Etkilenen ve etkilenmeyen bölgelerdeki turizm işyerleri tarafından ödenen ortalama aylık reel ücret 2016 yılında farklılık göstermezken, 2017-2018 yıllarında etkilenen bölgedeki turizm iş yerleri için yaklaşık yüzde 1 daha düşük olarak hesaplanmaktadır. İstanbul, etkilenen grup örnekleminde çıkarıldığında, farkların farkı katsayıları sınırlı pozitif hale gelmekte ve diğer turizm iş yerlerine kıyasla etkilenen turizm iş yerlerinde ortalama aylık ücretlerde yaklaşık yüzde 1'lik bir iyileşmeye işaret etmektedir.

Etkilenen bölgedeki turizm iş yerlerinin ödediği ortalama aylık ücretlerdeki kötüleşme kontrol grubu lokantalar olduğunda daha belirgindir ve lokantalara kıyasla yüzde 5 civarında bir negatif ayrıştırıcı etki izlenmektedir. Ancak işyerleri için temel uyarılma kanalının istihdam olduğu, ücret ayarlamasının sınırlı kaldığı dikkat çekmektedir. Bu durumun nedeni asgari ücret artışı olabilir.

Bir iş yerinin toplam aylık ücret ödemesi, aylık ücret seviyesine ve çalışan sayısına bağlıdır. 2016 yılında etkilenen bölgelerdeki turizm iş yerlerinin toplam ücret ödemeleri, diğer illerdeki turizm iş yerlerine kıyasla yaklaşık yüzde 12 daha düşüktür ve olumsuz fark etkisi daha sonra kademeli olarak azalmıştır. Lokantalara kıyasla 2016 yılında, etkilenen bölgedeki turizm iş yerlerinin ücret faturası yüzde 17-20 (İstanbul firmaları hariç tutulduğunda yüzde 25) daha düşüktür.

Sunulan bu tahmini değerler, etkilenen illerdeki turizm iş yerleri grubundaki ortalama etki olarak yorumlanmalıdır. Ancak, şokun farklılaştırıcı etkisinin iller arasında homojen olmayabileceği not edilmelidir. Aynı ildeki farklı ilçeler farklı Rus turist yoğunluğu oranlarına sahip olabilir ve bu da farklılaştırıcı etkinin aynı ilin ilçeleri arasında farklılık göstermesine neden olabilir. Firmalar için ilçe bilgileri mevcuttur ancak Rus turist sayısının ilçeler arasındaki dağılımı yayınlanmamaktadır. Verideki bu kısıtlar nedeniyle böyle bir heterojen etkinin olup olmadığı test edilememiştir.

### **Şokun Turizm Sektörüne Etkisi: Çalışan Bazlı Analiz**

Turizm sektörü istihdam yaratma kapasitesi yüksek bir sektör olup Türkiye'deki toplam hizmet istihdamının yaklaşık yüzde 9'unu turizm sektörü oluşturmaktadır. Bu nedenle Rusya ile yaşanan şok sonrasında etkilenen geniş bir çalışan grubu bulunmaktadır. Özellikle sektörde uzun süreli çalışan işçiler üzerindeki etkinin anlaşılması, sonrasında benzer şoklarla karşılaşıldığında istihdamı korumak ve toparlanmayı hızlandırmak için tasarlanacak politikalara da yol gösterici olacaktır. Tezin üçüncü bölümü, politik şokun çalışan düzeyindeki etkilerine odaklanmaktadır. Uçak düşürme krizinin yaşandığı dönemden önceki üç senede (yani 2013 ve 2015 yılları arasında) en az dokuz dönem boyunca aynı turizm iş yerinde çalışmış olan uzun dönemli işçilerin, krizden nasıl etkilendiklerinin ortaya konması amaçlanmaktadır. Bu bölümde yer alan gözlem ve analizler, GBS verilerine dayanmaktadır. GBS'de, Sosyal Güvenlik Kurumu (SGK) kayıtlarından oluşturulmuş 2012-2020 dönemindeki her yıl için detaylı çalışan verisi bulunmaktadır. Bu veri 2019'a kadar çeyreklik bazdayken 2020 yılından itibaren aylık frekanstadır. Türkiye ekonomisinin finansal olmayan ve özel sektörlerindeki tüm kayıtlı çalışanları kapsamaktadır.

Her yıl için sigortalı ve kayıtlı olarak kamu kuruluşları ve finansal sektör dışındaki iş yerlerinde çalışan tüm işçilerin bilgileri yer almaktadır. İdari bir veri seti olduğu için kayıt dışı çalışanlara ilişkin bilgi içermemektedir. Veri seti, işçilerin ayırt edici kimlik kodları, günlük ve aylık ücretleri, çalıştıkları gün sayısı, cinsiyetleri ve yaşları ile çalıştıkları işyeri ve firmanın kimlikleri hakkında bilgi sağlamaktadır. Veriler, işçilerin üç aylık kazançlarının ve istihdam durumlarının yaklaşık 10 yıllık bir zaman dilimi boyunca izlenmesine olanak sağlamaktadır. Ücret verileri, vergi yükümlülüklerini hesaplamak için kullanılan firma raporlarına dayanmaktadır ve bu nedenle ölçüm hatasından arındırılmış olması beklenmektedir. Ayrıca firma tanımlayıcı numaraları aracılığıyla SGK veri setini firmaların bilanço verileri ile ilişkilendirmek mümkündür. Bu da analizlerde kişilerin çalıştıkları firmaların yaşı, büyüklükleri, 4 haneli sektör kodu ve faaliyet gösterilen il gibi firma özelliklerinin kontrol edilebilmesine olanak sağlamaktadır.

Analizlerde kullanılmak üzere 2012-2020 dönemini kapsayan birebir eşleşmiş firma ve çalışan verisi hazırlanmıştır. Bunun için öncelikle "Konaklama" sektöründe faaliyet gösteren turizm firmaları tespit edilmiştir. Daha sonra her yıl için, ilgili yılın SGK istihdam verilerini kullanarak bu turizm firmalarında kayıtlı çalışanlar belirlenmiştir. Bu şekilde, örneklem dönemindeki her yıl için bir turizm firmasında (bir gün bile olsa) çalışmış olan tüm işçiler verisetine dahil edilmiştir. SGK verileri bire bir eşleşmiş değildir, yani aynı çeyrek için birden fazla firmada kayıtlı olan çalışanlar olabilmektedir. Her yılın çalışan verilerinde, bu tür gözlemler toplam gözlemlerin yaklaşık yüzde 10'unu oluşturmaktadır. Her çeyrekte bir işçiye tek bir firma atamak için şu prosedür izlenmiştir: İlk olarak, işçi bu birden fazla firma arasında en uzun süre çalıştığı firmayla eşleştirilmiştir. Ancak bir eşitlik durumu söz konusuysa (yani bir işçi aynı çeyrekte birden fazla firmada eşit sayıda gün çalışmış olarak kayıtlıysa), ilk olarak 15 günden kısa olan eşitlik durumları örneklemden atılmıştır. Örneğin, bir işçi aynı çeyrekte 2 farklı firmada 11 gün çalışmış olarak kayıtlıysa bu gözlemler düşürülmüştür. Bu şekilde eşitlik olan gözlemlerin yüzde 60'ı temizlenmiştir. 14'ten uzun çalışma günü olan eşitlik durumlarında (örneğin çalışan aynı çeyrekte iki ayrı firmada 15 gün çalışmış görünüyorsa), işçi bir önceki çeyrekte veya bir sonraki çeyrekte çalıştığı firmayla eşleştirilmiştir.

Bu ikisi de sağlanamıyorsa eşit gün çalıştığı firmalardan herhangi biriyle rastgele eşleştirilmiştir. Bu veri temizleme prosedüründen sonra, 2012-2020 dönemini kapsayan turizm sektörü için birebir eşleşmiş işveren çalışan veri seti elde edilmiştir. Turizm sektörüne ilişkin bu veri seti 1.780.090 işçi ve 862.859 firma için 26.669.665 gözlem içermektedir. Çalışanların çoğunluğu "oteller ve benzeri konaklama hizmetlerinde" (alt sektör kodu: 5510) istihdam edilmektedir. Sektörde mevsimlik çalışma yaygındır. İşçi sayısı turizmin yoğun olduğu yaz dönemlerinde, yani ikinci ve üçüncü çeyreklerde artmaktadır. Ortalama olarak, ilk ve son çeyrekte çalışan sayısı 680.000 civarındayken, ikinci ve üçüncü çeyrekte 800.000'e yükselmektedir. Çalışanların yaş ortalaması 35'i geçmemektedir. Ancak kriz öncesi dönemde, yaş ortalamasınının 2. ve 3. çeyreklerde 1. çeyreğe kıyasla azaldığı bir örüntü dikkat çekmektedir. Bu durum, turizm yüksek sezon dönemlerinde işgücü piyasasına giren mevsimlik işçilerin daha genç olmasından kaynaklanıyor olabilir. Türkiye'de kadınların işgücüne katılım ve istihdam oranları oldukça düşüktür. 2013-2015 döneminde kadınların toplam istihdam oranı Türkiye genelinde yüzde 30 civarındadır. Benzer bir görüntü turizm sektörü örnekleminde de gözlenmektedir, öyle ki örneklem dönemi boyunca kadınların ortalama payı 0,22 ile 0,27 arasında değişmektedir. Çalışanların il bilgileri, ikinci bölümde belirtilen kaygılar nedeniyle çalıştıkları iş yerinin ili olarak seçilmiştir. Turizm sektöründe en fazla çalışan olan ilk yedi il İstanbul Antalya, Ankara, Muğla, İzmir, Bursa ve Aydın'dır.

Bu tezde esas ilgi odağımız, kriz sırasında istikrarlı bir işe sahip olan uzun süreli çalışanlardır. Uzun süreli çalışanlar, 2013-2015 döneminde (yani şok yılı da dahil olmak üzere önceki 3 yılda) aynı iş yerinde en az 9 çeyrektir çalışan kişiler olarak belirlenmiştir. Veri setinde, 2013-2015 döneminde turizm sektöründe faaliyet gösteren 1.173.158 çalışan bulunmaktadır. Bunların sadece 70.103'ü (yüzde 8,6'sı) uzun süreli çalışmaktadır. Bu da turizm sektöründe çalışanların çoğunluğunun mevsimlik olduğunu ya da sık sık iş değiştirdiklerini göstermektedir.

Uzun süreli çalışanlarda, yaş ortalaması, çalışılan gün sayıları ve kadın çalışan oranı tüm örneklem ortalamasının üstündedir. Ayrıca uzun süreli çalışanların günlük ücretleri de hem şok öncesi hem şok sonrası dönemde diğer çalışanların üzerindedir.

Ücretler ve çalışma uzunluğu arasındaki bu pozitif ilişkinin, çalışanların iş başında eğitim yoluyla kazandığı becerilerin ücretlerine yansımaları olabileceği düşünülmektedir. Ancak uzun süreli çalışanlar ile örneklem genelindeki nominal ücretler arasındaki bu farkın 2016 yılında azaldığı görülmektedir. Ücret farkındaki bu azalma büyük ölçüde uzun süreli olmayan çalışan ücretlerindeki yüksek artıştan kaynaklanmıştır. Bu durumun Ocak 2016'da asgari ücrete yapılan yüzde 30'luk artışla ilgili olduğu düşünülmektedir. Örneklemimizdeki işçilerin daha büyük bir kısmının asgari ücretli olması ve asgari ücretteki yüzde 30'luk resmi artışın tüm örneklem medyan ücretini yukarı çekmesi bu gelişmeyi sürüklemiş olabilir. Asgari ücretin üzerinde kazanan uzun süreli çalışanlardaki ücret artışının yüzde 30'dan daha düşük gerçekleşmesiyle birlikte, bu gelişme uzun süreli çalışanlar ile diğerleri arasındaki ücret farkının kriz sonrası dönemde azalmasına yol açmış olabilir.

Turizm sektöründeki uzun süreli çalışanları 2016-2018 döneminde kriz sonrası istihdam durumlarına göre sınıflayarak bu grupların kriz sonrası dönemdeki ücretleri kıyaslanmaktadır. Böylece şok öncesindeki iş yerinde kalanlara kıyasla işini kaybedenlerin veya çalıştıkları iş yerini, sektörü değiştirenlerin ücretlerinin nasıl farklılaştıkları değerlendirilebilecektir. Uzun süreli çalışanları gruplandırmak için "statü" adında bir gösterge kukla değişkeni kullanılmaktadır. Statü değişkeni 8 farklı değer almaktadır: 10, 11, 12, 13, 20, 21, 22, 23. İlk rakam 2016'da işsiz kalan süreye göre değişmektedir. Eğer 2016'da çalışılmayan süre sıfır ise ilk hane 1 (statü=1x), aksi takdirde 2'dir. Diğer bir deyişle, bir işçiye [10, 13] aralığında bir statü değeri atanması, bu işçinin 2016 yılında 4 çeyrek boyunca çalıştığını gösterir; [20, 23] değerleri ise 2016 yılında en az bir çeyrek boyunca işsiz kalan işçilere verilir. Statü değerinin ikinci hanesi 2017-2018 dönemindeki istihdam durumuna göre belirlenmektedir. Eğer ikinci hane 0 ise (statü=10 veya 20) bu çalışanın 2017-2018 döneminde 3 çeyrekte az çalıştığı anlamına gelir ve bu dönemde işsiz kalmış olarak değerlendirilir. Daha sonra, 2017-2018 döneminde en az 3 çeyrek çalışmış olan işçiler, hangi iş yeri ve sektörde çalıştıklarına göre ayrılmaktadır. 12 ve 22 değeri alan statü grupları 2017-2018'de farklı bir iş yerinde çalışıldığını gösterirken 13 ve 23 değerleri sektör değiştirildiğini göstermektedir. 11 ve 21 statü grupları ise 2017-2018'de şok öncesindekiyle aynı iş yerinde çalışılanları kapsamaktadır.

Bu sınıflandırmadan sonra, uzun süreli çalışanların çoğunluğunun (yüzde 77,4) 2016 yılında da tamamen çalıştığı görülmektedir. Bu durum firmaların uzun süreli çalışan işçilerini koruma (hoarding) güdülerini yansıtır olabilir. 2016 yılında istihdamda kalan işçilerin büyük kısmının (yüzde 76,8) şok öncesi iş yerinde çalışmaya devam ettiği de bir diğer önemli gözlemdir. 2016 yılında işini kaybetmeyen uzun süreli çalışanlarda firma ve sektör değişimlerinin yaygın olmadığı görülmektedir. Buna karşın, 2016 yılında en az bir çeyrek işsiz kalan uzun süreli çalışanların 2017-2018 döneminde hem işsiz kalanların (yüzde 34,8) hem de firma (yüzde 26,6) veya sektör değiştirenlerin (yüzde 25,5) oranları daha yüksektir. Krizin ilk yılı olan 2016'da işini kaybeden çalışanlarda, 2017 ve sonrasında işsiz kalma oranı da yüksektir. Tam tersine, 2016'da işini koruyanlar (dört çeyrek boyu çalışanlar) arasında sonraki yıllarda da istihdam edilme oranı yükselmektedir.

Statü-12 grubundaki (2016'da dört dönem çalışan, 2017-2018'de başka bir turizm firmasına geçen) çalışanların hem şok öncesi hem şok sonrası ücretleri daha yüksektir. Buna karşı 2016'da işsiz kaldıktan sonra 2017-2018'de firma değiştirmiş olanların ortalama görece ücretleri ise şok sonrasında bozulmuştur. Benzer şekilde 2017-2018 döneminde sektör değiştirenler arasında 2016'da işsiz kalanların (statü-23), kalmayanlara (statü-13) kıyasla görece ücretleri kötüleşmiştir. Bu gözlemler, 2017-2018 dönemindeki ücretlerde 2016 yılında işsiz kalıp kalınmadığının oldukça önemli olduğuna işaret etmektedir. Ayrıca iş değiştirme yazımında iradesi dışında işini kaybeden çalışanların tekrar işe başladıklarında aldıkları ücret üzerinde işsiz kalma sürelerinin oldukça belirleyici olduğu yönündeki bulgularla da uyumludur.

Verideki bu gözlemleri test edebilmek için çalışan bazında sabit etki tahminleri yapılmıştır. İşsiz kalan, firma veya sektör değiştiren ya da il değiştiren uzun süreli çalışanların 2015 sonrası ortalama ücretlerinin firma veya sektör değiştirmeyen diğer uzun süreli çalışanlara kıyasla nasıl değiştiği incelenmiştir. Bağımlı değişken olarak logaritmik formda günlük nominal ücretin kullanıldığı bu denklemlerde çalışılan il, zaman ve kişi bazlı sabit etkiler kontrol edilmektedir. Şok öncesi çalıştığı iş yerini değiştiren uzun süreli çalışanların ücretlerinin değiştirmeyenlere kıyasla ortalamada yüzde 1,7 daha düşük olduğu bulunmaktadır.

Bu etki, çalışan etkilenen bir ildeyse yüzde 2,7'ye yükselmektedir. Sektör değiştiren uzun süreli çalışanların ücretlerinin ise turizmde çalışmaya devam edenlere kıyasla ortalamada yüzde 10,8 daha düşük olduğu tahmin edilmektedir. Aynı analizler çalışılan gün ve aylık nominal ücret için de yapılmıştır. Sonuçlara göre firma değiştiren uzun süreli çalışanlarda, çalışılan gün sayısı ortalama yüzde 3 daha düşüktür. Sektör değiştirenlerde ise bu değer yüzde -7 civarındadır. Firma veya sektör değiştiren uzun süreli işçilerin 2016-2019 dönemindeki günlük ücretleri de çalışılan gün sayıları da daha düşüktür. Sonuç olarak, firma (sektör) değiştiren işçilerin aylık kazançları yüzde 4,7 (yüzde 16,5) daha düşüktür ve bu oran etkilenen bölgelerde yüzde 5,7'ye (yüzde 20,5) yükselmektedir. Sektör değiştiren işçilerin aylık kazançlarının firma değiştirenlere kıyasla daha fazla olması yazınla uyumlu bir bulgudur. Ayrıca 2016 yılında işsiz kalıp da firma/sektör değiştirenlerin ücretleri 2016 yılında işsiz kalmayıp firma/sektör değiştirenlere kıyasla da daha düşüktür. Bu da işsiz kalma süresinin ücretler üzerinde ilave bir olumsuz etkisi olduğuna işaret etmektedir.

Bu bölümdeki ampirik analizlerin bir diğer amacı da 2015 sonrası dönemde, politik şokun uzun süreli bir çalışanın günlük veya aylık reel ücret ile çalışılan gün uzunluğu üzerindeki farklılaştırıcı etkisini ölçmektir. Bu amaçla ikinci bölümde olduğu gibi farkların farkı yöntemi kullanılmaktadır. Tanımlama stratejisi de aynı şekilde RTY oranına dayanmaktadır. Buna göre etkilenen (RTY değeri>10 olan) illerdeki uzun süreli turizm çalışanları etkilenen grup (TT) olarak seçilmiştir. Ayrıca İstanbul ilinde çalışanların diğer etkilenen illerdeki çalışanlardan farklı davranışlar izlediklerine yönelik gözlemlerimiz nedeniyle İstanbul'u dışlayan etkilenen illerdeki turizm çalışanları (TT2) da ikinci bir etkilenen grup olarak analizlerde yer almıştır. Kontrol grubu da yine ikinci bölümdekiyle aynı şekilde belirlenmiştir. Lokantalarda (R), etkilenmeyen bölgedeki lokantalarda (RO), etkilenmeyen illerdeki turizm sektöründe (TO), etkilenmeyen bölgedeki turizm veya lokanta sektöründe (TORO) çalışanlara kıyasla etkilenen grubun emek piyasa göstergeleri incelenmiştir. Tüm örnekleme paralel eğilim varsayımının doğrulanamaması nedeniyle, tahminlerde kabalaştırılmış tam eşleştirme (CEM) yöntemiyle eşleştirilmiş çalışan örnekleme kullanılmıştır. Eşleştirme kriterleri, 2015 yılı ikinci çeyreğinde çalışanların yaşları, cinsiyetleri ile çalıştıkları firmanın büyüklüğü ve yaşı üzerinden belirlenmiştir.



Eşleştirilen örnekleme çalışılan günün bağımlı değişken olduğu durumda tüm lokantaların kıyaslama grubu olduğu analizler dışındakilerde paralel eğilim varsayımı bu şekilde doğrulanabilmiştir. Ancak günlük veya aylık reel ücretlerde eşleştirme sonrasında da testler ile paralel eğilim varsayımı doğrulanamamıştır. Fakat bu analizde olduğu gibi gözlem sayısının fazla olduğu durumlarda testlerin katsayıları anlamlı çıkarma güçlerinin yüksek olduğu yazında vurgulanmaktadır. Nitekim ücret değişkeni için paralel eğilim varsayımının doğrulanabildiği tek senaryo grubu İstanbul dışındaki etkilenen iller ve etkilenmeyen illerin karşılaştırıldığı durumdur. Bu senaryo aynı zamanda gözlem sayısının en düşük olduğu karşılaştırma durumudur. Bu nedenle paralel eğilimi reddeden test sonuçlarında gözlem sayısının etkili olduğu düşünülmektedir. Böyle durumlar için önerilen sınaama yöntemi, denklemlere doğrusal trend terimi eklendiğinde ve eklenmediğinde tahmin edilen farkların-farkı katsayılarının karşılaştırılmasıdır. Analiz sonuçları bu iki durum için ücret değişkenlerinde karşılaştırıldığında katsayı tahminlerinin oldukça yakın olduğu görülmektedir. Bu da etkilenen ve kontrol grup çalışanlarındaki ücretlerde paralel eğilimin doğrulanmayışının ampirik sonuçlar için sorun teşkil etmediği sonucuna işaret etmektedir.

Şok, etkilenen grubun reel günlük ücretlerinde tüm kontrol gruplarındakilere kıyasla bir kötüleşmeye yol açmıştır. Farklılaştırıcı negatif etki, en güçlü 2016 yılında gözlenmiş, sonrasında kademeli olarak azalmakla birlikte 2018'in ilk yarısına kadar devam etmiştir. Tüm lokantalardaki veya etkilenmemiş bölgedeki lokantalardaki çalışanlarla karşılaştırıldığında da sonuçlar benzerdir. Yiyecek/içecek hizmet sektöründeki uzun süreli çalışanlarla (R ve RO) karşılaştırıldığında, etkilenen işçi grubunun günlük reel ücreti başlangıçta yüzde 8 oranında azalmıştır. 2017'nin ikinci çeyreğinde, farklılaştırıcı olumsuz etki yüzde -3 seviyelerine gerilemiştir. Etkilenen bölge çalışanlarının ücretlerindeki olumsuz ayrışma, etkilenmeyen (TO) bölgede yer alan diğer turizm firmalarındaki uzun süreli çalışanlara kıyasla (en fazla yaklaşık yüzde -4) daha sınırlı olmuştur. Turizm sektöründe İstanbul dışındaki etkilenen illerdeki (TT2) ve etkilenmeyen illerdeki (TO) çalışanlar karşılaştırıldığında reel günlük ücretler üzerindeki negatif etkinin (en fazla yaklaşık yüzde -6) bir miktar daha güçlü olduğu dikkat çekmektedir.

Etkilenen gruptaki işçilerin reel günlük ücretlerindeki kötüleşme, etkilenmeyen bölgedeki lokantalarda (RO) veya turizm ve lokanta sektörlerinde (TORO) çalışan işçilerle kıyaslandığında daha belirgindir. Başlangıçta etkilenen grupta günlük ücret yüzde 12 oranında daha düşük olmuş ve etki daha uzun süre kalıcı olmuştur. Bu kalıcılık, işten çıkma yazınındaki iradeleri dışında işsiz kalan çalışanların yaşadığı belirgin ve kalıcı kazanç kayıpları bulgusuyla uyumludur.

Etkilenen gruptaki uzun süreli çalışanların çalışılan gün sayılarında en fazla yüzde 2'ye ulaşan sınırlı ve kısa süreli bir kötüleşme gözlemlenmiştir. Tüm kontrol gruplarına kıyasla, etkilenen (TT) grupta çalışılan gün sayısı üzerinde görülen negatif etki 2017 yılı itibarıyla ortadan kalkmıştır. Turizm sektöründeki mevsimsellik nedeniyle farklılaştırıcı etki 1. ve 4. çeyreklerde daha belirgin hale gelmektedir. Etkilenen çalışan grubundan İstanbul'da çalışanlar dışlandığında (TT2), Aylık ücretlerdeki hareket, günlük ücretlerdeki ve çalışılan günlerin uzunluğundaki değişiklikleri yansıtmaktadır. Çalışma süresi üzerindeki etki küçük ve kısa süreli olduğundan, günlük ve aylık reel ücretler üzerinde ölçülen farklılaştırıcı etkiler benzerdir. Şok, etkilenen turizm firmalarındaki uzun süreli çalışanların aylık reel kazançlarının kontrol grubundaki çalışanlara kıyasla olumsuz ayrışmasına yol açmıştır. Olumsuz etki, şoktan sonraki ilk yıl daha güçlü olmuş ve daha sonra kademeli olarak azalmıştır.

Etkilenmeyen illerdeki turizm sektöründeki çalışanlarla karşılaştırıldığında, etkilenen gruptaki (Antalya, İstanbul, Muğla, Edirne, Kırklareli, Artvin ve Ardahan) çalışanların aylık ücretlerinin başlangıçta yüzde 6 oranında azaldığı ve 2017'nin ikinci çeyreğinde etkinin yüzde 2,6'ya gerilediği tahmin edilmektedir. 2018'in ilk yarısı itibarıyla da negatif farklılaştırıcı etkinin ortadan kalktığı görülmektedir. Ancak İstanbul haricindeki etkilenen illerdeki turizm çalışanlarını (TT2) etkilenmeyen illerdeki turizm çalışanlarıyla (TO) karşılaştırdığımızda, olumsuz etkinin ilk yılda daha güçlü olduğu görülmektedir. TT2 etkilenen grubunda reel aylık ücretler 2016 yılı ikinci çeyreğinde diğer illerdeki turizm çalışanlarına kıyasla yüzde 8 daha aşağıdadır. Bu durum İstanbul'da günlük ve aylık ücretlerin diğer etkilenen illerdekine kıyasla yüksek olmasıyla da ilintili olabilir.

Son olarak il grupları bazında hesaplanan bu ortalama farklılaştırıcı etkinin il genelinde homojen olmayabileceği uyarısı tekrar not edilmelidir. Aynı ildeki farklı ilçelerde turizm sektörünün ve Rus turist sayısının değişmesinin, şoka karşı kırılganlığın ve şokun etkisinin bu iki ilçe arasında farklılaşmasına neden olabileceği belirtilmelidir.

### **Şokun Turizm dışı Sektörlere Ticaret Ağları Kanalıyla Yayılması**

Belirli bir mal veya hizmetin üretimi, farklı sektörlerden farklı firmaların dahil olduğu karmaşık bir üretim yapısı içerisinde gerçekleşir. Bu nedenle tedarik zincirinin bir noktasını etkileyen bir şok, bu ticaret bağlantıları aracılığıyla tüm üretim sürecini etkileyebilir. Üretim bağlantılarının kurulması firmalar açısından zaman alan maliyetli bir süreçtir. Bu nedenle, bir firmanın (girdi satın aldığı) tedarikçisine veya (ürün sattığı) müşterisine gelen bir şok, şoktan doğrudan etkilenmemiş olsa bile o firmayı da etkileyecektir. Bu etkinin kısa dönemde alternatif tedarikçilerle veya müşterilerle yeni üretim bağlantıları hemen kurulamadığı için daha güçlü olması beklenir. Tedarikçi bir firmanın üretimini etkileyen bir şok olduğunda, bu durum kendisinden girdi satın alan firmaları da etkileyebilir. Bu, aşağı yönlü (tedarikçiden müşteriye doğru) yayılma mekanizması olarak adlandırılır. Benzer şekilde, bir firmanın müşterisine gelen bir şok, o firmanın çıktısına yönelik talebi etkileyecek ve dolayısıyla üretim planlarının gözden geçirilmesini gerektirebilecektir. Bu da yukarı yönlü (yani müşteriden tedarikçiye doğru) yayılımdır.

Mikro şokların makro düzeyde dalgalanmalar ve iş çevrimleri üzerindeki rolü ve firma bağlantılarının şokların aktarımı üzerindeki rolü küresel finansal krizden sonra daha fazla ilgi görmeye başlamıştır. Buna ilgiye paralel olarak üretim ağları yazını da büyümüştür. Yazındaki ilk ilerleme, şokların firmalar arası yayılımını genel denge modelleri aracılığıyla teorik olarak göstermeye çalışan çalışmalar üzerinden olmuştur. Firma bağlantıları üzerinden şokların yayılmasını ampirik olarak inceleyen çalışmalar ise daha geriden gelmiştir. Ampirik çalışmaların daha az olmasının nedeni, “dışsal mikro şokların” tanımlanmasındaki ve bunların ekonomi geneline yayılmasının izlenmesindeki güçlüklerdir.

Ancak bu tür mikro-düzey şokların örnekleri biriktikçe ve firmalar arası işlemleri içeren veri setlerinin (küresel ölçekte bile) kullanılabilir hale gelmesiyle, şokların yayılmasında girdi-çıkıtı bağlantılarının önemine dair ampirik kanıtlar sunan çalışma sayısı da artmaya başlamıştır. Bu çalışmalarda temel tanımlama stratejisi olarak sıklıkla doğal afetler kullanılmaktadır. Doğal afetler, az sayıda firmayı etkileyen, dışsal, beklenmedik büyük şoklardır. Bu yönleriyle de ampirik olarak analiz edilmeye uygundur. Bu bölümdeki analizler literatürün bu alanına katkıda bulunmakta ve sektöre özgü beklenmedik bir şokun firmalar arasındaki girdi-çıkıtı bağlantıları aracılığıyla diğer sektörlerle yayılmasını analiz etmektedir.

Bu bölüm, turizm sektörünü etkileyen Türkiye-Rusya arasındaki politik şokun, firma bağlantıları yoluyla turizm dışı sektörlerle nasıl aktarıldığını anlamayı amaçlamaktadır. Şok öncesi dönemde turizm firmalarının müşterisi veya tedarikçisi olan turizm dışı sektörlerdeki firmalara, şokun yayılıma boyutu değerlendirilmektedir. Bu amaçla yine idari kayıtlardan derlenen firmalar arası işlem verisi kullanılmaktadır. Bu veriler Maliye Bakanlığına bildirilen faturalara dayanmaktadır. Her firma, alıcılarının ve tedarikçilerinin tam listesini ve bir eşik değerin (5.000 TL) üzerindeki her bir işlemin tutarını bildirmektedir. Bu bilgiler katma değer vergisi (KDV) amaçları için derlenmektedir. Bu veriler, ortak firma tanımlayıcıları aracılığıyla Türkiye'deki tüm firmaları kapsayan bilanço ve gelir tabloları ile birleştirilmektedir. Nihai birleştirilmiş veriler firma tanımlayıcı kimlik numarasını, tüm bilanço değişkenlerini (satışlar, karlar, banka kredileri, özkaynak vb.), 4 haneli sektör kodunu (NACE4), çalışan sayısını, kuruluş tarihini ve firmanın ilini içermektedir.

Bir şokun dolaylı etkilerini ölçmek için bir maruziyet değişkeni oluşturulması literatürde sıklıkla kullanılmaktadır. Örneğin bir doğal afetin etkilerinin afet bölgesi dışındaki firmalara yayılımını ölçmek için, tanımlama şu değişken aracılığıyla yapılabilir: Afetten doğrudan etkilenmemiş ancak öncesinde afetin gerçekleştiği bölgede faaliyet gösteren etkilenen bir firmanın tedarikçisi veya müşterisi olan firmalar için bir değeri alan kukla değişken analizlerde kullanılabilir. Örneğin bir firmanın Japonya'daki depreme maruz kalma düzeyini temsilen, depremden önceki sene Japon ithal girdilerinin maliyet içindeki payı kullanılabilir.

Bu çalışmadaki tanımlama stratejisi de benzer bir fikre dayanmaktadır. 2015 yılındaki firmadan firmaya işlem verileri kullanılarak firma düzeyinde şoka maruz kalma değişkeni oluşturulmaktadır. Şokun yukarı yönlü yayılımını temsilen 2015 yılında turizm sektörü dışındaki bir firmanın turizm sektörüne yaptığı satışların toplam yıllık satışlarına oranı (*yukarı yayılım*, kısaca *yy*) kullanılmaktadır. Bu değişken turizm firmalarının tedarikçisi olan sektör dışı firmaların şoktan etkilenme derecesini ölçmek amacıyla oluşturulmuştur. Diğer yandan sektörel şokun aşağı yönlü yayılımını temsilen 2015 yılında turizm sektörü dışındaki bir firmanın turizm sektöründen yaptığı alımların toplam yıllık alımlarına oranı (*aşağı yayılım*, kısaca *ay*) kullanılmaktadır. Bu değişken şoktan doğrudan etkilenmiş turizm firmalarının müşterisi olan sektör dışı firmaların şoktan ne derece etkilendiğini ölçmek için oluşturulmuştur. Maruziyet değişkenleri (“*yy*” ve “*ay*”) turizm dışı sektördeki her bir firma için hesaplanmakta ve turizm firmalarıyla yaptıkları işlemlerin kriz öncesi (yani 2015 yılı) değerine dayanmaktadır.

2015 yılı aylık firmadan firmaya işlem veriseti, 852.214 alıcı firma ve 2.628.295 satıcı firmaya ait 43.967.089 gözlem içermektedir. 2015 yılında bir turizm firmasının alıcı veya satıcı olarak dahil olduğu işlem sayısı 830.672'dir. “*ay*” oranı 65.044 gözlem için, “*yy*” oranı ise 62.560 gözlem için pozitifdir. Bu gözlem turizm sektörüyle ticari ilişkileri olan firma sayısının görece az olduğunu ima etmektedir. Turizm ile ticari ilişkileri en güçlü olan sektörler yıkama, kuru temizleme, kuaförlük faaliyetlerini de içeren 96 kodlu “diğer kişisel hizmet faaliyetleri” ile 79 kodlu “Seyahat acentesi, tur operatörü rezervasyon hizmeti ve ilgili faaliyetler” sektörleridir.

2015'teki politik şoktan doğrudan etkilenen turizm firmaları ile ticari ilişkilere sahip olmanın turizm sektörü dışındaki firmaların 2015 sonrası dönemdeki performansları üzerinde bir etkisi olup olmadığı incelenmektedir. Bir başka deyişle pozitif “*ay*” ve “*yy*” oranlarına sahip olan firmaların 2016 yılı satış ve toplam çalışan sayılarındaki yıllık değişimin, kriz öncesinde turizmle ticari ilişkisi olmayan firmalara kıyasla nasıl farklılaştığı tahmin edilmektedir. Firma-düzeyinde yapılan tahminlerde sektör, il, sektör-bölge sabit etkileri ile firmaların 2014 yılına ait özellikleri (firma yaşı ve çalışan sayısı, borçlanma oranı, kredi kullanımı gibi) de kontrol edilmektedir.

2016 yılı için yapılan tahminler negatif ve anlamlı yayılım etkilerinin olduğuna işaret etmektedir. Kriz öncesi dönemde turizm firmalarının tedarikçisi olan -sektör dışı-firmaların 2016 yılındaki satış büyüme oranları, turizm sektörüne hiç satış yapmayan firmalara kıyasla ortalama 8,0 yüzde puan daha düşüktür. Buna karşın turizm sektöründen hizmet satın alan müşteri bir firmanın (turizm sektöründen hiç alım yapmayan firmalara kıyasla) satış değişimi 7,2 yüzde puan daha düşüktür. 2015 yılındaki satış verilerini ve sektörlerin katma değerlerini dikkate alan bir hesaplamayla, turizm firmalarıyla ticari bağlantıları olan diğer sektörlerin satışlarındaki düşüşün 2016 büyümesine 0,5 puan negatif etki yaptığı bulunmaktadır. Bağımlı değişkenin istihdam değişimi olduğu regresyon sonuçları ise turizm firmasının tedarikçisi firmalarda yüzde 2,2 puan, turizm sektörü müşterilerinde ise yüzde 1,1 puan daha düşük istihdam değişimi olduğunu göstermektedir. Turizm sektörü imalat sektörü gibi bir merkez sektör değildir ve turizm firmalarıyla yapılan ticaretin payı sınırlıdır. Buna rağmen, küçük de olsa anlamlı yayılım etkilerinin bulunması sektörel şokların yayılımına dair önemli bir bulgu olarak düşünülmelidir.

Tezde yer alan analizlerle 2015 yılında yaşanan politik şokun turizm sektörüne etkileri işyerleri ve çalışanlar düzeyinde ele alınmış ve turizm dışı sektörlerle ticari ilişkileri aracılığıyla yansıyan boyutuna dair incelemeler yapılmıştır. Böylece şokun Türkiye ekonomisi üzerindeki etkilerine dair bütüncü bir analiz sunulmaktadır. Bu analizler, politik şokun ve turizm sektörüne yönelik kısıtlamaların etkilerine dair mikro düzeyde yürütülen ilk çalışma olması nedeniyle önem taşımaktadır.

## APPENDIX E

### THESIS PERMISSION FORM / TEZ İZİN FORMU

#### ENSTİTÜ / INSTITUTE

- Fen Bilimleri Enstitüsü** / Graduate School of Natural and Applied Sciences
- Sosyal Bilimler Enstitüsü** / Graduate School of Social Sciences
- Uygulamalı Matematik Enstitüsü** / Graduate School of Applied Mathematics
- Enformatik Enstitüsü** / Graduate School of Informatics
- Deniz Bilimleri Enstitüsü** / Graduate School of Marine Sciences

#### YAZARIN / AUTHOR

**Soyadı** / Surname : Yüksel Yücel  
**Adı** / Name : Canan  
**Bölümü** / Department : İktisat / Economics

#### TEZİN ADI / TITLE OF THE THESIS (İngilizce / English):

ESSAYS ON ECONOMIC CONSEQUENCES OF A POLITICAL CONFLICT: 2015 RUSSIA  
TÜRKİYE DISPUTE

**TEZİN TÜRÜ / DEGREE:** Yüksek Lisans / Master  Doktora / PhD

1. **Tezin tamamı dünya çapında erişime açılacaktır.** / Release the entire work immediately for access worldwide.
2. **Tez iki yıl süreyle erişime kapalı olacaktır.** / Secure the entire work for patent and/or proprietary purposes for a period of **two years.** \*
3. **Tez altı ay süreyle erişime kapalı olacaktır.** / Secure the entire work for period of **six months.** \*

\* Enstitü Yönetim Kurulu kararının basılı kopyası tezle birlikte kütüphaneye teslim edilecektir. / A copy of the decision of the Institute Administrative Committee will be delivered to the library together with the printed thesis.

**Yazarın imzası** / Signature .....

doldurulacaktır.)

hand.)

Tezin son sayfasıdır. / This is the last page of the thesis/dissertation.

**Tarih** / Date .....

(Kütüphaneye teslim ettiğiniz tarih. Elle

(Library submission date. Please fill out by